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Table of Contents:

CONFERENCE PAPERS

An evaluation of a local short break scheme for children with disabilities: Measuring the impact on disabled adolescent users and their parents	Dr Elizabeth Spruin	Canterbury Christ Church University, UK	9
An Exploration of the Effect of Information and Awareness on African American Women's Perceptions of Kidney Disease	Tiffany Shockley	Community Health Independent, USA	24
Antenatal thyroid screening - One year prospective study	Singh Amandev	BFUHS, Faridkot, India	31
	Kaur Parmjit		
	Bhupal Surinder K.		
	Kaur Swapandeep		
	Bhatia Ruby		
	Kathpal S Yashpreet		
Building a nurse student-patient with mental illness relationship in a Thai cultural context	Rattikorn Mueannadon	Boromarajonani College of Nursing Udonthani, Thailand	39
Community engagement: Implications for MDG 4 in South Africa	Roman Tandlich	Rhodes University, Grahamstown, South Africa	49
Dating violence and impact on adolescent reproductive health	Rosmala Nur	Tadulako University, Indonesia	62
Development of Filipino Adolescent Resilience Scale (FARS): Achieving Positive Life Adaptation	Joel C. Navarez	De la Salle University, Philippines	73
Dimensions of Hygiene & sanitation in resource - limited settings; the case of Uganda	Mubiru Joseph	Ministry of Water & Environment, Uganda	83
Environmental epidemiology of tuberculosis in Northern India and view on ayurvedic immunomodulators as an adjuvant therapy	Rakesh B. Sharma	Primary Health Centre, Pinna, Muzaffarnagar, UP, India	94
	Kiran B. Sharma	GSS School, Ghanaur, Patiala, Punjab, India	
Experiences of Breast Cancer Women Who Had Undergone Chemotherapy: A Case Study	Mae Joy P. Espinosa	Sultan Qaboos University, Muscat, Oman	110
	Perry Paul J. Espinosa	Woosong College, Daejeon, Republic of Korea	
Father's role in breastfeeding practice	Neneng Bisyaroh	University of Indonesia, Indonesia	114
	Ratri Ciptaningtyas	State Islamic University, Indonesia	
Fatty liver MRS analysis as the feeding period of high fat diet 60% in rat	Seung-Man Yu	Gimcheon University of Korea, Republic of Korea	123
Gintonin from Korean Red Ginseng suppresses inflammation in RAW 264.7 cells by targeting NF-κB and MAPK pathways and revives the levels of mir-34a and mir 93	Evelyn Saba	Kyungpook National University, Republic of Korea	126
	Man Hee Rhee		
Health Communication Effectiveness of Liver and Gallstone Detoxification Project: Case Study of Santi Asoke Group's Projects	Prof. Dr. Lucksana Klaikao	Rangsit University, Thailand	145
Health Promotion through Learning Experience in Primary Care in Higher Education Institutions	Lolita L. Aranas	Jose Rizal University, Philippines	151
Identifying and Modeling Risks in Health Insurance: A Systems Dynamic Approach	Saeid Ataiepoor	Kharazmi University, Iran	162

Improvement of students self-confident through peer counselor activity in the center of information and counseling students (PIKM) Laras Hati in 2014	Izza Mufida	Yogyakarta Midwifery Academy, Indonesia	173
	Istri Bartini		
	Ratna Agustina		
	Silmika Wijayanti		
	Indah Widi A.		
Knowledge and Attitude of Rural Tshivenda Speaking Teenagers towards Choice of Termination of Pregnancy on Vhembe District, South Africa	Takalani Tshitangano	University Of Venda, Thohoyandou, South Africa	180
Medicine Price, Availability and Affordability in China: A Case From Harbin City	Liang Xuefeng	Harbin Institute of Technology, China	188
	Wang Xiuzhen		
	Li Yundan		
Obesity prevalence in Portuguese school adolescents: The impact of a project of research-action	Amâncio António de Sousa Carvalho	University of Trás-os-Montes e Alto Douro, Portugal	203
Patients' organisation in Poland's health care: Legal and institutional legitimacy	Piotr Romaniuk	Medical University of Silesia in Katowice, Poland	213
Physical Activity, Dietary Intake and Nutritional Status of CABEIHM Faculty Members in BatStateU Main Campus I	Myla A. Argente	Instructor-Batangas State University, Philippines	225
Social determinants of vaccination coverage in Australian paediatric population: differentials between general and indigenous populations	Dr Rajeev Nagpal	Flinders University, Australia	242
	Dr Lillian Mwanri		
Substance use among high school learners in the Buffalo flats of East London, South Africa	Mr. Emmanuel Manu	Human Sciences Research Council, South Africa	255
	Prof Thelma Maluleke		
	Dr Mbuyiselo Douglas		
The attitude of medical professionals towards the implementation of disability evaluation based on the ICF	Ching-Ying Lin	Taipei Medical University, Taiwan (R.O.C.)	266
	Yu-Shan Chen	National Taipei University	
The development of a proposed conceptual framework for conducting cross-national comparative policy analysis of oral health policy development and implementation	Dr Tufayl A Muslim	University of KwaZulu-Natal, South Africa	270
The most common offending type of snake and common biting place of snake bites in selected rural area, Sri Lanka	H. M. P. Herath	General Sir John Kotelawala Defence University, Sri Lanka	284

ABSTRACTS

A Study of the Relationships in Anesthesia Nurses' Work Stress and Job Satisfaction	Yu-Ling Huang	National Taiwan University Hospital, Taiwan (R.O.C.)	291
Antimicrobial properties of aqueous and ethanol extracts of Anacardium occidentale	Shobha K.L.	Manipal University, Manipal, India	292
Comparing the Effects between Specific Exercises and Education for the Patients with Knee Osteoarthritis	Chien-Tsung Tsai	Da-Chien Hospital, Taiwan (R.O.C.)	293
Comparison of Antimicrobial Effect of Antibacterial Soap Containing Triclosan and Plain Soap for Hand Hygiene	Keeseok Lee	Korea University, Republic of Korea	294
	Min Suk Rhee		

Detection of <i>Listeria monocytogenes</i> and <i>Salmonella</i> in food by rapid microbiological methods	Orsolya Erdősi	Szent István University, Hungary	295
Development and initial evaluation of reliability and validity of the Symptom-Management Self-Efficacy Scale	Shu-Yuan Liang	National Taipei University of Nursing and Health Sciences, Taipei, Taiwan	296
Effect of Sensorimotor Integration Training on Balance among Patients with Stroke	Sang-Hun Jang	Gimcheon University, Republic of Korea	297
Effects of Tai Chi Exercise for Osteoarthritis Knee	Chien-Tsung Tsai	Da-Chien Hospital, Taiwan (R.O.C.)	298
Experiences in public welfare program for Korean disabled adults	Jeong-Soo Kim	Pukyong National University, Republic of Korea	299
Growth and Sporulation Characteristics of <i>Geobacillus stearothermophilus</i> under different conditions of milk	Na Young Lee	Korea University, Republic of Korea	300
	Tae Jin Cho		
	Min Suk Rhee		
In vitro antibacterial and antifungal activities of aqueous and ethonolic extracts of <i>Acacia Nilotica</i>	Amita Shobha Rao	Manipal University, Manipal, India	301
Influence of Treatment Temperature and Medium on Activity of Lytic Bacteriophages (STP-1, STP-2, and Esc-COP-1) against <i>Escherichia coli</i> O157:H7	Tae Jin Cho	Korea University, Republic of Korea	302
	Na Young Lee		
	Min Suk Rhee		
Investigating the Impact of Cognitive-Behavioral Therapy on the Mental Health Status of Patients Suffering from Myocardial Infarction	Rostam Jalali	Kermanshah University of Medical Sciences, Kermanshah-Iran	303
	Behnam Khaledi Paveh		
Local health systems in the indigenous municipality of Lake Sebu, South Cotabato, Philippines	Jocelyn P. Bayquin	Lake Sebu Municipal Health Office, Philippines	304
Low income and injury types were indicators of elderly abuse inpatient: A nationwide evidence-based study	Ya-Ting Yang	National Defense Medical Center, Taiwan (R.O.C.)	305
Motility and Biofilm Formation of <i>Escherichia coli</i> O157: H7 under Low-Shear Modeled Microgravity	Hye Won Kim	Korea University, Republic of Korea	306
	Min Suk Rhee		
Olive: A Nutraceuticals Against Alzheimer's Disease	Syed Haris Omar	Charles Sturt University, Australia	307
Primary health care for indigenous communities in the Department of Meta, Colombia	Janeth Carrillo Franco	Universidad Cooperativa de Colombia, Colombia	308
Reproductive Health of the Indigenous Rakhine women in Cox's Bazar, Bangladesh	Dr. Ma Yin Nu	Cox's Bazar Medical College, Bangladesh	311
	Dr. Pu Chaw Ni		
Social determinants and blindness: Situational Analysis of risks, prevention, surgical services and eye care programmes in Nepal. Case study in Gandaki and Dhaulagiri Zones – Western Region Nepal	Angelika Feldmann	University Dresden, Germany	312
The association between socioeconomic status and the trend of health status: A longitudinal analysis	Tzu-Yu Lin	Chang Gung University, Taiwan	313
The stress index changes according to the types of floor impact sound	Seok Hyeon Yun	Ulsan University Hospital, Republic of Korea	315
	Chang Sun Sim		
	Ji Ho Lee		
Trajectory of lifestyle, self-management and quality of life among stroke patients	Heng-Hsin Tung	National Taipei University of Nursing and Health Sciences, Taiwan (R.O.C.)	316
	En-Yuan Lin	Taipei Medical University Hospital, Taiwan (R.O.C.)	

Water Supply Quality Associated with Toddlers Diarrhea in North Semarang District	Nila Puspita Sari	University of Diponegoro / University of Indonesia, Indonesia	318
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Index of Authors:

A., Indah Widi	173
Agustina, Ratna	173
Amandev, Singh	31
Amita Shobha Rao	301
Aranas, Lolita L.	151
Ataeipoor, Saeid	162
Bartini, Istri	173
Bayquin, Jocelyn P.	304
Bisyaroh, Neneng	114
Carvalho, Amâncio António de Sousa	203
Chen, Yu-Shan	266
Cho, Tae Jin	300
Cho, Tae Jin	302
Ciptaningtyas, Ratri	114
Douglas, Mbuyiselo	255
Erdősi, Orsolya	295
Espinosa, Mae Joy P.	110
Espinosa, Perry Paul J.	110
Feldmann, Angelika	312
Franco, Janeth Carrillo	308
Herath, H. M. P.	284
Huang, Yu-Ling	291
Jalali, Rostam	303
Jang, Sang-Hun	297
Joseph, Mubiru	83
K., Bhupal Surinder	31
K.L., Shobha	292
Kim, Hye Won	306
Kim, Jeong-Soo	299
Klaikao, Lucksana	145
Lee, Ji Ho	315
Lee, Keeseok	294
Lee, Na Young	300
Lee, Na Young	302
Liang, Shu-Yuan	296
Lin, Ching-Ying	266
Lin, En-Yuan	316
Lin, Tzu-Yu	313
Maluleke, Thelmah	255
Manu, Emmanuel	255
Mueannadon, Rattikorn	39
Mufida, Izza	173
Muslim, Tufayl A.	270
Mwanri, Lillian	242
Myla A. Argente	225
Nagpal, Rajeev	242
Navarez, Joel C.	73

Ni, Pu Chaw	311
Nu, Ma Yin	311
Nur, Rosmala	62
Omar, Syed Haris	307
Parmjit, Kaur	31
Paveh, Behnam Khaledi	303
Rhee, Man Hee	126
Rhee, Min Suk	294
Rhee, Min Suk	300
Rhee, Min Suk	302
Rhee, Min Suk	306
Romaniuk, Piotr	213
Ruby, Bhatia	31
Saba, Evelyn	126
Sari, Nila Puspita	318
Sharma, Kiran B.	94
Sharma, Rakesh B.	94
Shockley, Tiffany	24
Sim, Chang Sun	315
Spruin, Elizabeth	9
Swapandeep, Kaur	31
Tandlich, Roman	49
Tsai, Chien-Tsung	293
Tsai, Chien-Tsung	298
Tshitangano, Takalani	180
Tung, Heng-Hsin	316
Wijayanti, Silmika	173
Xiuzhen, Wang	188
Xuefeng, Liang	188
Yang, Ya-Ting	305
Yashpreet, Kathpal S.	31
Yu, Seung-Man	123
Yun, Seok Hyeon	315
Yundan, Li	188

**An evaluation of a local short break scheme for children with disabilities:
Measuring the impact on disabled adolescent users and their parents**

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ABSTRACT

The present research explored the impact of local short break scheme on the strengths and difficulties of disabled adolescents and their parents. At the end of the scheme disabled children ($N=11$) took part in semi-structured interviews to evaluate their experiences of the scheme. Data was also collected from their parents ($N=7$), who completed questionnaires measuring their strengths and difficulties (SDQ, Goodman, 2001) and levels of parental stress (PSI, Abidin, 1995). The findings highlighted that short break schemes can have numerous beneficial effects on disabled adolescent's health, development and wellbeing. Moreover, the findings suggest that these potential benefits extend beyond the scheme participants to their parents. Finally, areas for future developments emerged, including: funding for more resources, development of young people's skills, implementing more activities, provide a longer scheme and most significantly the need to develop young adult short break schemes to help aid the transition into adulthood for those from 18 years of age.

Introduction

Children and adolescents with learning disabilities and/or severely challenging behaviour can place particular strains on their families. This often leads to maternal ill health, depression and family breakdown, which can be very stressful and threaten family wellbeing (Hastings, 2002; McConkey, Gent & Scowcroft, 2011). In extreme cases, children may have to move to high cost residential placements (McGill et al., 2006). A potentially more appropriate and cost effective approach is the provision of family support services; predominantly these have taken the form of ‘respite’ short break provision and the UK government has recognised the need to extend such services (HM Government, 2007). Most recently, the UK government has made changes to the disability code of practice, further highlighting the need to focus on the participation of children and parents in the extension of these services (HM Government, 2015). Despite the on-going emphasis by the UK government to expand short break services for children with complex needs, little attention has been paid to adapting these services for children and families that have complex needs (Emerson, 2001; McConkey, Truesdale & Conliffe, 2004; Staley, 2008). More surprisingly, there is a lack of research assessing current service provisions from the perspective of service users and their families (Audit Commission, 2003).

Problematically, children and adolescents with additional needs due to autism or challenging behaviours may not be able to access short break schemes, as they are not equipped to manage their needs (Chadwick et al., 2002). For example, in 2008 the Challenging Behaviour Foundation asked 314 families across the UK for their experiences of short break services. They found that over a quarter of families reported exclusion and one third reported being turned down from a short break service. Furthermore, 52% of families stated that they need more short breaks and 40% of families found at least some of their short breaks unsuitable. These findings are consistent with MENCAP’s “Breaking Point” survey (2006), which found that 6 out of 10 families do not receive a short break that meets their needs.

In addition, the Governments report on Special Educational Needs and Disability Code of Practice (2015:72) identified that ‘local authorities must provide a range of short breaks for disabled children’, particularly as a method to support and enhance the children and families lives. Further government recommendations such as ‘the Breaks for Carers of Disabled Children Regulations (2011) proposed that short breaks are required to improve the ability for parents to care for their disabled child/children. Thus, both research conducted with families and government policy highlight the need for short break schemes adapted for disabled children and adolescents. Moreover, there is a lack of research into the adaptations required to meet the requirements of children with more challenging and complex needs, such as autism and challenging behaviours (McConkey, Gent & Scowcroft, 2011; Mooney, Owen & Statham, 2008). Therefore, one of the main aims of the present study is to evaluate the impact of a local short break scheme on disabled adolescents with additional needs, and their parents. Thereby allowing for a greater understanding into the adaptations needed for a more inclusive short break schemes.

Impact of Short Term Breaks for Children

Action for Children and the Every Disabled Child Matters Campaign (2009) commissioned a report which explored the social and economic value created by effective local delivery of short break schemes. They found a range of positive outcomes for disabled children, including: improved health through physical activities; improved well-being through social contact and by enjoying activities they had chosen to do; improved ability to form and maintain relationships, increased interaction with peers through participation in mainstream leisure activities; learning and developing a range of skills and abilities through

variety of activities; strengthened family relationships through an increased sense of well-being.

Furthermore, there is empirical evidence to demonstrate the benefits for the disabled child, including: fun and enjoyment (McConkey, Gent & Scowcroft, 2011; Mencap, 2010), high levels of attention (Gerard, 1990), opportunities for new experiences (Davies et al., 2005; McConkey et al., 2004) and an increase in social skills (Short-DeGraff & Kologinsky, 1987; Starkey & Sarli, 1989; Tarleton & Macaulay, 2002; McConkey et al., 2004). In addition, Prewett (1999) conducted a study which identified that disabled children themselves benefit from having short breaks in terms of broadening their experiences and giving them opportunities for making new friends and relationships.

Gerard (1990) conducted a cross-sectional survey of family carers (N=253) in England of children with severe learning difficulties, who had used one of three local authorities short break services. The study found that quality of life improved for 81%, 90% and 63% and been affected detrimentally for 3%, 3% and 11% in each service, respectively. Gerard (1990) concluded that short breaks produce overwhelmingly positive effects on the quality of life of children, according to reports by carers. However, more recent research is needed across short break services in England to support the reliability of these findings. Moreover, despite the positive outcomes from previous research, the vast majority of these studies rely on qualitative evidence from carers, thereby hindering an all-inclusive and robust evaluation of short break services specifically designed for children and adolescents with disabilities. Therefore, the present study included interviews with the adolescents themselves, to “give them a voice” in the evaluation of the short break scheme, along with quantitative evidence from carers on the benefits for their child.

Impact of Short Term Breaks for parents and the family

For parents and families, several key benefits of short break schemes have been highlighted, including: having a rest (MacDonald & Callery, 2004); allowing for a greater engagement in social activities (Chan & Sigafos, 2001); reduced levels of stress (Bose, 1991); increases in relaxation (McConkey et al., 2004); having more time to spend with partners and other children in the family (Beresford, 1995).

There is also evidence to demonstrate that short breaks may play a role in improving relationships between parents and carers (Stalker 1988, Stalker & Robinson 1994). In a study of 164 short break users in England, the reported benefits included quality time to spend with partners, improved marital relationships and bringing the family closer together (Stalker & Robinson, 1994). However, in other research Bose (1991) found no significant difference in marital relationships from an evaluation of a link family scheme in England. This further emphasises the importance of evaluating a range of short break services across England.

In a review of the literature, Robertson et al. (2010) suggests that short breaks can have a positive impact on the family as a whole. Furthermore, having an opportunity to be a “normal” family was frequently cited by parents and carers as a highly valued outcome of short breaks. Robertson and colleagues proposed that what children and their families wanted from short break services were similar: services which were fun and provided a range of experiences; a choice of services to suit the child’s needs; confidence that the service will care for the child well; services that were reliable and flexible; local services where good relationships can be built; good information and support.

It should be recognised there are possible negative effects associated with short breaks. There is evidence to suggest that while parents and carers benefit from the use of short breaks services, this can be accompanied by feelings of guilt (Hartrey & Wells, 2003), loss (Stalker, 1998), and concerns about safety of the child (Duff, 1992). A minority of children have had unhappy experiences of residential short breaks, including acute homesickness (Oswin, 1984) and general anxiety as a result meeting new people and being in a new environment (Dowling & Dolan, 2001). Furthermore, some parents may also experience vicarious anxiety associated with their children's short term breaks (Duff, 1992).

As aforementioned, there is research to indicate that some families find short breaks unsuitable for their family members (Challenge Behaviour Foundation & Tizard Centre, 2008; Neufeld, Query & Drummond, 2001). This unsuitability can be due to a lack of familiarity, unstable activities, and insufficient toys and games (Cramer & Carlin, 2008; Stalker & Robinson, 1994). A further concern by some is the poor continuity and high turnover of staff (Cramer & Carlin, 2008; Neufeld, Query & Drummond, 2001; Staley, 2008). Children with behavioural issues or higher care needs have been highlighted as a group of children with specific needs that require more staff to support them. For example, assistance in being hoisted or in being given medication which cannot always be provided as the staff may not have the appropriate training or the right equipment to perform the task (Action for Children, 2009; Welch et al., 2011). However, it can be argued that many of these issues are linked to limited funding around the costs of providing short term breaks (Holmes, McDermid, & Sempik, 2010).

Although prior research has explored the benefits and issues of short break schemes for parents and families, as previously mentioned, the vast majority of these studies are based on qualitative evidence, producing explanatory evidence (Welch et al., 2011). Accordingly, more robust and reliable evidence needs to be established. Furthermore, previous research has also failed to incorporate the perspectives of carers, in particular, their satisfaction with current short break provisions, in the evaluation and future recommendations of short break provisions. The current study therefore sought to ensure that the range of benefits and issues experienced by carers were highlighted.

In summary, whilst previous research on short break schemes has identified positive outcomes for both parents and children, the provision of short term breaks is arguably an area which would benefit from further exploration in order to establish more robust findings. There is also a vital need to assess current service provisions from the perspective of children and their families in order to develop more inclusive and person-centred service schemes. Accordingly, the overarching aim of this study is to evaluate the precise impact of a local short break scheme through the eyes of service users and their families.

Method

Participants

Eleven disabled adolescents accessing a short break scheme over the summer holiday, along with their seven corresponding parents, were recruited for the study. All participants were recruited from a local organisation which provides short break services to children and adolescents with various types of disabilities. Two parent participants had two separate adolescents attending the scheme. Once written parental consent was obtained, verbal assent was obtained from their child. The adolescent participant's (10 males and 1 female) ranged from 9 to 16 years of age ($M = 12.7$, $SD = 2.12$), with the majority of adolescents having a diagnosis of Autism (63%), followed by a Learning Disability (18%) and Cerebral Palsy. The parent participants (2 males and 7 female) age ranged from 32 to 53 ($M = 45.24$, $SD = 6.70$).

Materials

Adolescent interviews. A semi-structured interview schedule was constructed for adolescent participants in order to explore their experiences of and satisfaction with the local short break scheme. Interviews started with broad questions, and then moved onto more specific questions covering the following themes: benefits and drawbacks of scheme, feelings about themselves, skills developed, overall satisfaction and future recommendations. All interviews took place face-to-face on the last day of the summer short break scheme. All interviews were interviewee-led, with some prompts being imposed if necessary, as a result of this method, interviews varied in length from 5 to 20 minutes.

Parent questionnaires. Data collection from parents consisted of short answer questions and quantitative data derived from two adapted standardised measures:

Strengths and Difficulties were measured using and adaptation of the Strengths and Difficulties Questionnaire – Parent Report version for parents of 4-17 year olds (SDQ, Goodman, 2001). The primary caregiver of the adolescent short break user was asked to rate all original 25 items of the scale (e.g. “Often has temper tantrums or hot tempers”). The response scale was adapted to a 5-point scale (0 “a lot less”, 2 “slightly less”, 3 “the same”, 4 “slightly more” and 5 “a lot more”) to indicate degree to which the item has or has not changed since the start of the scheme. The questionnaire comprises of the following sub-scales: emotional problems, conduct problems, hyperactivity, peer relationship problems and prosocial behaviours. Firstly, all five of the reverse items were reversed coded and then all 25 items were dummy coded (-2 “a lot less”, -1 “slightly less”, 0 “the same”, 1 “slightly more” and 2 “a lot more”). A composite mean score was then calculated, good internal reliability was found for this measure (Cronbach’s alpha, .77).

Parental Stress Index was measured using an adaptation of the Parenting Stress Index (PSI, Abidin, 1995) whereby responses to 32 items were captured on a 5-point scale (0 “a lot less”, 2 “slightly less”, 3 “the same”, 4 “slightly more” and 5 “a lot more”) to indicate the degree to which the item has or has not changed since the start of the scheme. All 32 items were dummy coded (-2 “a lot less”, -1 “slightly less”, 0 “the same”, 1 “slightly more” and 2 “a lot more”) and then a composite mean score was then calculated. Excellent internal reliability was found for this measure (Cronbach’s alpha, .96).

Procedure

The study followed strict BPS ethical guidelines. Parents were asked to complete the questionnaire during the final week of the short break scheme and the semi-structured interviews were also held with their child during the final week of the scheme.

Results

Table 1 provides a summary of the patterns found within the thematic analysis, all identified patterns were placed within two overarching themes: (1) Benefits and (2) Overall Satisfaction. Each theme and corresponding sub-themes are presented below with supporting verbatim patterns from adolescent interviews, along with supporting statistical analysis from parent participants.

Table 1. *A summary of the coding frame*

Main Theme	Sub-Themes	Key comments within sub-themes
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1. Benefits	Well-being	<i>Emotional development</i>
	Social interaction	<i>Group activities</i> <i>New friendships</i>
2. Overall Satisfaction	Positive experience	<i>New experiences</i>
	Future recommendations	<i>Adult scheme</i> <i>More resources</i>

Benefits

When examining the benefits, this theme refers to the positive impact on the adolescent's quality of life. All adolescent and parent participants revealed a number of vital benefits for the short break scheme users. These benefits were further broken down into two sub-themes; (1) Well-being and (2) Social interaction.

Well-being. When adolescent participants were asked if there were any benefits or learning outcomes to attending the scheme, all participants made reference to the benefits in their overall well-being, with the vast majority ($N = 9$, 81%) noting the impact on their emotional development. This pattern included a greater sense of belonging and enjoyment by the adolescents, along with a decrease in emotional symptoms such as anger, anxiety, fear and unstable emotions. For example, when adolescent participants were asked about whether they felt a sense of belonging at the scheme, all participants noted this feeling as a positive reinforcement to their short break enjoyment. For instance, as one participant expressed, '*...I've been coming here for years... I know all the staff and the other kids... I fit, all the kids are like me (P5).* Similarly, another participant talked about the enjoyment they got from the summer scheme, '*...There is always something to do, you know? And like, every day, you don't know, it's different and fun'.* (P9).

This was also partially supported by the quantitative responses from parent participants. A one-sample t-test was used to examine parental reports of their child's emotional problems upon completion of the scheme. Results indicated a significant reduction in adolescent's emotional problems sub-scale of the Strengths and Difficulties Questionnaire, $t(7) = -2.42$, $p = .052$, including factors such as unhappiness, worry, nervousness and fear. These benefits were further echoed by all parent participants when they were given the opportunity to elaborate on examples, whereby they noted that the life skills of their child vastly improved over the course of the summer.

Social interaction. Another sub-pattern which developed within the benefit theme emerged when adolescent participants were asked what they liked best about the short break scheme. All participants made reference to some form of social interaction, with the majority ($N = 9$, 81%) responding that the various group activities, such as the days out, organised games, local trips and use of technology, were their favourite aspects of the scheme. For example, as one young person stated; '*...well, instead of sitting at home on my Xbox, which I normally do, it's good to get out a bit and see more friends. So, it's better that I am being more social ...*' (P1). Most of the child participants ($N = 8$, 72%) also stated that the new friendships they made with staff and other adolescents was their favourite aspects of the scheme. For instance, one participant exemplified how their favourite activity was hanging out with '*friends, like in the computer room, chatting to the others saying what are they doing*

(P3). Another participant explained how this was the only opportunity he had to see his friends, *'now that I've left the school I was at, it's the only place I can see some of my friends from there'* (P10).

Further support for the benefits of young people's social interaction came from quantitative responses from parent participants. A one-sample t-test was used to examine the conduct problems (i.e., aggressiveness, temper issues and anger regulation) and hyperactivity problems (i.e., restlessness, distraction and fidgetiness) sub-scales from the Strengths and Difficulties Questionnaire. The results indicated a significant reduction in their negative conduct, $t(7) = -2.70$, $p = .036$, and hyperactivity $t(7) = -2.83$, $p = .030$. When prompted to elaborate on their responses, all parents further noted that one of the main skills their child developed during the scheme was social skills, in particular, building and maintaining new friendships.

Overall satisfaction

This theme refers to the fulfilment of participant's expectations and needs, along with the pleasure they derived from the short break scheme. Whilst all adolescent and parent participants noted great overall satisfaction with the short break scheme, key recommendations were also noted. The patterns which emerged within this theme were therefore reflective of participants (1) Positive experience and (2) Future recommendations.

Positive experience. When adolescent participants were asked about their overall experience at the scheme, *all* young people found the scheme to be a positive experience. In particular, there was a noteworthy emergence of discussion around the great satisfaction of new experiences, with all participants reporting at least one of the following: learning new things, new activities or new friendships as pivotal in their positive experiences. For example, as one participant explained, *'I like coming to the youth centre, I like going out seeing my friends and some of the activities they do here and some of the trips we go on are quite enjoyable'* (P1). Another young person responded that they were satisfied with *'everything really. Obviously I like coming here, having a laugh. Err, and having fun'* (P2).

Furthermore, all parent participants also expressed that the scheme was a very positive experience for both themselves and their child, further stating that they would recommend the scheme to others in similar situations. With that, all parent participants also expressed greater satisfaction with their child's behaviour and their relationship with their child upon completion of the scheme. These responses were further supported by a reported decrease in Parental Stress, $t(7) = -4.34$, $p = .005$, including factors such as; stresses associated with restrictions on life, conflict with child's other parent and social support. As well as a significant reduction in parental-child dysfunctional interaction, $t(7) = -4.58$, $p = .004$, including factors such as; believing their child is not meeting their expectations and stress problems related to the child's behaviour.

In summary, the key themes that emerged from the adolescent's experience of the short break scheme were the benefits and overall satisfaction. This was further supported by the parent's reports of reductions in their child's emotional, conduct and hyperactivity problems and reductions in their own levels of parental stress. From the parental reports, the peer problems and prosocial sub-scales of the Strengths and Difficulties Questionnaire were not significantly reduced, $t(7) = -1.59$, $p = .162$ and $t(7) = 1.58$, $p = .166$, respectively. Moreover, these areas did not emerge as themes from the adolescent interviews, therefore, this could be an area for future development in short break schemes. Further future recommendations will now be delineated.

Future recommendations. The final sub-pattern which developed within the overall satisfaction theme emerged when both adolescent and parent participants were asked if they had any future recommendations. The vast majority ($N = 10$, 91%) of young people and all parent participants felt the need for a young adult scheme (18 years +) developing from the youth short break scheme. For example, one individual expressed; *'... I think for the older people, for the people like that. I think once they are eighteen or over they should have a... ERM, a 'age and beyond' one...'* (P2). The young people further emphasized the real need for a young adult scheme, as one individual explained, *'...there are some older people here but after about the age of... twenty-one... [the scheme] sort of goes off, there is absolutely nothing they can offer'* (P10).

Further recommendations from child participants all related to the need for more funding to access better resources, implement more activities and provide a longer scheme. For example, one participant indirectly described the need for more staff, *'they used to have volunteers come over and it sort of mixed people who were disabled with people who were normal and it was quite nice, but there's not been any of that this year'* (P10). Whilst another described the need for a more modern and accessible building, *'what I would like them to do is just like demolish the whole building and then, like, re-build it up, so it's more improved and more stylish. Because you can see like... it's not all been done properly'* (P3). Some participants also described how they would like the scheme to be longer so they could have *'more time so we can play more'* (P7). Other participants wanted *'more trips like water sports or maybe, or, just, more hands-on trips'* (P1). These thoughts were further echoed by the parents, for instance, parents indicated that introducing a programme in which young people learnt skills needed for independent living would be beneficial.

Discussion

This study has provided overarching support for the use of short break schemes, as they contribute to the maintenance and development of the holistic health and well-being of both adolescents and their parents. Indeed, *all* participants stated that they were extremely satisfied with the short break schemes provided. One of the key discoveries is that the adolescent's overall well-being was significantly improved by respite, these findings were strengthened by both qualitative data from the adolescent's and supporting quantitative data from parents, providing more robust conclusions than in previous research. The study's findings also strongly echoed the conclusions from the Action for Children and Every Disabled Child Matters Campaign's (2009), advocating that short breaks for adolescent can have numerous benefits. The present study also highlighted improved well-being through: social contact, enjoying activities in which the children had chosen to engage and improved ability to form and maintain healthy relationships. In addition, the findings from the research are some of the first to actively put into practice the UK government's provisions to expand short break services for children with complex needs (HM Government, 2007) and enabling children and parents of these services to have a voice in the changes being made to these provisions (HM Government, 2015). These key points will now be discussed in more detail.

This investigation found new evidence to further support previous research which highlights the various benefits of short break schemes for disabled children, such as; fun and enjoyment (McConkey, Gent & Scowcroft, 2011; Mencap, 2010), high levels of attention (Gerard, 1990), opportunities for new experiences (Davies et al., 2005; McConkey et al., 2004) and an increase in social skills (Short-DeGraff & Kologinsky, 1987; Starkey & Sarli, 1989; Tarleton & Macaulay, 2002; McConkey et al., 2004). More specifically, the current study found that short breaks were able to reduce adolescent's emotional difficulties, which

can generally range from feelings of anger and anxiety to fear. The results further indicated that there was a significant reduction in adolescent's emotional stress and instability, including factors such as unhappiness, worry, nervousness and fear. These key findings also provide support for the benefits of short break schemes for families, in particular, previous research has indicated that adolescents with complex needs place greater emotional and physical pressure on their families (Hastings, 2002; McConkey, Gent & Scowcroft, 2011). Thus, it could be suggested from the present study that short break schemes can help reduce this pressure by providing a much-needed rest. Along with reductions in emotional difficulties, findings further indicated a significant reduction in adolescent's negative conduct and hyperactivity. This is an outcome that is yet to be explored within previous research and, as a result, requires further exploration in the future.

In terms of social interaction, the current study highlighted social interaction with others as one of their favourite aspects of the scheme. These findings support previous research which acknowledges that respite can potentially reduce social isolation, along with providing opportunities for children to experience social interaction with their peers through different types of activities (McConkey, Truesdale & Concliffe, 2004; Tarleton & Macaulay, 2002; Chan & Sigafoss, 2001). Findings further demonstrated that the progression of social skills was most evident across the adolescents. This was a significant finding because prior research suggests that children and adolescents with special needs tend to find it more challenging to socialise with peers (Buckley, Bird & Sacks, 2002; Child Development Institute, 2015). Therefore, not only does this inquiry add to current knowledge, it has highlighted it as an area that may benefit from greater exploration. Similarly, new friendships were illustrated as being a significant feature of short breaks and several of the participants emphasised this as one of the best aspects of short breaks. This supports previous research findings that children want to befriend and engage with others (Aiming High for Disabled Children, 2007; Prewett, 1999). Therefore, this investigation adds to the wealth of knowledge that new friendships can develop from short breaks. In regards to the adolescents and families overall satisfaction with the short break scheme, it was discovered that the parents and their children were content with the scheme, with some of the essential features being identified as: making friends, new experiences and having fun. This is extremely valuable as in the current literature it was demonstrated that not all short break schemes met the service user's needs (Challenging Behaviour Foundation and the Tizard Centre, 2008; MENCAP, 2006). Similarly, it has been identified that opportunities for new experiences were required but not always delivered (Davies et al., 2005; McConkey et al., 2004; Prewett, 1999). Interestingly, Robertsons et al. (2011) propose that what children and their families wanted from short break services was fun and to be provided with a range of experiences; a choice of services to suit the child's needs; confidence that the service will care for the child well; services that were reliable and flexible; local services where good relationships can be built; and finally good information and support.

All parent participants further expressed greater satisfaction with their child's behaviour and their relationship with their child upon completion of the scheme. These responses were supported by a decrease in parental distress, including factors such as; stresses associated with restrictions on life, conflict with child's other parent, social support and depression. As well as a significant reduction in parental-child dysfunctional interaction, for example, believing their child is not meeting their expectations and stress problems related to the child's behaviour. This is extremely encouraging, as the limited literature that has been carried out has found that short breaks may play a role in improving relationships (Stalker 1988, Stalker & Robinson 1994). This study has provided robust empirical support from

parents of disabled children highlighting the numerous positive effects that short breaks may have on parents and the wider family.

When adolescents and parents were asked about any future recommendations, all participants identified more resources were strongly shown to be required for short breaks, such as games, activities and longer breaks. These results are supported by prior evidence showing that a greater frequency, number and longer duration of short breaks are requested by parents and their children (Action for Children, 2009; Challenging Behaviour Foundation & Tizard Centre, 2008). A unique contributing factor of this study is the identification as to why longer breaks were required by adolescents, as they wanted to spend more time engaging with their peers and activities provided. Specifically, some of the adolescents commented *they wanted 'more time to play' or 'speak to their friends'*. However, with more resources, more financial funding is required (Holmes, McDermid, & Sempik, 2010). That being said, with the UK governments report on Special Educational Needs and Disability Code of Practice (2015), there is further pressure for the public bodies in providing opportunities for new approaches to help make a difference in the lives children and young people with disabilities. Accordingly, extending the current results further to explore more in-depth the specific resources and benefits of these resources would be extremely valuable.

Along with more resources, the vast majority expressed that an adult scheme for young adults over 18 years of age was needed, to help with the transition into adulthood. With particular reference to a scheme where young people learnt skills needed for independent living would be beneficial such as cooking, completing tasks, such as learning how to get tie shoelaces. These findings show particular relevance for future exploration, as continuum support into adult services requires more funding to be in place; yet due to the recent austerity measures there has been significant cut backs in funding (Local Government Association, 2014). In relation, to children and adolescent funding, the local councils have been cutting children and adolescent's services funding considerably over the last five years (County Council Network (2015). These recent cutbacks go against the findings of the current study and also the government's recent provisions to the Disability Code of Practice (2015), which places a high degree of focus on supporting young people up to the age of 25 years old. It is therefore crucial that future research explores the development of adult services and the lack of funding being issued to such services be investigated further.

Overall, the intention of this study is not to negate the pre-existing literature on short break schemes for children and young people with disabilities, but rather to integrate the personal experiences of these young people and their families as a process of moving forward to create more all-inclusive short break schemes. More specifically, the study has produced new and more robust evidence to support the argument that short-term breaks are beneficial for both adolescents and their parents' emotional health and wellbeing. Of particular significance was the method by which these results were obtained. Previous research within the area has primarily relied on data from family member's perception. Whereas, the current study applied a person centered approach, consulting the adolescents directly about their views in regards to the benefits of short break schemes. These methods are fundamental as they incorporated the views of the individuals who most benefit from short break schemes. The methods further echoed the UK Governments White Paper (2001) *Valuing people: a new strategy for learning disability in the 21st century*, which emphasized the need to work in partnership with service users to ensure services are meeting their direct needs, along with the recent changes to the Disability Code of Practice, which focuses on the participation of children in the changes to short break schemes (HM Government, 2015).

The numerous positive effects on the family network further demonstrates the vital importance of making short breaks schemes constant from child to adulthood. The current study was also one of the first to explore the importance of extending current short break schemes into adulthood from the perspective of both child and adults. Therefore, it is fair to argue respite care needs to be positioned centrally within both politics and society, in order that services users, parents and carers are valued appropriately and receive support and funding for short break schemes. Only when this happens can we begin to build upon it and progress to delivering high quality short break schemes for all children and adolescents with disabilities.

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An Exploration of the Effect of Information and Awareness on African American Women's Perceptions of Kidney Disease

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Abstract

This study explored the effects of information and awareness on African American women's kidney disease screening intentions, perceived susceptibility to and perceived severity of kidney disease, utilizing the National Kidney Foundations *Your Kidneys and You* awareness program. Perceptions were measured by a revised Champion Health Belief Model instrument and the stage of action was measured by the Precaution Adoption Process Model (PAPM), which is an algorithm that placed the participants in 1 of 5 possible stages of intent for screening. A cross-sectional survey was administered to a convenience sample of 94 African American women at community organizations. A paired samples *t* test compared intention to be screened for kidney disease before and after participation in the program. Study findings indicated that participation in the kidney disease education and awareness program increased both intentions for kidney disease screenings ($t = -13.162, p = .000$) and the perceptions of susceptibility ($t = -9.98, p = .000$) and severity ($t = -8.38, p = .000$) of kidney disease among African American women. This study's findings may contribute to social change by generating more interventions that increase awareness of kidney disease and the need for screening amongst groups that are susceptible to kidney disease.

Keywords: *African American women, kidney disease, renal disease, nephrology, renal failure, hypertension, diabetes, CKD, ESRD, HBM, renal insufficiency, nephrology tests, renal morbidity, renal mortality, PAPM, perceived susceptibility, perceived severity, and CKD screenings*

Kidney disease is one of the leading reasons that Americans require organ transplants. Currently there are over 110,000 Americans waiting for organ transplants and approximately 90,000 of them are in need of a kidney¹. End stage renal disease (ESRD) and chronic kidney disease (CKD) are affecting the African American population at a disproportionate rate. Additionally, the 2013 United States Renal Disease Surveillance (USRDS) report showed that the prevalence of kidney disease is 12.6% among African Americans compared to 8.6% among White Americans. Kidney disease mortality was 5 times greater for African Americans in the later stages of kidney disease than White Americans² (USRDS, 2013). Among African American women, the incidence of multiple risk factors for kidney disease is high, chiefly diabetes and hypertension³ (AHA, 2006). Several researchers have identified low awareness and under diagnosis as a possible culprit^{4, 5, 6, 7, 8}

Learning more about African American women's perceptions of kidney disease and intentions to be screened for kidney disease is an important step towards reducing the prevalence of kidney disease that exists among the African American population.

This study examined risk perceptions of kidney disease among African American women. Risk perception over the years has been found to be a strong predictor of behavior in both cross sectional and longitudinal studies.⁹

Methods

This study sampled African American women from several organizations that predominantly consisted of the study population. Recruitment took place from March 2013 to September 2013. A quantitative, pre posttest design was used to examine the effects of kidney disease education on African American women's perceived susceptibility and perceived severity of kidney disease. This study also assessed if kidney disease awareness motivated African American women to get screened for kidney disease. A survey was given to a convenience sample of African American women at local African American organizations. Differences in perceived susceptibility scores and intention to be screened pre and post intervention were examined using *t* tests. In addition, demographic and BMI data was collected using a self-report questionnaire to assess the association between kidney disease risk factors and intention to be screened.

Subjects

Participants of this study needed to self-identify as African American. They needed to be female, English speaking and age 18 or older. Women were excluded from this study if they had been previously diagnosed with kidney disease. The study participants consisted of a convenience sample of 94 African American women ages 20 to 78.

Treatment

Participants were convened in a conference room where the National Kidney Disease Foundations *Your Kidneys and You* (YKY) program was delivered from the researcher who had been trained by the National Kidney Foundation to deliver the program. The program presents information about risk factors, detection, signs, symptoms and complications of CKD in a simplified easy to understand format. Participants received handouts and participated in activities that were designed to encourage them to reflect on the information received.

Instrumentation and Materials

The research tool included the Champion Health Belief Model (HBM) scales that analyzed perceived susceptibility and perceived seriousness (severity). Participants of the study self-administered the survey. The Precaution Adoption Process Model (PAPM) was used to address the dependent variable of intention to be screened.

The Champion HBM has a seven item scale which accessed severity and a five item scale which assessed susceptibility. Each of these scales use the following coding: *Strongly disagree* (1); *disagree* (2); *neutral* (3); *agree* (4); and *strongly agree* (5).). Permission to use and modify the Champion HBM was granted by Dr. Victoria Champion on May 17, 2011.

The PAPM is a three item questionnaire which identifies the stage of intention that the participants were in pre and post the intervention. The stages range from ignorance to action. The stage of intending to be screened was identified by Stage 5.

Analysis

Variables analyzed in the study included the risk factors for kidney disease which consist of obesity based on BMI, hypertension, and diabetes. Using self-reported height and weight, BMI was calculated using a BMI calculator. The BMI calculation was selected because the Centers for Disease Control and Prevention had identified this tool to be “one of the best methods for population assessment of overweight and obesity.”¹⁰ The risks factors of hypertension and diabetes were collected as part of a survey where respondents were asked to self-identify using yes/no responses, whether or not they have been previously diagnosed by a medical professional as having diabetes, hypertension or kidney disease.

The dependent variable of screening intention was measured in a pre-posttest using the PAPM Stage Classification Algorithm, from Weinstein & Sandman.¹¹ The dependent variables of perceived severity and susceptibility were measured using a pre post design with the Champion HBM instrument. This instrument uses a Likert scale which will result in a five-level ordinal response. Perceived susceptibility and perceived severity demonstrate perceived threat level therefore the ordinal response of 1 is indicative of minimal perception of threat and an ordinal response of 5 is indicative of a high perception of threat. A paired *t* test tested for differences in pre post responses on the instrument with regard to screening intention and perceived severity and susceptibility. Participant data was placed in three ordinal groups of BMI categories: Group 1 BMI was ≤ 24.9 (normal) Group 2 BMI was 25-29.9 (overweight) and Group 3 BMI was $30 \leq$ (obese). The data were initially entered in an Excel spreadsheet and later analyzed using SPSS 21.0. Descriptive statistics were used to describe the variables of age, BMI, and history of diabetes and/or hypertension.

Results

Two of the 94 study participants did not answer the survey question regarding BMI. The mean age of the participants was 41.14 ($N=94$, SD 12.968). The range of the women's ages was between 20 and 78. The majority of participants were overweight (31%) or obese (42%). Thirty-three percent of participants had reported as having a history of hypertension and 18.1 % reported as having a history of diabetes. Table 1 presents frequency analyses for the variables of BMI and self-report of a family history of diabetes and/or hypertension.

Table 1

Frequency Analyses for variables of BMI Groups Hypertension and Diabetes

	Frequency	N	Percent
BMI			
Normal Weight (BMI $\leq$ 24.9)	24	92	26.1
Overweight (BMI 25- 29.9)	29	92	31.5
Obese (BMI > 30)	39	92	42.4
Hypertension (yes)	31	94	33.0
Diabetes (yes)	17	94	18.1

Statistically significant findings indicated that there was a marked impact on African American women's perceptions of kidney disease susceptibility and severity following the educational sessions. Strong statistical significance found in paired samples *t* test and frequency distribution analysis demonstrated an increase in intentions to be screened for kidney disease after receiving information on kidney disease. Table 2 presents the frequency distributions for intentions to be screened and Table 3 present paired comparative scores for screening intentions. Table 4 shows the perceived threat scale outcomes.

Table 2

PAPM Stage of Intention Frequency Distributions pre/ post

PAPM (Stage) (n=94)	Frequency		Percent		
	N	Pre	Post	Pre	Post (%)
Stage 1 Never heard of kidney disease	94	15	0	16%	(0)
Stage 2 Never thought of screening	94	39	3	41.5%	(3.2%)
Stage 3 Undecided	94	11	1	11.7%	(1.1%)
Stage 4 Don't want to	94	5	0	5.3%	(0)
Stage 5 Want to	94	24	90	25.5%	(95.7%)

Table 3

Paired Comparative Scores for Pre/Post Screening Intentions (n=94)

Variable	Pre M	Pre SD	Post M	Post SD	Mean Difference	P Value	T Value
Intention	2.83	1.456	4.883	.565	-2.0532	.000	-13.162

Note: for variable of screening intention the scale range was 1 = never thought of testing to 5 = want to be tested.

Table 4
Perceived Threat Scale

Variable	Pre <i>M</i>	Pre <i>SD</i>	Post <i>M</i>	Post <i>SD</i>	<i>T</i>	Mean Difference	<i>p</i>
<i>Susceptibility</i>	2.01	.986	3.26	1.11	-9.98	-1.25	.000
<i>Severity</i>	2.73	.707	3.41	.831	8.38	-.675	.000

The positive statistical significance that information and awareness had on the screening intentions and threat perceptions of African American women for kidney disease was found within frequency distributions as well as the aforementioned *t* test. The frequency analysis depicted that there was a 70.2% increase in the screening intention of the study participants. These findings correlate to findings from researchers who have asserted that an individual's perception of risk or personal susceptibility is enough to change their intentions to endeavor in positive health related behaviors such as intending to be tested for kidney disease.^{9, 13, 14}

Discussion

The statistically significant findings from this study support the use of disease perception theoretical models and education geared towards health beliefs, specifically perceptions and how they correlate to intentions. These combined could inform the creation of intervention materials that focus on African American women. These interventions could help to further reduce the rates of kidney disease progression in this community.

Limitations

The use of a quantitative nonexperimental study design does not allow for an examination of causality therefore the impact of screening intentions or lack thereof was only inferred and examined through the use of statistical tests of association. Also, screening intentions were measured immediately after the intervention was provided therefore limiting this study's results with regards to the long term effectiveness of this program. Additionally, the variables of interest were measured by self-report and were comprised of a convenience sample. The difference in the ages of the study participants and their previous knowledge of CKD and ESRD may have had an effect on the outcome of the study.

Conclusion

This study helped to highlight the importance of using interventions that use education to influence CKD disease risk perceptions and promote kidney disease screenings in African American women. The present research has found that African American women, when armed with knowledge based health messaging that informs their health beliefs, are more than willing to engage in preventive health behaviors.

About the Author

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ANTENATAL THYROID SCREENING - ONE YEAR PROSPECTIVE STUDY

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ABSTRACT

Background : Thyroid disorders are the second most common endocrine disorders during pregnancy after diabetes mellitus. Thyroid disorders are particularly common in women of child bearing age.

Aims and Objectives : To estimate value of TSH and its effect on pregnancy and to find out prevalence of thyroid dysfunction in pregnant females.

Material and Methods : This was a prospective study carried on 150 pregnant women attending antenatal clinic in Department of Obstetrics and Gynaecology, Rajindra Hospital, Patiala. All antenatal women, both primigravida and multigravida were screened. Serum TSH estimation was done after informed consent. Estimation of free T3 (FT₃) and free T4 were advised in the event of the screening test being abnormal. Adverse effects of thyroid disorders on pregnancy were noted.

Results : The mean age of patients was 24.92±3.09. The majority of patients were primigravida (54.67%). Out of total 150 patients, majority of patients 137 (91.34%) were euthyroid, Thirteen (8.66%) patients had thyroid disorders. Subclinical hypothyroidism was reported in 6 (4%) patients followed by overt hypothyroidism 3 (2%) and overt hyperthyroidism 1 (0.66%). Three (2%) patients were already having thyroid disorders but were adequately treated. Out of total 13 patients with thyroid disorders, one patient (7.69%) had spontaneous abortion, two patients (15.36%) presented with preeclampsia, two patients (15.36%) had IUGR and three patients (23.07%) had preterm delivery.

CONCLUSION : Thyroid screening should be recommended in all antenatal women.

INTRODUCTION

Goitre, iodine deficiency disorder and thyroid disease burden in India is nearing almost 60 million which is almost double the size of the diabetic epidemic. The female gender is uniquely susceptible from all ages from the mother's womb till tomb from the ravages of the autoimmune thyroid epidemic.

Fetus needs Thyroxine for brain development, growth, and lung maturation.^[1] The fetal brain develops during the first trimester when the fetal thyroid is not yet functioning, and the fetus is therefore entirely dependent on maternal thyroid hormone crossing the placenta. In addition, thyroid hormone deficiency in the newborn may lead to permanent cognitive, neurological, and development abnormalities if not recognized and treated promptly.^[2-4]

Thyroid disorders satisfy most of the criteria for a disease to warrant population screening. They are common, treatable and to some extent preventable conditions which significantly impair physical and mental performance, produce morbidity, pose special risk for pregnancy and the developing fetus. Sub clinical thyroid dysfunction is viewed as a predecessor for hyperthyroidism and hypothyroidism, and can be diagnosed by thyroid function tests before symptoms and complications occur.^[5]

It is well documented that maternal thyroid dysfunction is associated with adverse outcomes in the mother and fetus, including miscarriage, preterm delivery, eclampsia, pre-eclampsia, and placental abruption and impair neurological development of the fetus as several studies have reported decreased IQ in infants born to mothers with hypothyroidism.^[6]

Non-pregnant TSH reference ranges are unreliable in pregnancy. We have accepted a TSH value of 0.25-2mIU/ml as normal euthyroid reference range in pregnancy.

- Truly normal range of TSH in pregnancy is defined as 0.5-2.5mIU/ml.^[7]
- Individuals with >2 mIU/ml of TSH have a higher incidence of later hypothyroidism.^[7]
- Biological reference range of TSH in pregnancy is 0.5-1.5 mIU/ml.^[8]
- S.TSH >2.5 mIU/ml in 1st trimester shows T4 insufficiency.^[9]
- A.T.A. has stressed daily dosage of Thyroxine should be adjusted to keep TSH at 1-2 mIU/ml.^[10]

MATERIAL AND METHODS

The present study was conducted in Outpatient Department of Obstetrics and Gynaecology, Rajindra Hospital Patiala. It was a one year prospective study from January, 2012 to December, 2012.

Inclusion Criteria

All pregnant women both primi gravida and multi gravida were included in the study. A detail history was taken. The general, physical and local examination was done as per proforma. Routine investigations and special investigations (TSH, T3, T4) were done after informed consent the patients. Adverse effects of thyroid disorders on pregnancy were noted and compared with those pregnant women with normal thyroid profile.

RESULTS

We screened for thyroid function in 150 pregnancy females (both primigravida and multigravida). Majority of the patients 91(60.67%) belonged to age group of 20-25 years followed by 26-29 years 44(29.33%) and only 15(10%) were >30 years old. The mean gestational observed in our study was 8.91±1.93 weeks of pregnancy. Maximum number of patients 82 (54.67%) were primigravida followed by 49(32.67%) who were second gravida, 17(11.33%) belonged to gravida 3 group and only 2(1.33%) were gravida 4. Majority of patients 137 (91.34%) patients were euthyroid, 13 (8.66%) patients had thyroid disorders. Subclinical hypothyroidism was reported in 6(4%) patients followed by Overt Hypothyroidism 3(2%) and Overt hyperthyroidism 1 (0.66%). Three (2%) patients were already having thyroid disorders but adequately treated (table 1). Out of total thirteen patients with thyroid disorders, three patients (23.07%) had preterm delivery, two patients (15.36%) presented with pre-eclampsia, two patients (15.36%) had IUGR and one patient (7.69%)

had spontaneous abortion (table 2). The incidence of various complications like abortions, preeclampsia IUGR and preterm labour were higher in women with thyroid disorders than in euthyroid women but the difference was not statistically significant which may be due to small sample size and early diagnosis and treatment (table 3).

TABLE-1
INCIDENCE OF THYROID DISORDERS

Group	No. of Patients (n=150)	%age
Euthyroid	137	91.34
Adequately Treated Thyroid Disorders	3	2.00
Subclinical Hypothyroidism	6	4.00
Overt Hypothyroidism	3	2.00
Overt Hyperthyroidism	1	0.66

TABLE-2
PREGNANCY COMPLICATIONS IN PATIENTS
WITH THYROID DISORDERS

Group	No. of Patients (n=13)	%age
Abortions	1	7.69
Pre-eclampsia	2	15.36
IUGR	2	15.36
Preterm Delivery	3	23.07

TABLE-3
COMPARISON OF PREGNANCY COMPLICATIONS BETWEEN EUTHYROID AND
PATIENTS WITH THYROID DISORDERS

Pregnancy Complications	Euthyroid (n=137)		Pregnancy with Thyroid Disorders (n=13)	
	No. of Patients	%age	No. of Patients	%age
Abortions	4	2.90	1	7.69
Preeclampsia	6	4.37	2	15.36

IUGR	7	5.1	1	7.69
Preterm Delivery	10	7.29	3	23.07

Statistical Analysis

Chi-square value	df	Significance
8.86	4	0.065

The difference was not statistically significant which may be due to early diagnosis and treatment.

DISCUSSION

Pregnancy is a stress test to the maternal thyroid gland, due to increase in Thyroxine binding globulin, increase demand for iodine, and thyroid stimulation by HCG.^[11] While for normal euthyroid pregnant women this does not seem to be a burden, it is borderline hypothyroid women, who conceive, and come out with sub clinical or overt hypothyroidism. Fetus depends in the first 12 weeks on the mother for Thyroxine.^[12] A substantial amount of Thyroxine is transferred across the placenta. Shah et al^[13] (2013) did screening for thyroid dysfunction during pregnancy and found that the incidence was 5.8%. In the present study the incidence of thyroid disorders in pregnant females was 6.7% which is comparable to the study conducted by Shah et al^[13] (2013) (table 4).

In the present study it was observed that out of 150 patients, six (4%) had sub clinical hypothyroidism and three (2%) patients had overt hypothyroidism. Three (2%) patients were hypothyroids but already on treatment. Out study is comparable with study of Woeber^[14], Bulmus et al^[15] and Shah et al^[13]. The present study observed that the incidence of hypothyroidism was 0.66% which is comparable with study conducted by Shah et al^[13].

TABLE-4

INCIDENCE OF THYROID DISORDERS IN PREGNANCY IN VARIOUS STUDIES

Study Group	Incidence of Thyroid Disorders in Pregnant Females
Chang et al (2013)	3.4%
Ohashi et al (2013)	3.8%
Bulmus et al (2013)	4.5%
Shah et al (2013)	5.8%
Present Study (2013)	6.7%

TABLE-5
INCIDENCE OF HYPOTHYROIDISM IN PREGNANCY IN VARIOUS STUDY GROUPS

Study	Incidence of Hypothyroidism in pregnancy
Glinoe (1997)	0.3%-0.7%
Woeber (1997)	2-5% (subclinical hypothyroidism)
Gillmer and Hurley (1999)	9 in 1000 pregnancy
Chang et al (2013)	2.5% (subclinical hypothyroidism) 0.5% (Overt hypothyroidism)
Bulmus et al (2013)	4.1% (subclinical hypothyroidism) 0.2% (Overt hypothyroidism)
Shah et al (2013)	3.5% (subclinical hypothyroidism) 0.9% (Overt hypothyroidism)
Present Study (2013)	4% (subclinical hypothyroidism) 2% (Overt hypothyroidism)

TABLE-6
INCIDENCE OF HYPERTHYROIDISM IN PREGNANCY IN DIFFERENT STUDY GROUPS

Study	Incidence of Hyperthyroidism in pregnancy
Mestman et al (1995)	0.2%
Casey and Leveno (2006)	0.2%
Chang et al (2013)	0.1-0.4%
Bulmus et al (2013)	0.2%
Shah et al (2013)	0.6%
Present Study (2013)	0.66%

In our study, incidence of various complications like spontaneous abortion, preeclampsia, IUGR, and preterm labor were higher in women with thyroid dysfunction than in euthyroid women but the difference was not statistically significant which may be due to early diagnosis.

CONCLUSION

There is increased deleterious pregnancy outcomes in pregnancies with thyroid dysfunctions. Although there is a consensus on screening of high risk group, universal screening is not recommended yet. The most recent practice guidelines from the American College of Obstetricians and Gynecology (ACOG) in 2013 recommended thyroid testing only in high risk pregnant women who are symptomatic, or have a personal history of thyroid disorders, personal history of type-I diabetes or other autoimmune disorders. Even though universal screening for thyroid dysfunction is not yet a recommendation, it should be considered. Screening by estimation of serum TSH levels is sufficient, should be done preconceptionally or early in first trimester.

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Building a nurse student-patient with mental illness relationship in a Thai cultural context

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Abstract

Building a therapeutic relationship with patients who have disturbance of thought, affection and behavior is a core of mental health nursing. An effective relationship helps patients to develop and adjust themselves to live appropriately with others in society. This study aimed to understand the process of building relationship between student nurses and patients with a mental illness during students' placement in the Khon Kaen Rajanagarindra Psychiatric Hospital, Khon Kaen Province. The study used a qualitative approach. The participants recruited in this study were 12 student nurses and 12 patients with a mental illness. Data was collected by interviewing students, observing student-patient relationship and examining students' reports. Data was analyzed based on Grounded Theory. The results demonstrated that student nurses emphasized on gaining patients' trust at the beginning of a relationship. Many different techniques to build a trusting relationship including being consistent, making patients feel valued, offering self, maintaining confidentiality and being patient were applied. Additionally, students building a relationship with patients focused on the professional relationship by adopting several strategies including showing respect to patients, selecting appropriate language and words, no restriction and using touch to enhance professionalism. The knowledge generated by this study provides guidance for nurse educators and nurses to help students to build an effective relationship with patients with a mental illness in Thai cultural context.

Keywords: relationship, student nurse, patient with a mental illness

1. Introduction

Developing therapeutic relationships with people who have mental health problems is one of the important tasks for mental health nurses, and is central to their practice. Therapeutic relationships have the benefit of helping patients recover (Fourie, McDonald, Connor and Bartlett, 2005; Scanlon, 2006) and change their social lives (Barker, 1990) such as improving their ability to communicate with others and participate in outdoor activities. In the initial stage of building this relationship, nurses develop a sense of trust with the aim of moving this onto the development of mutual understanding; Gardner (2010) reported that nurse-patient relationships were achieved when nurses were friendly and open to patients and made patients feel relaxed. Nurses have more contact with and spend more time with patients than any other healthcare professionals (Mullen, 2009), although it would appear that they spend more time documenting care and interacting with other staff (Mullen, 2009; Loukidou, Ioannidi and Kalokerinou-Anagnostopoulou, 2010). Mullen (2009) noted that when they are interacting with patients, nurses seem to spend more time observing and monitoring patients rather than talking with them. This ineffective interaction can also be applied to student nurses who are inexperienced of taking care of the patients with a mental illness. Therefore, this study aimed to explore student nurses' relationship with patients with mental illness in clinical practice, in a psychiatric hospital in Northeast of Thailand.

2. Methodology

Approval for the study was granted by the ethics committee of the Boromarajonani College of Nursing Udonthani and of the Khon Kaen Rajanagarindra Psychiatric Hospital. The participants were student nurses and patients with mental illness, with the former being the primary and the latter secondary participants. The primary participants were drawn from a population of full-time student nurses in the third year of a 4-year diploma of nursing science at the Boromarajonani College of Nursing, Udonthani (BCNU) in the 2008 academic year, Udon Thani province in the Northeast of Thailand. After the completion of the classroom phase of the Nursing Care of Persons with Mental Illness Module, student nurses from BCNU commenced a period of clinical practice of 3 weeks duration at the Khon Kaen Rajanagarindra Psychiatric Hospital, where they would gain experience and knowledge in caring for patients who have a mental illness. The purposive sampling strategy was used in this study. The criteria of the selection of participants were student nurses who were undertaking clinical practice at Khon Kaen Rajanagarindra Psychiatric Hospital and student nurses who had been assigned to care for patients with a mental illness who were classified as level 4 of the patient classification of Khon Kaen Rajanagarindra Psychiatric Hospital. Level 4 are those clients who have good orientation, and have the ability to conduct daily living activities, communicate with others, and make decisions. These clients are viewed as having sound decision-making ability and this means that patients in this category are able to give consent to participate in this study voluntarily. The recruitment of patients was commenced after the student participation was obtained.

This study was conducted between 2007 and 2011. Data collection was undertaken for six months and comprised of observations, examination of interactions reports, and interviews. The precise length of observation varied from 15 to 71 minutes. Each student nurse was observed twice in different weeks. Twenty-three observations were conducted but one was lost because the patient assigned to one student was discharged before the final observation of this pair was conducted. Twenty-four interaction reports were examined. Twelve students were interviewed after their practice completion with times varying from 54 minutes to 1 hour 47 minutes.

Data was analyzed based on the constructivist grounded theory (Charmaz, 2006). Firstly, the interview transcripts, observational field notes and interaction reports were coded in two steps; line-by-line and focused coding. Secondly, building tentative categories was undertaken.

3. Results

The two categories demonstrated the building relationship between the student nurses and the patients with a mental illness. The first category was “establishing a trusting relationship” occurring when students began their practice. The second category was “building a professional relationship”. Students established a professional relationship and avoided building a social relationship with their patients. In building relationship with patients, students realised that Thai cultures could either promote or inhibit student-patient relationship.

Category 1: Establishing a Trusting Relationship

At the beginning of placements, most students recognised that to gain a patient’s trust was an important issue and if they achieved this it would help them to get to know a patient and understand their problems.

‘...What I think important is to establish trust which the patient will have on the student and the patient will think that we (students) truly have genuine volunteer mind to help patient solve the problem.’ (Student 1, Interview)

Students used five important strategies which helped them gain a patient’s trust; being consistent, making patients feel valued, offering self, maintaining confidentiality and being patient. Being consistent relates to when students demonstrated their presence to patients, everyday in nursing practice by greeting frequently in order to promote a patient’s worth. Greeting could take a short time and it could be undertaken at any time during the course of the day.

‘I just had a small talk but I didn’t carry on with the conversation for long. Just asked about life in general like “Have you eaten?” I do ask and greet him everyday...’ (Student 3, Interview)

Making patients feel valued relates to when students demonstrated their attention to patients by divulging their generally personal information to patients (such as hometown, educational institution, aims of practice), recognising the changes in patients, and making patients feel important.

‘Firstly, I would introduce myself. He asked me rather than I asked him questions such as where I came from, how long I have been studying at college, where I do expect to get a job, what I had to do to come here and why I chose him to interact with. He would ask and I would answer him.’ (Student 2, Interview)

Offering self relates to when students demonstrated their intention to help patients and to support them.

‘...I offered to help her (the assigned patient) who felt depressed, isolated. Whenever I saw this in the patient, I went in to ask if I could be any help...’ (Student 7, Interview)

Maintaining confidentiality relates to when students demonstrated ways of not divulging a patient's personal issues when they were having a conversation with a patient. This was mostly found in the initial relationship building when patients were not familiar with the students. Students demonstrated two ways of maintaining confidentiality; giving a reason and speaking very softly. Giving a reason is when students described the necessary conditions for undertaking a particular activity that might intrude upon the rights of patients. Most students used this method in the first communication session or when a particular situation required it.

'...I felt that the patient glanced over my note so I told him that it's about what we had talked today and the student (I) kept the note secret. The only other person who would know about this was the officials who were involved in taking care of the patients. Whenever the patient had a problem, he could talk or share it with the student as the student would be willing to lend her ear. The notebook was here because it was for keeping record of our conversation. This was to help about making plan to care for the patients like him (the one that the student was talking to)...' (Student 9, Interview)

Student-patient communication mostly took place in the garden outside the building where it could be seen by others and could be disturbed by others who passed by. Some students reported that they were afraid of the sensitive topics about patients that may be known unintentionally to others, therefore, they spoke very softly.

...They (the student and the patient) talked about patient's drugs addition, job history, side effect of psychotropic medicine. While talking the student spoke very soft voice... (Students 6, Observation)

Being patient relates to students hiding their feelings of dissatisfaction towards unpleasant behaviours of patients and being non-judgemental about such behaviour of patients. In addition, students showed their patience by continuing a conversation with the patient even when the patient paid little attention to them.

'...In the beginning, I talked to the patient. It's okay if she (the patient) did not talk at all. I sat and whenever she was okay to talk, she talked to me. If she was not okay, I would talk at a later time. What I was doing was like being persistent. If she did not talk, I just sat there to be a companion.' (Student 1, Interview)

After using a variety of strategies in establishing a trusting relationship, students reported that they had a sense of achievement in gaining a patient's trust. They explained that if a patient trusted them, s/he was keen to speak and showed attention while they were talking. Patients would express the following behaviours; greeting initially, being unconcerned about notes of students, taking the lead in the conversation, taking turns in talking, or revealing personal stories. Most students stated that they gained a patient's trust after the first two communication sessions.

'I observed from the gestures, and the patient's facial expression. She smiled and greeted me when she met me. While talking she made eye contact throughout the conversation. Moreover, the patient was curious to talk with me...' (Student 1, Interview)

Category 2: Building a Professional Relationship

Building a professional relationship is the means by which students communicated with patients with the main aim of helping patients to solve their problems. At the same time, they demonstrated professional credibility in order to gain patients' trust. During professional relationship building, students tried to avoid engaging patients in a social relationship. Students were faced with the difficulties of selecting strategies that are appropriate in a Thai cultural context to build a professional relationship.

Students explained that during nurse training, when they worked in the mental health nurse role, they were aware of the differences between professional relationships and social relationships. They identified the differences between the two forms of relationships in terms of goals and time duration. They suggested that a professional relationship had the specific objective of collaborating with patients and had a time limitation when compared with a social relationship.

'In my view, the therapeutic relationship should have objectives, and the specific time duration. The goals in a professional aspect should be to establish a relationship. In the social aspect, one can talk to anybody or it can have or not have a specific ending time. Or it can be continuous or not depends on the duration and the objectives of the talk. Another aspect is the target group. For a social unit, we might talk to a friend and this friend introduces us to another friend and then the new friend introduces us to many more friends. This can go on with no ending.' (Student 5, Interview)

In promoting a professional relationship, it was apparent that students adopted four prominent strategies which included showing respect in Thai culture, using appropriate language, no restriction, and using touch.

Showing respect in Thai culture was noticed during the commencement and termination of each therapeutic communication session. Showing respect in Thai culture relates to when students performed a *wai* (the Thai greeting of placing one's palms together at chest level while bowing the head) to a patient. Age and occupation were important factors that influenced the ways of thinking of students when performing a *wai*. With regarding to seniority, students performed a *wai* to patients if s/he was older in order to show respect and to give honour to a patient. Students reported that the aim of doing a *wai* was to obtain cooperation with a patient in order to help them undertake a successful assessment.

'Although my position was a therapist I was a student and younger than him. He might notice and acknowledge that I was respectful (as paying a wai). ...If we greet him with a wai and be humble to him, he will talk well and cooperate to give me more information.' (Student 2, Interview)

Students who performed a *wai* to patients identified that there were two significant factors influencing the performance of a *wai*; family and academy. They described that *wai* was tradition that they constantly performed to senior people. As a result, it became a social norm. Students reported that they were taught to perform a *wai* from parents or school.

'I think it (to wai a patient) was appropriate. This might be because my parents taught me to 'wai' others. What I saw from my parents was that they 'wai' everybody when they had a social function to attend. However, this depended on the seniority too...' (Student 7, Interview)

On the other hand, some students, who viewed that they worked as a nurse and they must show professional credibility to patients and make patients build trust on them, did not perform a *wai* to patients. In performing a *wai* first, they identified that it might reduce their professional credibility. However, they selected another way of greeting by saying '*sawaddee*' (hello) instead.

'... I think the verbal greeting is better than 'wai' the patient. Though the patient is older than us, we are here to take care of them. Thus, we have to show the patient that we can be the leaders. The verbal greeting 'sawaddee' will motivate the patient to acknowledge us that we are the care-takers. We need faith from them. If we 'wai' them first, the patients might think that we are less superior than them or we are too young to take care of them. I'm afraid that they might want to show their superiority.' (Student 5, Interview)

Using appropriate language was also used to promote a professional relationship. This relates to when students made a decision on what was the most appropriate language to use when they established a professional relationship with a patient. There are two types of languages: Central Thai and *Isan* (local) dialect. The Central Thai dialect is used across all areas in Thailand as it is an official language while *Isan* or local dialect is used mostly in the Northeast of Thailand. In this study, it was apparent that there were three aspects influencing the decision making of student nurses when selecting a specific dialect; language skills, objectives of therapy, and power of language.

Some students stated that they selected a specific language depending on the fluency in that particular language of students and patients. Students who used *Isan* dialect explained that patients felt comfortable and could continue communication with them when they spoke with their fluent language.

Moreover, they suggested that the complexity of Central Thai dialect was higher, compared with *Isan* dialect. Students explained that they spoke *Isan* dialect with patients as it meant they were at the same status level with patients as well as *Isan* dialect was easier to convey messages. In addition, students identified that using the same language with patients would promote understanding and cooperation.

'...When I use Central Thai language, it might delay the conversation with the patient. The patient's thought might not come out easily when she had to think of the Central Thai to express. She might have to translate into Thai again. Thus, I spoke Isan dialect. I feel that using our local dialect helps us understand the patient better.' (Student 10, Interview)

Students who felt *Isan* dialect may lead to a social relationship used Central Thai dialect. Students reported that the Central Thai dialect was appropriate for therapeutic communication as it could promote treatment as well as serve a professional role.

'...The use of Central Thai language should help in the therapy and it is also professional.' (Student 12, Interview)

However, some students had the view that both *Isan* and Central Thai dialect were appropriate to use in the therapeutic sessions as they assisted students to discover and solve patients' problems.

'I think that using local dialect or Isan dialect with the Central Thai language would be a way to a therapeutic communication too. This is because the goals are to find out the patient's problem, to motivate the patient to make a decision. Then the patient can find a way to solve a problem by himself. The goals are common but only the means of language use is different.' (Student 9, Interview)

No restriction was seen in the beginning of relationship building when students were not familiar with patients. No restriction relates to when students served patients' demands by doing something to please patients or ignoring inappropriate speech of patients and that would promote patients' self-esteem. In turn, as students pleased patients, they aimed at having cooperation from patients.

'Yes, it was the word which the patient said that he (the patient) was a fortune teller as well as a masseur. The patient asked me right there and I didn't know what to do. If I said 'no', it might mean that I didn't follow him. I then said 'yes' which meant that I didn't want to disagree with him (maikudjai). However, in my mind, I asked myself what I should do. I was hoping that things wouldn't turn out bad. It would be better if I went along with the invitation. If I didn't accept, the patient might lose his self confidence. Then, the communication might come to an end. I might get side-track a bit but I would be able to come back to the focus later.' (Student 8, Interview)

Using touch is one of strategies of building a professional relationship within this category as students used it in order to console those who had emotional distress. However, in this study, touch was used rarely between students and patients with a mental illness, especially, between students and patients of opposite sex.

'... As a female student, I am not bold enough to touch the patient if he is male.' (Student 5, Interview)

Moreover, students stated that they avoided touching patients with a mental illness because of the conditions of these patients.

'... If the patient has a mental health problem, I won't touch him. I only talk to him. For the male patient, I won't have any physical contact at all. I'm afraid that the patient might feel for me or he might think that I'm fond of him.' (Student 5, Interview)

Another condition of avoiding touch with a patient of the opposite sex was the status of patients. In this work, it appeared that female students touching monks were unacceptable. This is because monks are ranked the highest in the Thai social hierarchy and it is taboo for women to touch them.

'The patient is a male and was once a monk. I didn't dare to touch him...' (Student 9, Interview)

However, some students stated that if they used touch in the context of nursing care, they could only touch certain parts of patients' body and that touch needed to be done in an open place where it could be viewed by others.

'If a patient is a male, I (a male student) would touch him. But if a patient is a female, I would touch the arm. The male patient is like my friend. For the female patient, I would only touch the arm.' (Student 8, Interview)

Also, students who focused on developing their professional role were not greatly influenced by Thai custom as they viewed touch as being appropriate when patients needed support.

'...There was a touch. The patient (a female patient) cried and I (a male student) padded the patient and asked if she was okay... The hand padding is to let patient know that she has someone to depend on, support, not to feel lonely... I didn't think that what I did to her would mean an intimate relationship. This really didn't occur to me at all.' (Student 1, Interview)

4. Discussion

During the initial stage of building a relationship, all students emphasised building a trusting relationship as a hugely important issue. Trust has been identified in the literature as an important component in nurse-patient relationships because it enables patients to accept the treatment courses (Hupcey, Penrod, Morse, and Mitcham, 2001). Conversely, it seems to be rewarding for nurses, as it could promote nurses' job satisfaction (Belcher and Jones, 2009). Trust is necessary in working with patients suffering from mental problems (Moyo, 2008). However, Hem, Heggen and Ruyter (2008) reported that it was tough for mental health nurses to gain trust from patients with mental illness while these patients were being treated in a distrustful environment (e.g. seclusion room).

Students were mainly concerned with building a professional relationship, with the main aim of helping patients solve their problems within certain boundaries. A boundary is the personal relationship between students working as nurses and patients, which retains the dignity and comfort of each party (Baca, 2011). Baca also suggests that establishing a professional boundary is crucial for mental health nurses. In addition, if nurses fall in to a boundary violation, it can be harmful as they may not be able to distinguish between their own needs and those of their patients. This may result in the failure of therapy. At this point, student nurses must consequently focus on maintaining professionalism when building a relationship with patients. In this study, using appropriate language and using touch were prominent elements of showing respect in Thai culture, in relation to promoting a formal relationship. In building relationships with patients, the notion of professional credibility influenced student thinking. Interestingly, although study participants did not explicitly mention the term 'social hierarchy', the concept regardless played an important role in building professional relationships. It can be seen within the literature that Thai people's perception of ranked social positions is evident in Thai society (Choowattanapakorn, 1999). In addition, it is widely acknowledged that social inequality is prevalent Thai society; the concept of superiority and inferiority is bound in social relationships (Mulder, 2000). Children or younger people are taught to respect and exhibit deference for their elders (Burnard and Gill, 2008). In Thai society, it is important for Thais to assess others' positions (as inferior or superior) in order to place themselves in an appropriate position during engagements (Mulder, 2000). A more precise explanation is that when Thai people meet each other for the first time, they typically sort out each other's age, family status, educational background, career, and other matters, in order to determine their social position (Guest, 2004). Westerners may view such matters as extremely personal issues. However, Thais need to know who holds the superior/inferior position in order to adopt appropriate behaviours while establishing relationships with others (Guest, 2004). In this study, age, gender, occupation, and social status influenced students' values; some students put their own positions on a lower level when compared to patients' (Vongvipanond, 1994).

5. Conclusion

Building a trusting relationship is very important in the beginning of relationship in order to get patients' cooperation. Five significant strategies to build a trusting relationship including being consistent, making patients feel valued, offering self, maintaining confidentiality and being patient were applied. Moreover, building a professional relationship was promoted when students worked as a professional and avoided social relationship. Students built a professional relationship by adopting several strategies including showing respect in a Thai culture, using appropriate language, no restriction and using touch. At the same time, students were influenced by the notion of social hierarchy and recognised their professional roles when they worked with patients with mental illness in order to have professional credibility.

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Community engagement: Implications for MDG 4 in South Africa

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ABSTRACT

United Nations Member States agreed upon attaining eight Millennium Development Goals (MDGs) by 2015. This review focuses on MDG 4, which targeted reducing under-five deaths by two-thirds by 2015 in each nation. Primary Health Care has been associated with positive outcomes in child survival through health promotion and total community participation pertaining to aspects that have an impact on their health. The main causes of infant mortality rates are pneumonia and diarrhoeal diseases, which account for almost 2 million infant deaths annually. South Africa features among the 74 “Countdown countries” having shown no progress towards attaining MDG 4, in spite of its substantial economic growth. This lack of progress points to a need to incorporate health interventions through active community participation, an essential element to fostering an empowered community. In the pursuit of child health reforms, citizens need to take ownership of their health and accountability should originate from community members and stakeholders.

KEYWORDS: maternal health, health promotion, community engagement.

INTRODUCTION

The World Health Organization (WHO) cautions about the increasing inequality in the population health status between developed and developing countries as well as within countries, which is detrimental in all aspects such as social, economic and health justice (1). In an attempt to address inequalities in health coverage, the Alma Ata declaration was ratified by the UN member states in 1978 at the International Conference on Primary Health Care. The declaration served to promote the use of Primary Health Care by all governments, as the key to attaining 'Health for All' by the year 2000 (2). Primary Health Care (PHC) is defined as "essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community throughout their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination" (2,3). It is further stipulated that PHC should at the very least include health education, promotion of food supply and adequate nutrition, sufficient supply of clean safe water and basic sanitation, and maternal and child health care (2,4,5). It also requires and encourages the total community and individual independence and participation in aspects pertaining directly and indirectly to their health (2,4).

The Ottawa Charter was endorsed by the WHO in 1986 at the First International Conference on Health Promotion (6). The Charter served to reinforce PHC through Health Promotion due to emerging prospects for a new public health movement worldwide (7). Health promotion provides a platform for enabling communities and individuals to be proactive in all aspects that directly and indirectly impact on their health and well-being. Examples of health promotion can be seen in the work that Non-Governmental Organizations do within communities in order to raise health awareness. Health promotion depends on effective community participation in setting priorities and implementing strategies to achieve health development. The essence of health promotion is the empowerment of communities, in order for these communities to take ownership and control of their endeavours (8). Community development utilizes existing resources within the community to enhance community independence, and to develop schemes that strengthen community participation with regard to health issues (8-10). To strengthen the notion of health promotion the WHO held the Fourth International Conference on Health Promotion in Jakarta in 1997. The Jakarta declaration on Health Promotion served to reiterate the importance of the covenant made in the Ottawa Charter and to emphasise certain features of health promotion (11). Priorities for health promotion were set out to encourage social responsibilities for health through increased investments for health development, and consolidation and extension of partnerships for improved health (12). The declaration further proclaimed the need to increase community capacity, to empower communities and to secure a platform to realize health promotion (11). Improving the capacity of communities for health promotion entails health education, availability and access to resources (13). The most recent Conference on Health Promotion, held in Helsinki in June 2013, served to promote a collaborative effort to review progress and achievements of Health Promotion to date. Member states expressed the importance of developing strategies in which action for health is retained in multiple sectors nationwide (14).

Community participation and collaborations are the foundation of public health development (15). The re-emerged paradigm of public health stresses the essence of engaging communities in making decisions that affect their health and improving community participation in health promotion and disease prevention (16). It is crucial to understand the dimensions of a community before embarking on community engagement processes. In order for community engagement processes to succeed, such strategies should include members of the community and their leaders (17). One definition of community engagement is that it is the process of working through collaborations that are mutually beneficial with people affiliated by similar situations and interests to address issues that impact on the well-being of that community (18,19). Community engaged research recognizes

and builds on the resources within that community (20). Community participation and community involvement are the hallmarks of community development (21).

At the turn of the millennium, it became evident that provision of health care for all was beyond the reach of many developing countries. This served as the basis upon which 189 countries agreed on a set of Millennium Development Goals (MDGs) that aimed to eliminate target global concerns (22-24). The MDGs encompass the social determinants of health (i.e. eradicate poverty, education, gender equality and a sustainable environment) and the health-related goals (i.e. maternal and infant health, HIV/AIDS and global partnerships for development; 25). This publication focuses on MDG 4 which aimed to reduce the infant mortality rate (IMR) by two-thirds by 2015.

SOUTH AFRICA'S PROGRESS TOWARDS MDG 4

The global number of deaths of children under five was by 30% reduction between 1990 and 2008 (26). South Africa, however, has made no significant progress towards achieving MDG 4, as IMR has only reduced from 60 deaths per 1,000 live births in 1990 to 57 deaths per 1,000 live births in 2010 (27). This lack of progress places South Africa amongst the 74 "Countdown countries", a term used to describe countries that have the highest IMR worldwide. An overwhelming 95% of global IMR occur in these "Countdown countries" (27,28). The causes of IMR in South Africa, in order of predominance, are HIV/AIDS, neonatal causes, diarrhoea and pneumonia, with malnutrition as the underlying cause of infant mortality in South Africa (29). Many of these deaths are the result of preventable factors, missed opportunities and the delivery of substandard health care (30). Furthermore coverage of simple interventions that have proven to be effective in other countries, such as exclusive breastfeeding for infants up to six months, remains low in South Africa (27-29).

South Africa is a middle income country (31,32), with a generous 8.5% of the GDP allocated to health expenditure (33). Despite South Africa's economic growth the health outcomes have not yet been achieved, as universal access to basic health remains a challenge (27,30). The health status of the population of South Africa does not reflect the growth of an improved health system (30). The Department of Health spent only 99.25% of the set target raised for all health expenditure during the 2011/2012 financial year, indicating an excess in funds raised (34). Yet the country suffers major inequalities in access to quality health care (29,35). The uneven distribution of health professionals undermines South Africa's progress in achieving the health-related goals. There are approximately 8 doctors, 41 nurses/midwives and 3 pharmaceutical personnel per 10,000 people (27,29). The insufficient number of health personnel calls for a community-orientated approach, to hold all partners and stakeholders accountable for health outcomes within a given community (36). The situation is further complicated by the issues in the pharmaceutical supply chain management, breakdown of essential healthcare services such as the National Laboratory Health Service and others. Gaps in the implementation of the healthcare policy are often the case of these problems.

SIGNIFICANCE OF COMMUNITY ENGAGEMENT IN MDG 4

The evident lack of progress in attaining MDG 4 with the existing strategies, particularly in developing countries, suggests a need to incorporate health interventions in a community that are more practical when it comes to matters regarding their health (37). The current era on development calls for a greater respect for the needs and perceptions of the poor and marginalized. Active community participation is a major key to fostering an empowered community and it is critical to the success of the community (38). A community that is participatory in its own health needs has a high probability of acquiring resources with more efficient use, yielding better outcomes. These communities tend to have citizen control over their government, a more diverse board membership with a greater implementation of the empowerment approach (39). Community mobilization is the notion of changing community behaviour and thus creating a platform for communities to take an

active role to improve their well-being through initiatives brought about by themselves and/or stimulated by other stakeholders, with the ultimate goal of bringing about development (40). Community mobilization is a notion that has not received much appeal due to controversial views on its significance in attaining health targets. Development pertains to the progress of members of a community in increasing their capacities to activate and manage resources to ultimately produce sustainable and equal advances in their quality of life. Evidence from past research implies that community participation and ultimate empowerment is a cost-effective approach to reduce infant mortality, particularly in remote underserved communities (21,41). An example of interventions employed in remote, low-resourced areas is the Integrated Management of Childhood Illnesses (IMCI), in which the more accessible health worker is trained to identify and treat childhood illnesses as they occur, avoiding further complications (42).

Universities worldwide have adopted the concept of community engagement as an integral role in the development of communities in which they are based. This entails a reciprocal and comprehensive relationship between a community and a higher education institution (43). In South Africa, many universities have recognized the potential that community engagement holds for altering higher education with respect to societal needs and producing students with the ability to apply their disciplines to local development affairs. Universities have identified the role of higher education to generate and disseminate knowledge, through which service-learning, community-based research and teaching provide a platform to enlighten and enrich both roles (44). In an academic context, community engagement is defined by McDonald as “initiatives and processes through which the expertise of the institution in the areas of teaching and research are applied to address issues relevant to the community” (45). Typically the community-engaged university is one that is committed to continuous engagement with the community through supportive, collaborative development with the intent of mutual gain (46). Higher education also has a role to play in supporting gender equity and ultimately ensuring that the human rights of all citizens are met. Researchers have found that educating girls not only impacts positively on reducing poverty and promoting sustainable development, but also has its place in improving women’s social and economic status, resulting in improved family planning and child survival (47). Empowering women has significant implications in advancing community development, as these women can translate limited advances in knowledge and resources into positive substantial outcomes for communities (48).

WHEN AND WHERE WAS THE CONCEPT OF COMMUNITY ENGAGEMENT ENDORSED?

Article 2 of the declaration on the Right to Development was sanctioned by the United Nations (UN) General Assembly in 1986. In accordance with the UN, every human being is the fundamental subject of development and should be the active participant and benefactor of the right to development (49). To reinforce the right to development, the Talloires declaration serves to promote shared and universal human values through engagement of tertiary institutions within local and global communities. The declaration, which was pledged in 2005 by tertiary institutions worldwide, further stipulates that higher education institutions ought to serve and strengthen societies in which they exist (50). This assertion parallels that which was made 15 years earlier at the World Declaration on Education For All held in Thailand in 1990. The World Declaration emphasized a broader approach to meeting the educational needs for all, which encompasses universal and equal access to knowledge, with an enabling environment for learning through strengthened partnerships (51). Institutions that ratified the Talloires declaration have the obligation to expand public engagement and programs that promote social responsibilities, through teaching, research and public service (50). Additionally, universities can encourage partnerships between universities and communities to increase opportunities, empower individuals within the community and strengthen the relevance, reach and openness of engagement (50,51).

South Africa drafted the White Paper on Public Service Transformation in 1997. This draft provides a guideline for health providers in public service delivery, which serves to improve the value of delivering services that meet the basic needs of all South Africans (52). The proclamation of the White Paper is in accordance with the South African constitution which articulates that public service should be assumed through rendering services that are impartial and in which the public is encouraged to participate in order to guarantee a development-centred society (53). The White Paper further calls upon policy makers to identify and make available services that redirect resources to communities that are remote and underserved (52). In 1997 a set of transformation priorities were implemented which set to transform public service delivery to develop into a more community-orientated approach, termed the eight Batho Pele principles (52,53). The Batho Pele principles strongly echo the sentiment of the World Development Report (54) in that services can be improved by empowering communities to increase their influence on services rendered to them (52-54). Community participation has been the subject of somewhat controversial views, as some policy-makers hold that this approach is time-consuming and difficult to expand. As a result, in the past the South African public sectors relied on a centralized approach, where a more supply-driven approach was assumed focusing more on the delivery of outputs to secure better service delivery. This in turn took power away from the citizens, with a major consequence as citizens are now completely reliant on the government to undertake full responsibility for service delivery (55,56).

HOW HAS COMMUNITY ENGAGEMENT CONTRIBUTED TO IMPROVEMENT IN INFANT HEALTH IN OTHER COUNTRIES?

Many countries have adopted the approach of task-shifting to compensate for the lack of health care providers, to increase community mobilization and to reach the remotest communities (57).

Honduras implemented the Integrated Community Child Health Program (AIN-C), through which the Ministry of Health decentralized the provision of health care focusing on the marginalized communities to achieve greater equity in health provision and participation (58). This program serves to create an opportunity for the community to participate actively in improving the health of infants. The community selects the Community Health Workers (CHWs) within their own community to form a bridge between the health centres and the community. The CHWs provide the public with a medium through which they can identify and address health issues affecting child health in their community (57). AIN-C increased the knowledge of mothers on factors impacting on their children's health. The percentage of children who received Oral Rehydration Therapy (ORS), vaccinations and supplements, among other interventions, increased considerably more in areas where AIN-C was in progress compared to those in which it was not (59). In India, house visits were performed regularly by trained local workers to reach mothers who could not access health facilities. These workers worked with UNICEF towards reducing IMR in remote, underserved communities through the implementation of IMCI (60). Lastly, the health houses were elected which were designed to reach remote areas, in an attempt to strengthen delivery of the PHC system in Iran. These health houses were run by one or two trained members of the community in which they served and covered approximately 85% of the rural population. The remaining 15% were covered by mobile teams of health professionals and trained local workers (61). These health workers contributed to the sharp decline in IMR noted in Iran (61,62).

HOW HAS COMMUNITY ENGAGEMENT IMPROVED INFANT HEALTH IN SOUTH AFRICA?

Two examples of community engagement interventions from South Africa are used to demonstrate the effect of these interventions on infant health outcomes in two communities. The first example is of an intervention which aimed to improve the quality of mother-infant relationship and infant attachment. In this intervention, which was carried out in Khayelitsha, local women from the community were trained to provide mothers of young infants with support, resulting in an improvement in the mothers' capacity to interact with their infants. The intervention was delivered in the mothers' homes by the women from the community who had been selected from the local

community council for this purpose. Women in Khayelitsha who received the home-based intervention interacted with their infants with greater sensitivity after completion of the intervention six months later and at 12 months later. At 18 months, infants had a more secure attachment after the intervention than those in the control group. This research focused on the indirect impact of mother-infant interactions on childhood outcomes. Impaired mother-infant interactions may have irreversible effects on childhood development (63).

The second example is that conducted by the USAID's infant and young child nutrition project, whose objective was to integrate nutrition into existing community development programs in South Africa. The focus was to improve the nutritional status, dietary intake and feeding practices of infants and young children below two years of age. In addition to helping mothers track the growth of their children the project also aimed to help mothers understand the importance of proper nutrition on their children's improved growth. Community volunteers were trained to lead nutritional measurements of children and pregnant women at different time intervals in order to carry out this project and extend it to marginalized communities. Volunteers were also responsible for furnishing important information to mothers on growth and nutrition of their children. In the Eastern Cape, PATH's efforts helped develop training package for over a 100 community health workers and local volunteers. The project also assisted the health department to develop tools for assessing nutrition services rendered by the health facilities (64). There is no current information on the efficiency of the programme, but it provides a promising paradigm for community engagement in the future.

THE WAY FORWARD IN SOUTH AFRICA

To advance the development of community engagement at South African universities, a clearly articulated framework which is currently lacking must be established to guide the principles and practices of community engagement in higher education (44). Universities have an obligation to the communities in which they exist as well as to the development of the country. Institutions and other health systems are recommended to customize their approach to accommodate the country's stage of development. Common goals should provide all stakeholders with a guide to expansion and transformation of higher education to ultimately develop a system that is attuned with societal goals (47).

In order for South Africa to scale-up public services and improve infant health, communities need to be consulted and their inputs echoed in national policies (55). All stakeholders are to ensure that service delivery meets the demands, and that every person gets the service they need. Citizens need to take ownership of their health and social determinants of health, accountability should thus originate locally and amongst citizens, service providers and other stakeholders (55,60). The way forward for South Africa is to introduce a development approach that empowers all stakeholders and aligns the vision of decentralization, community empowerment and accountability to the general public. Strengthening community capacity to hold all members accountable for their health needs by managing and participating in health programs is critical in the road to health development (55). According to the WHO, all organizations, institutions and stakeholders are encouraged to recognize the community as a key component of the health system in South Africa (65). Mechanisms for effective community participation, involvement and control must thus be in place. Overall respect for human rights and accountability of recipients of health care and the general public must be maintained. In order for the PHC system to reach marginalized groups, each community has a key role in realizing the goals of PHC through community mobilization (2,65).

CONCLUSION

Community participation in health is advocated as a platform for potential recipients of health services to get involved in all stages of health care provision to ultimately increase responsiveness, accountability and sustainability of health care. It is viewed as the population's fundamental right

and the principal factor in the success of health development programs, as it allows the community to become independent in choices they make regarding their health. One of the principles of the Alma Ata Declaration asserts that the people have the right to and the responsibility to participate both individually and in collaboration with other stakeholders in matters concerning their health. Community participation was, and still is, viewed as one of the major driving factors towards the achievement of PHC goals. Community participation can bring about cost-effective and substantial reductions in infant mortality, and can improve health of infants and their optimal development. In South Africa, local and international experiences should be applied in the involvement of the community in PHC and healthcare in general. This is important as the community action and involvement in public life, e.g. through issues of service delivery by local government, are deeply rooted in the consciousness of the population. As women are often primary caregivers in households, community engagement could be achieved through the active participation of the women as drivers of community engagement initiatives in healthcare.

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DATING VIOLENCE AND IMPACT ON ADOLESCENT REPRODUCTIVE HEALTH

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Abstract

This research aims to analyze the forms of violence in dating and impact on adolescent reproductive health., The study was conducted in the the rural areas at two villages namely Kabonena and Matauwe village of Sigibiromaru Sub-district, Central Sulawesi, Indonesia, which involved 105 girls who experienced violences in dating aged 10 to 25 years old. The Data were collected through structured interviews, in-depth interviews, and observation of moderate participation, focus group discussions and documentation.

The results showed that the forms of violence in dating at the time were physical, psychological, sexual and economic. Dating violence experienced by adolescents has an impact on reproductive health problems. The impact can be non fatal and fatal. The non fatal impacts include sexually transmitted diseases (STDs), unwanted pregnancy, unsafe abortion, premature birth/low birth weight and loss of sexual desire,. Meanwhile fatal effects include maternal mortality and infant mortality. The occurrence of fatal effects (maternal and infant mortality) can be caused by non fatal effects (unsafe abortion and premature birth).

As conclusion, dating violence causes fatal effects through the process of non fatal impacts.

Keywords: Dating Violence, Reproductive Health

1. Introduction

Ideal condition which is desired in adolescent reproductive health, is liberation from pain disorders and diseases, without compromising the health of himself (ICPD in Cairo, 1994). Contrary to these expectations in fact there are a lot of violence and torture of teenagers such as beat, slap, torture and even murder by his own partner or close friend. Women crisis centers data (2011) showed that in 2010, violence against adolescent girl in dating amounted to 186 cases. This value increased to 380 cases in 2011. The National Commission for Women reported that the number of cases of violence against adolescent girl amounted 163 cases in 2009, then in 2010 rose up to 293 cases. Hakimi research (2001) in Purworejo, from 765 women interviewed 23 percent had experienced physical violence, 22 percent had experienced sexual assault, and 38 percent had experienced emotional abuse, and 17 percent of women experienced economic violence or neglect during adolescence in his life time.

In Central Sulawesi, based on the data from Central Sulawesi Police Office during the period 2012 - 2013 indicated violence against adolescent girls the most highest in Palu were 85 cases and 95 cases in Sigibromaru District, while other districts between 60-70 cases. In Sigibromaru District in the period 2013 - 2014 increased to 110 cases (Central Sulawesi Police Public Relations, December 2014)

Dating violence can be widely implicated for socio-economic status of the girl, including reproductive health because it can weaken her energy, causing injuries, physical disabilities, drug and alcohol abuse, and depression. Adolescent girl with a history of physical and sexual abuse also increase the risk of unintended pregnancy, sexually transmitted diseases (STDs) and adverse pregnancy termination (Kounik, 2001).

Gazmararian (1996) suggested that the results of 11 studies on the prevalence of violence during adolescence in some countries, nearly 156,000 to 332,000 women had experienced violence during adolescence. This raises a fundamental question “what is the effect of dating violence to the adolescent woman reproductive health?” This research aimed at analyzing the effect of dating violence during to the adolescent reproductive health in Sigibromaru Regency, Central Sulawesi.

Model on the Effect of Violence to Women Health

Dixon, [9] elaborated that reproductive health consists of two important elements: healthy sex and healthy reproduction. Sexual state is healthy if the following things are presented:

- a) Individuals are free or under control from possibility to get STDs due to sexual relations.
- b) Individuals are free or under control from dangerous practices and sexual violence.
- c) Individuals could control one's sexual access to him/her.
- d) Individuals could enjoy sexual pleasure and satisfaction.
- e) Individual could have an access of information on sexuality.

Furthermore, individuals are free from reproductive problems if they:

- a) are safe from possibility to get unwanted pregnancy.
- b) are under control from dangerous reproduction practices such as risk abortion and complicated pregnancy,

- c) are free to choose suitable contraception,
- d) have an access to information on contraception and reproduction,
- e) have an access to pregnancy care and safe childbirth care,
- f) have an access to treatment for impotence.

On the conference relating to population and development in Kairo, 1994, reproductive health is defined as the condition of comprehensively physical, mental, social welfare, free from disease or concern from anything related to its functions and processes. This means that humans have the capability of reproduction, women are able to pass through pregnancy period and post-childbirth safely, reproduction has positive effect, and baby could grow well. This definition implies that humans are able to control their fertility without getting risk of health problems and enjoy sex safely [10,11].

The effect of violence to woman health can be described in Heise [12] Heise's model (2001:7). Principally, this elaborates the consequence of the three types of violence: couple violence, sexual violence, and violence to children. These three types of violence are likely to bring about physical health matters, soul, negative attitudes, serious conditions and serious and good health reproduction as shown in Figure 1.

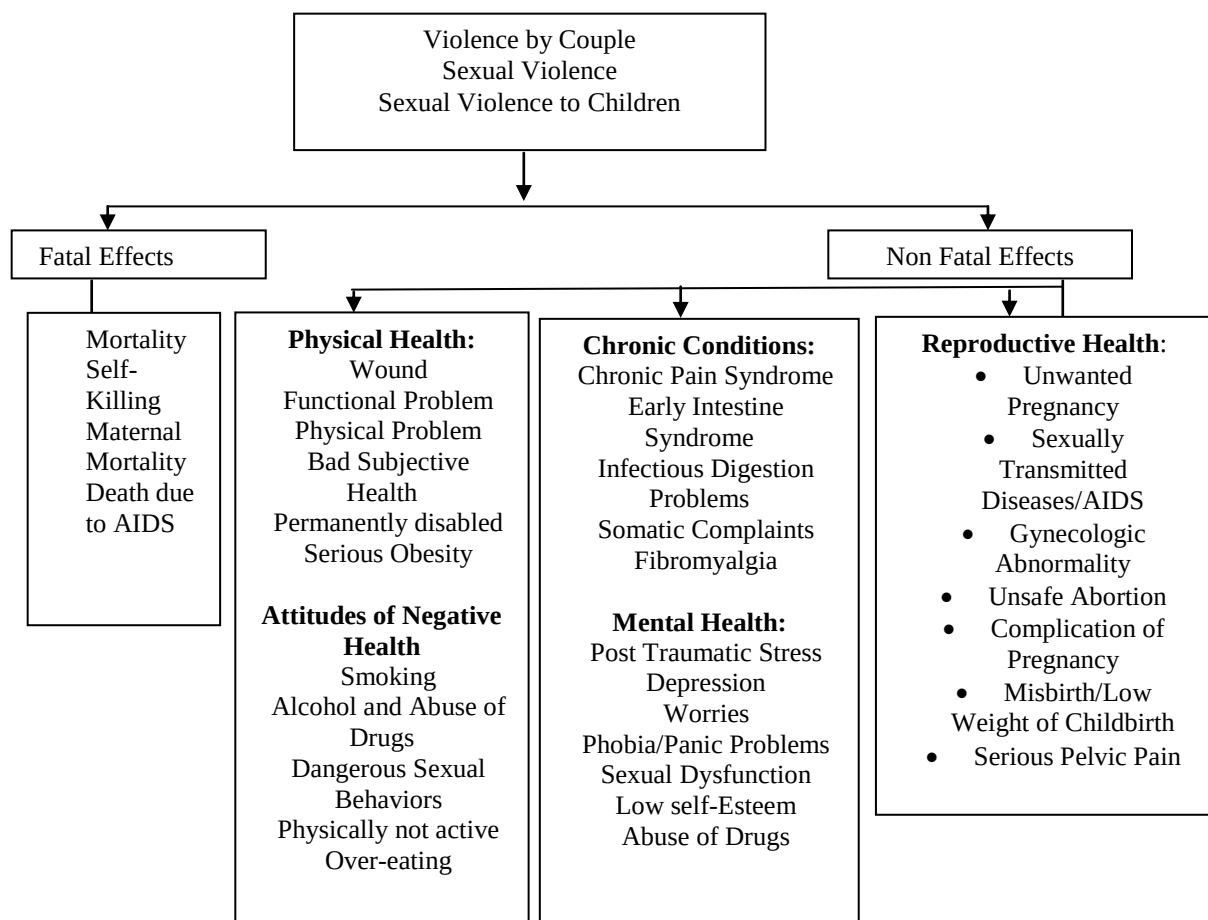


Figure 1. The effect of violence to woman health by Heise [12].

2. Material and Method

The study was conducted in the rural areas at three villages namely Sunju, Kabonena and Matauwe village of Sigibiromaru Sub-district, Central Sulawesi, Indonesia, which involved 105 girls who experienced violence in dating aged 10 to 25 years old. The Data were collected through structured interviews, in-depth interviews, and observation of moderate participation, focus group discussions and documentation.

3. Result and Discussion

3.1 The Effect of Non Fatal Violence to Reproductive Health

Based on the respondents' perceptions, this research reveals some effects which are non fatal. They are unwanted pregnancy, sexually transmitted disease (STDs), premature childbirth, childbirth lower weight, unsafe abortion, and frigid. Each effect is presented in Table 1.

Table 1. The Effects of Non Fatal Dating Violence To Adolescent Reproductive Health

No	Non Fatal Effects	Matauwe		Kabonena		Total	
		1	2	3	4	5	6
1.	Unwanted Pregnancy	10	62,5	14	70	24	66,6
2.	Sexually Transmitted Diseases	1	6,25	2	10	3	8,3
3.	Unsafe Abortion	1	6,25	2	10	3	8,3
Premature Childbirth/Low							
4.	Weight of Childbirth (BBLR)	4	25	2	10	6	16,6
	Total	16	100.0	20	100.0	36	100.0

In order to see the effect of violence to adolescent reproductive health, we need to analyze one by one.

3.1.1 Unwanted Pregnancy

Unwanted pregnancy refers to the pregnancy due to a specific cause. It is not wanted by one of the couple. The unwanted pregnancy is caused by incomplete information and knowledge on the occurrence of pregnancy and the method of avoiding pregnancy due to raping in the marriage and the failure of contraception [17]. Table 1.1 reveals that violence to girls due to unwanted pregnancy is 66,6 percent. The data indicate that unwanted pregnancy occurs because a couple forbids his best friend to use contraception and when they was sexual relation. They was do it try and try. Clara, 20 years old, in Matauwe said that "actually Madam, I do not want to be pregnant but my best friend asked me not to use a contraception (condom), yah I get pregnant. Lala, 32 years old, in Kabonena also said that I do not want pregnancy ... so i need condom when i will sexual activity but my best friend forbade me to use contraception. If I use condom, I was accused of doing negative things.

The two experiences above indicate that unwanted pregnancy occurs due to sexual violence. Its process tends to take time. When their couple forbids them to use contraception, the girls get pregnant. This finding implies that dating violence has caused an unwanted pregnancy. This conclusion is in line with Singarimbun (1994:40) that the lack of man participation to the women whose contraception is not fulfilled is caused by the position of man in sexual activity to take decision has been dominant. This condition is relatively the same as in Latin America where man ignores family planning because of the value of *machismo*, that is, the value is in their manliness and man should dominate a sexual activity decision. Heise (2001:7) also reveals that the effect of violence to the problem of reproductive health includes non fatal effect (unwanted pregnancy, unsafe abortion, misbirth / low weight of childbirth, sexually transmitted diseases, gynecologic abnormality, and chronic pelvic pain).

3.1.2 Sexually Transmitted Diseases

Sexual diseases refer to the diseases whose transmission is through sexual relations. According to Manuaba [18], in the past sexual disease was termed venereal disease. However, such a disease has developed due to sexual relations, this sexual disease is now termed as sexually transmitted diseases (STD). These sexual diseases include syphilis, gonorrhea, herpes simplex, AIDS, and so forth. It has been found that the sexually transmitted disease that the victims got is gonorrhea. There were 3 cases. One was found in Matauwe and the other two were in Kabonena. The clinical signs are some pain on the back, liquid whitish like pus, painful when urinate, swollen, the front part of the vagina looks reddish. However, this disease is easy to cure. All these wives suffering from this sexual disease are due to sexual violence. This is in line with Golding's [19] finding that violence is not the serious effect of gender-related violence, but the effect is more on the problem of the functional reproduction. The women who get violated suffer from whitish, womb disease, and sexually transmitted diseases, including chronic pelvic pain. Heise, Hakimi et al., and Ni Komang [3, 8, 20] argue that powerlessness of women in the sexual relations with their couple leads them to easily get sexual diseases.

There has been more sexually transmitted diseases in Kabonena areas than in Matauwe areas. The process and the motive are different. In Matauwe, the girls of those suffering from sexually transmitted diseases sometime do not understand when they firstly get infected. They do not believe that their couple get connected with commercial sex women (prostitute). Jm, 28 years old, in Matauwe said that she suffered from gonorrhea because her couple got sexual relation with a prostitute in Palu. Here is her experience.

"My couple is a construction worker. Every day, he goes to and comes back from Palu. At the beginning, I did not know. Later I heard from his friends that my couple used to go to the prostitution area of Tondo. I asked him and told me that he went there twice. Actually, I would like to use condom, but my couple forbade that. Yeah, I get infected with this kind of disease, but this is embarrassing Madam..." Jm further

said that sexual violence committed by her couple has caused sexually transmitted disease, but they did not understand the initial sign. Within these two months, I felt itchy, red, and swollen. Then, we went to the midwife in the village. It remains that sexual violence suffered by married women is not immediately realised at the time, but it takes time.

In Kabonena areas, based on the two cases found, the two women's couple is fisherman. They tend to be more ready with the risk of sexually transmitted diseases. They said that when their couple go to fish for two months to even four months, their couple often gets sexual relations with other women as expressed by Dika in Kabonena. "Said that fisherman on the ship seems normal. If they would like to have it, they can have sexual relations in Surabaya or Balikpapan."

3.2 Fatal Effect

The fatal effects in this research include maternal death and death as shown in Table 2 as follows.

Table 2. The Fatal Effect dating violence to adolescent of Reproduction Health

No	Fatal Effects	Matauwe		Kabonena		Total	
		1	2	3	4	5	6
1.	Maternal Mortality	1	33.3	1	50.0	2	40.0
2.	Infant Mortality	2	66.7	1	50.0	3	60.0
	Total	3	100.0	2	100.0	5	100.0

3.2.1 Maternal Mortality and Infant Mortality

Violence experienced by adolescent can result in maternal mortality and infant mortality. The research data indicate that the number of death cases of mother is 2 and of baby is 3 cases. Although the cases are rare, the story is grieving and this occurs. Chowdhary and Patel [22] confirm that violent couple to his wife when giving birth can result in complication of baby delivery and even mother death and her baby. According to Heise [3], the couple violence can bring about mother death.

The relationship between violence and mother death (Yati) in Matauwe is an unsafe abortion. N in Kabonena also felt this when she was about to give birth. The violence when is about to give birth results in complication of pregnancy bringing to death. This fact teaches us that the presence of couple beside his wife who is struggling for a new baby is crucial to create the feeling of safe and comfortable. The process of giving birth taking 8-12 hours requires patience, physical energy, and mental support. Couple support is likely to make wife feel safe and quiet. Manuaba [18] argues that when mother feels stressful, the balance of hormone and energy needed for easing the process of giving birth can be disturbed and the effect could be

fatal, maternal and infant mortality. The violence by adolescent might also result in infant mortality. Mila, 22 years old in Matauwe narrated in the following. Initially, I did not want to have baby Madam..My couple also forbade me to have contraception. After the three months, I just realized that I was pregnant. I went to Ina for massage. Ina said you might be pregnant Nak. Please, test it first. I went to see the midwife. She said I get pregnant. I tried to have early pineapple, pill, but it does not go out. Later, I gave birth, e premature and abnormal, only one day Madam...the infant stayed and then passed away.

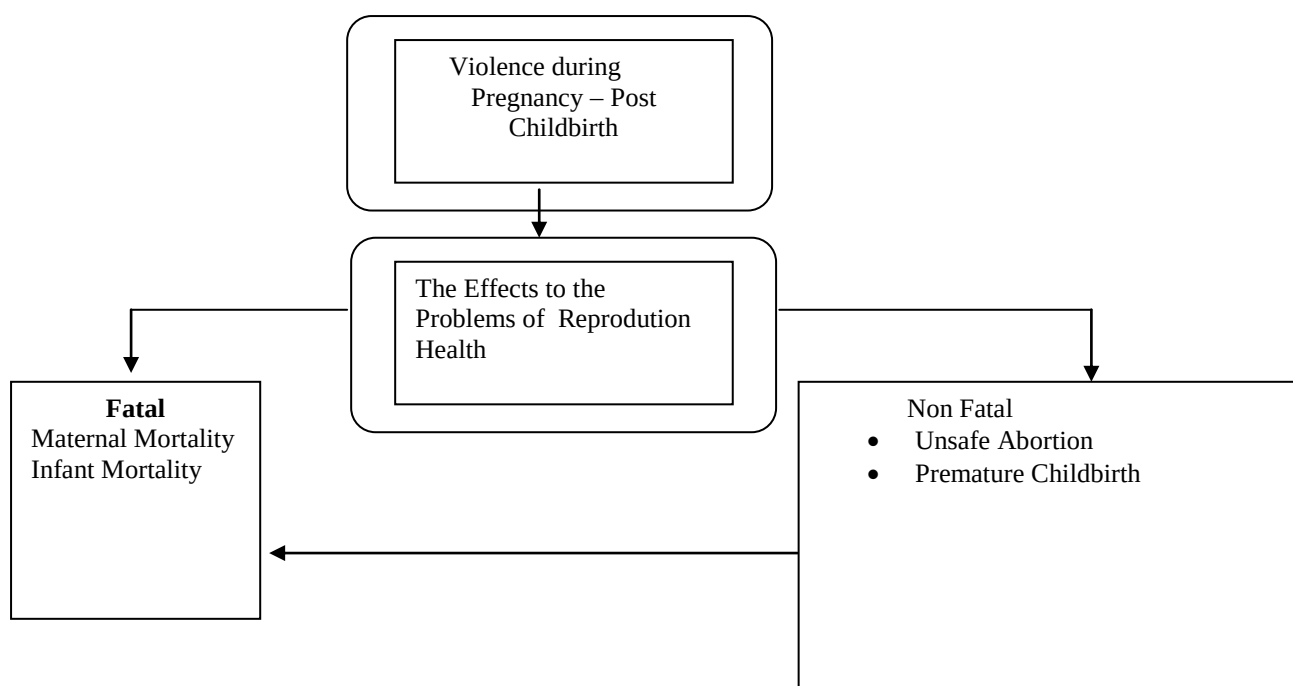


Figure 2. The Effect of Dating Violence To Adolescent Reproductive Health

In relation to the data above, it shows that the cases of Maternal and infant mortality does not occur independently and immediately. In other words, the violence at the time did not directly cause girls' death, but it takes morbidities process. Maternal and infant mortality go through the process of not fatal effect (unsafe abortion, and premature childbirth) to fatal. We could argue that there is a relationship and interconnection between not fatal and fatal. This research finding criticizes the Heise's theory analyzing the effect of not fatal and fatal. Each occurs independently and there is no connection to one another. The relationship is presented in Figure 2.

Cumulatively, this research stresses that the case of maternal and infant mortality in the Matauwe areas is higher, 8.3 percent than in the Kabonena areas, 3.4 percent. This occurs due to the difference of social-economic status and health facility which is situated in cities. Djoko [23] argues that the difference of social-economic background and health facility results in the difference in mortality pattern between cities and villages. Provincial Office of Social Department, Central Sulawesi (2006) also indicates that the health facility in the cities is likely to reduce the number of maternal and infant mortality. Consequently, the higher cases of maternal and infant

mortality are connected with the lower condition of care for pregnancy health. The quality care for pregnancy health should be supported by good health facilities.

4. Conclusions and Recommendations

The dating violence affects on adolescent reproduction health both in the Matauwe and Kabonena viallages. The effects are not fatal and fatal. The not fatal effects include the sexually transmitted diseases (PMS), unwanted pregnancy, unsafe abortion, premature childbirth or low weight of childbirth, the loss of sexual libido (frigidities). The fatal effects are maternal and infant mortality. The fatal effects (maternal and infant mortality) go through the process of not fatal effects (unsafe abortion and premature childbirth). Therefore, the not fatal and the fatal effects are connected and interrelated, not independently occurs. This conclusion confirms the research on violence effect model developed by Heise who argues that the couple violence is likely to result in the women reproduction health both fatal and not fatal. However, this research criticizes the Heise's theory stating that not fatal and fatal effects are independent. The cases indicate the relationship (from not fatal to fatal).

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Development of Filipino Adolescent Resilience Scale (FARS): Achieving Positive Life Adaptation

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Abstract

The study developed an instrument that measures five factors of resilience which is a multidimensional construct that incorporates both internal and external protective factors (Friborg, Hjemdal, Rosenvinge & Martinussen, 2006; Kumpfer, 1999; Luthar et al, 2000; Richardson, 2002). Internal characteristics associated with resilience include self-efficacy, perseverance, internal locus of control, coping and adaptation skills (Garmezy, 1985; Kumpfer, 1999; Luthans, Vogelgesang & Lester, 2006; Tedeschi & Kilmer, 2005). External factors that promote coping include family and social support networks (Friborg et al., 2006; Hardy et al., 2004; Luthar et al., 2000; Werner & Smith, 1992). The survey questionnaire was validated and distributed to 278 freshman college students enrolled in the College Orientation Course in a collegiate school in Calamba City ($N= 278$). There were 156 (56.12%) female and 122 (43.88%) male participants. The instrument was tested using Exploratory Factor Analysis (EFA). Out of 108 items, 62 remained significant and stable in the four factors of resilience. Given the results for the acceptable items in EFA, it was tested using a Confirmatory Factor Analysis (CFA). The goodness of fit based on the RMS standardized residual ($RMS=0.070$) showed less error having a value closer to .01. The Noncentrality fit indices values shows good fit for four factors of resilience (Steiger-Lind RMSEA Index= 0.70, Population Gamma Index= 0.774, Adjusted Population Gamma Index= 0.758).

Keywords: *resilience, adolescent, exploratory factor analysis*

Introduction

There has been an expansive interdisciplinary resurgence of interest in positive psychology with resilience at its core. From a deficit-oriented to strengths-based approach that concentrates on the strengths that are connected with healthy personality adjustment, resilience gained the interest of many researchers. The resiliency approach is a powerful shift that has the potential of reversing the problem-focused or “can’t do” orientation and move on to a wellness-focused or “can do” orientation (Misltein & Henry, 2000). The pathology perspective focuses on maladaptation, deficits, illness, and problems. On the other hand, the resiliency perspective focuses on wellness, adaptation, protective factors, and solutions.

There are multiple researches that explored on the definitions and models of resiliency, although many are not theoretically founded (Hjemdal, et.al., 2003; 2006; Fonagy, Steele, Steele, Higgitt, & Target, 1994), and most are linked to a collection of empirical findings, resulting in new definitions that convey aspects of resilience. Some definitions centered on personal (Rutter, 1985) or family (DeHaan, Hawley, & Deal, 1996) characteristics, whereas others focus on processes and mechanisms involved in resilience (Wolin & Wolin, 1993) or on outcome (e.g., Luthar, Cicchetti, & Becker, 2000). Resilience has often been defined as a relatively good outcome even though an individual may experience situations that have been shown to carry significant risk for developing psychopathology (Masten & Reed, 2002; Luthar et al., 2000; Rutter, 2000).

Resilience is highlighted as a strength that can assist people in positive life adaptation (Masten & Reed, 2005). Other research findings broadly defined it as the capacity to positively adapt to, or regain levels of functioning after difficult life experiences (Luthar, Cicchetti & Becker, 2000; Staudinger, Marsiske & Baltes, 1995). Furthermore, it has been proposed that resilience constitutes not just recovery, but growth and strengthening from adversity (Bonanno, 2004; Hardy, Concato & Gill, 2004; Ryff, Singer, Love & Essex, 1998). Resilience has also been described as a measure of stress-coping ability (Connor & Davidson, 2003), and Werner's (1995) conception of resilience emphasized sustained competence under stress. However, in research on child and adolescent development, resilience is seen as a factor that enabled children to achieve positive outcomes despite adverse circumstances (Campbell-Sills, Cohan & Stein, 2006; Hardy, et al., 2004).

Due to the diversity in the use of the concept, resilience can refer to the outcomes of (Rutter, 1990), the processes of (Kumpfer, 1999), and the capacity for successful adaptation despite threatening circumstances (Grotberg, 2003). Rather than focusing on a negative outcome, resilience pays more attention to adaptive outcomes, protective processes, and protective factors (Rutter, 1990; Garmezy, 1993a; Fraser *et al.*, 2004). This study highlights the protective factors that enhance resilience. It was proposed that protective factors enhanced resilience by moderating an individual's response to a stressful situation or threatening environment (Ryff et al., 1998).

Empirical research conducted with children and youth has indicated that protective factors can be internal (individual attributes) or external (environmental assets), specific or unspecific, and have cumulative effects, the greater the protective factors, the greater the influence of these factors on the outcomes (Fraser *et al.*, 1999; 2004). Individual protective factors (Seifer *et al.*, 1992; Grotberg, 1995; Kumpfer, 1999), play a decisive role in determining the level of resilience (Kumpfer, 1999). Resilience factors, which are innate or learned, include the attributes and competencies needed to be successful in different tasks, cultures, and personal environments (Garmezy, 1993a; Kaplan, 1999).

However, resilience factors change over time with different developmental states and environmental contexts, which vary among individuals (Kumpfer, 1999; Fraser *et al.*, 2004). Assessing, strengthening, and developing an individual's assets are one of the ways of enhancing the resilience of an individual at risk. Thus, an objective tool for assessing resilience factors could be helpful. In previous studies, there have been various attempts to develop direct measures of resilience for adolescents (Jew, Green, & Kroger, 1999; Oshio, Kaneko, Nagamine, & Nakaya, 2003; Hjemdal, 2006), for midlife (Ryan & Calabiano, 2009), for adults (Connor & Davidson, 2003; Friborg & Hjemdal, 2004; Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003; Hjemdal, Friborg, Martinussen, & Rosenvinge, 2001), and for older adults (Wagnhild & Young, 1993).

For measures of adolescents' resilience, Jew et al. (1999) developed a scale based on cognitive appraisal theory (Mrazek & Mrazek, 1987), which emphasizes 12 essential skills thought to be important to cope adequately with stressors. The scale was distributed on three factors: a) future orientation, b) active skill acquisition, and c) independence/risk-taking. Another scale was developed in Japan (Oshio et al., 2003) consisting of 21 items divided into three factors: a) novelty seeking, b) emotional regulation, and c) positive future orientation. Both of these scales only include the internal protective categories of resilience that have been previously outlined (Garmezy, 1983; Rutter, 1990; Wemer, 1989, 1993; Wemer & Smith, 1992).

Meanwhile, in another resilience scale for adolescents developed by Hjemdal, et al., (2006), using both explorative and confirmatory factor analyses (CFAs), on this scale showed a consistent pattern of five factors: a) Personal Competence, b) Social Competence, c)

Structured Style, d) Family Cohesion, and e) Social Resources. This five-factor solution was in accordance with the higher order categories of resilience.

Common findings came up with a multidimensional construct of resilience that incorporates both internal and external protective factors (Friborg, Hjemdal, Rosenvinge & Martinussen, 2006; Kumpfer, 1999; Luthar et al, 2000; Richardson, 2002). Although many factors have been proposed, a number of studies supported that the internal characteristics associated with resilience include self-efficacy, perseverance, internal locus of control, coping and adaptation skills (Garmezy, 1985; Kumpfer, 1999; Luthans, Vogelgesang & Lester, 2006; Tedeschi & Kilmer, 2005). In addition, the external factors that promote coping include family and social support networks (Friborg et al., 2006; Hardy et al., 2004; Luthar et al., 2000; Werner & Smith, 1992). Assessment tools to measure resilience would therefore need to tap into these five factors.

Today's youth continue to find themselves in situations of stress, conflict, and abuse. Identified risk factors include exposure to school place violence (Zinna, 1999), family violence (Adamson & Thompson, 1998), unsafe neighborhoods (Schwartz & Gorman, 2003), and the violence observed in the news and portrayed in the media (Bushman & Anderson, 2001; Cheng et al, 2004). Other factors recognized as risks are associated with peer rejection, bullying, intimidation, teasing, fearfulness, depressive feelings, and violent and abusive experiences (NIMH, 2000). In a study of 40,000 children over a five year period, Lundy and Grossman (2005) found that 43% of the older children and beginning adolescents were often afraid, almost 60% experienced mood swings, and more than one half reported social problems. It has been estimated that 10 to 15% of individuals between 9 and 17 years of age have some symptoms of depression (Guida, 2001). Identifying, understanding, and promoting resilience factors and personal strengths are encouraging avenues for clinical application and further research (APA, 2004; Kersting, 2003; Beardslee, 1989; Seligman & Csikszentmihalyi, 2000).

Although a review of the literature identified some instruments for evaluating resilience factors among the adolescent group, but none in the Filipino context. More importantly, no study has systematically tested their psychometric properties. Therefore, the purpose of this study was to develop and test the psychometric properties of the Filipino Adolescent Resilience Scale based from the internal and external protective factors (Friborg, Hjemdal, Rosenvinge & Martinussen, 2006; Kumpfer, 1999; Luthar et al, 2000; Richardson, 2002).

Self-Efficacy

It is an individual's belief in his or her ability to mobilize the motivation, cognitive resources and action to exert control over a given event (Bandura, 1997). Rutter (1987) described resilient individuals as possessing self-esteem and a belief in their own self-efficacy. When faced with adverse events, efficacious individuals tend to persist in a given task until success is achieved. Unless individuals believe that they can achieve desired goals through their actions, they will have very little incentive to persevere in the face of adversity (Benetti & Kambouropoulos, 2006; Friborg et al., 2006; Wagnild & Young, 1993).

Perseverance

It is the act of persistence, entails self-discipline and a willingness to continue the struggle to rebalance one's life after adversity. Resilient individuals rebound from adversity by remaining actively involved and developing new goals or plans if their original plans are unsuccessful (Schwartz, 2000; Werner, 2001). The closely related construct of hardiness also

associates perseverance with commitment to work consistently towards a goal, as well as the ability to view change as a challenge (Kobasa, 1979).

Internal Locus of Control

Individual's perception of being able to influence his or her current environment and future destiny. It also represents the extent to which individuals believe that they are responsible, through their own actions, for the things that befall them in life (Rotter, 1989). Resilient individuals have a greater internal locus of control and are optimistic about their ability to create positive outcomes for themselves and others. Individuals who believe that they can influence their own circumstances and personal outcomes are more likely to face adverse conditions with resilient approaches (Friborg et al., 2006; Kumpfer, 1999; Werner & Smith, 1992).

Coping and Adaptation Skills

Coping is a set of cognitive and behavioural strategies used by an individual to manage the demands of stressful situations (Folkman & Moskowitz, 2004). Adaptation is the process of adapting to a changing environment or adverse circumstances (Maluccio, 2002). An individual's ability to cope with these events is influenced by how he or she appraises the situation, how much has been learnt from previous experiences with stress, and how successfully he or she can adapt (Connor & Davidson, 2003). Resilient individuals are more likely to feel confident that they can cope successfully with adversity, and often employ a range of problem-solving and emotion-focused strategies (Caltabiano & Caltabiano, 2006; Masten & Reed, 2005; Rutter, 1987).

Family and Social Networks

Secure interpersonal relationships provide an important source of emotional support, and social support from the wider community can also serve as a building block for resilience (Greff, Vansteenwegen & Ide, 2006; Wagnild & Young, 1993). Resilience includes the individual's ability to utilise family, social and external support systems to better cope with stress (Friborg et al., 2006). Religious or spiritual belief has been implicated as another external component that can aid resilience by instilling a sense of hope in some individuals (Connor & Davidson, 2003; Johnson, 2000).

Method

Item Writing

The items Filipino Adolescent Resilience Scale (FARS) were classified according to five preliminary hypothesized factors: self-efficacy, perseverance, internal locus of control, coping and adaptation skills, family and social support networks. The scaling technique used a five-point Likert scale (1=Strongly Disagree, 2= Disagree, 3= Neutral, 4 = Agree, 5=Strongly Agree). There were 115 items judged by experts as to whether it was accepted, needs revisions, or rejected. Out of 115 items a total of 108 items remained and used in the study. The items were arranged by its category and the respondents answered by encircling the number corresponding to their answer.

Participants

In order to validate the construct being studied, the 108-item FARS was pilot tested to 278 freshman college students enrolled in the College Orientation Course in a collegiate school in Calamba City. There were 156 (56.12%) female and 122 (43.88%) male participants.

Data Analysis

The survey questionnaire tool for resilience was constructed and validated first using the Exploratory Factor Analysis (EFA). This procedure was meant to further explore the factors on resilience among the participants. In the analysis of the items, an exploratory factor analysis using principal component and varimax methods was conducted to extract and rotate the components. After the EFA, factor structure was tested using the Confirmatory Factor Analysis (CFA). The CFA approach used was Structural Equations Modeling (SEM) with a maximum likelihood of the variance. Goodness of fit indices was used to test the model for both non-centrality interval estimation and single sample goodness fit indices.

Results

Exploratory Factor Analysis

The Principal Components Analysis procedure extracted 31 factors with eigenvalues greater than 1. But using the scree-test to assess the number of acceptable factors, only four factors were analyzed; there were no items with high factor loadings starting at the 5th to the 31st factor. The factors were rotated using Orthogonal Vartimax Rotation with Kaiser Normalization and items with loadings of .40 where the variances of the squared factor loadings are maximized. The total variance accounted for was 28.85%, with Factor 1 yielding 16.45% variance, 6.07%, 3.66%, and 3.18% variance obtained by Factors 2, 3, and 4 respectively. The eigenvalues ranged from 3.18-17.77 and factor loadings from 0.40–0.78. As a result, a total of 62 items remained and the factors are labeled as: personal competence, social competence, control, external, family cohesion and social resources.

Table 1. Principal component analysis of the Filipino Adolescent Resilience Scale

Factor	Item Nos.	Total Items	Eigenvalue	Variance explained (%)
Factor 1	23, 36, 43, 44, 45, 46, 47, 55, 60, 61, 63, 67, 68, 69, 70 40, 57, 65, 73, 79, 81, 83, 84,	15	17.76955	16.45328
Factor 2	85, 86, 90, 91, 103, 104, 105, 106, 107, 108	18	6.55161	6.06631
Factor 3	2, 3, 4, 5, 10, 13, 14, 17, 22, 24, 28, 29, 30, 31, 34, 38, 51	17	3.65774	3.38680

Factor	Item Nos.	Total Items	Eigenvalue	Variance explained (%)
Factor 4	80, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102	12	3.17965	2.94412
Total		62		28.84961

Table 2. Factor loadings of the Filipino Adolescent Resilience Scale

Factor 1 Item	Factor 1 Loading	Factor 2 Item	Factor 2 Loading	Factor 3 Item	Factor 3 Loading	Factor 4 Item	Factor 4 Loading
23	0.497914	40	0.509338	2	0.414183	80	0.474826
36	0.433034	57	0.489122	3	0.460625	92	0.519305
43	0.630972	65	0.498611	4	0.445495	93	0.546563
44	0.547258	73	0.405769	5	0.516764	94	0.620104
45	0.582470	79	0.611338	10	0.418623	95	0.633499
46	0.609787	81	0.491824	13	0.495867	96	0.645236
47	0.473006	83	0.660895	14	0.431680	97	0.643460
55	0.463907	84	0.602975	17	0.430258	98	0.635905
60	0.542442	85	0.519868	22	0.405775	99	0.564532
61	0.579003	86	0.450707	24	0.535556	100	0.564687
63	0.428080	90	0.623769	28	0.526065	101	0.549394
67	0.551251	91	0.518071	29	0.490231	102	0.517161
68	0.437419	103	0.400179	30	0.415791		
69	0.488446	104	0.524531	31	0.445604		
70	0.628597	105	0.535085	34	0.478690		
		106	0.786500	38	0.485856		
		107	0.740108	51	0.465727		
		108	0.696802				

Confirmatory Factor Analysis

Given the results for the acceptable items in EFA for the four factors of adolescent resilience, it was tested using a confirmatory factor analysis. The goodness of fit based on the RMS standardized residual (RMS=0.070) shows less error having a value closer to .01. The Noncentrality fit indices values shows good fit for four factor resilience (Steiger-Lind RMSEA Index= 0.70, Population Gamma Index= 0.774, Adjusted Population Gamma Index= 0.758).

Conclusion

In the study, five factors of resilience namely: self-efficacy, perseverance, internal locus of control, coping and adaptation skills, and family and social support networks were tested among the adolescent participants. The constructed and validated items were first extracted in Exploratory Factor Analysis (EFA) to determine the significant and acceptable

items per factors. The EFA factor loading shows high eigenvalues and the number of items was maximized for each factor using the varimax rotation. A total of 62 items retained in EFA were tested using Confirmatory Factor Analysis (CFA). Self-Efficacy falls to factor 1, Internal Locus of Control for factor 2, Coping and Adaptation Skills for factor 3 and Family and Social Support for factor 4.

The results of the present study indicate that the FARS is a valid instrument for measuring adolescent resilience. Nevertheless, further research on its psychometric properties is needed, and there must be studies under way to replicate and validate this scale. It is also recommended for future studies to administer the instrument to a larger sample size since the study focused only in one private tertiary institution.

A valid direct measure such as the FARS can assist helping professionals in determining which factors contribute to the processes involved in wellness-focused or “can do” orientation. By identifying which factors are important in which situations and for whom, helping professionals can be more specific in predicting outcome and thus possibly generate more specific implications for both prevention and treatment.

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Short Biographical Note:

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Dimensions of Hygiene & sanitation in resource - limited settings; The case of Uganda



A modest pit latrine – in Nabigasa village



A modest bath shelter



A pit latrine fitted with a shield wall.



A case of poor solid waste disposal in Kalisizo Town.



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Abstract:

Area of residence: When one views the state of hygiene and sanitation facilities and practices among rural, peri-urban and urban communities wide discrepancies in terms of access, quality of the facilities, proper utilization, institutional responsiveness and individual practices emerge. **Population migration:** In Uganda, rural to urban migration is on the rise and as a result the hygiene and sanitation facilities /provisions have fallen below the thresholds to match the increasing urban populations. **Mobility:** Similarly, urban communities keep on changing and therefore efforts to educate urban dwellers on the appropriate useage of HESAN facilities are facing daunting challenges because of the oscillating nature of communities. People enter and leave towns at very high frequencies and this in a way affects the proper utilization of HESAN facilities under the operation & maintenance domain. **National level strategies:** The government's new 10-year Improved Sanitation and Hygiene Promotion Financing Strategy (ISH) recognizes the importance—and unrealized potential—of the private sector in improving household sanitation uptake. National-level budgeting tools, such as the League Tables and the Sector Review process, provide incentives for local-level officials to improve household sanitation coverage. In addition, key donors active in the sanitation sector, including the World Bank's Water and Sanitation Program (WSP), SNV (Netherlands Development Organization), and GTZ (German Agency for Technical Cooperation), support the sanitation marketing approach and are interested in opportunities for collaborative research and programming. However commitment to financing the sanitation sector seems to be low; if one critically analyses the proportion of the national budget allocated to sanitation efforts. **Institutional responsiveness:** In Uganda, the respective local governments' responsiveness in terms of planning, budgeting for & operationalization of hygiene and sanitation facilities, hygiene education and solid waste management efforts seem to fall short of adequate prioritization at that level. This is clearly demonstrated by the low level proportion of operational budgets allocated to HESAN/SWM facilities provision and management ranging between 3 – 5 % of the total resource envelope. Several dimensions appear to be attributing to this scenario and these include political interferences into the generally accepted public health laws enforcement efforts, low priority given to HESAN activities during budget allocation, limited tax base available to local governments, low capacity of the technical staff to defend their budget requests, poor state of operationalizing the physical planning tenets, indiscriminate solid waste disposal practices among the urban dwellers, limited access to technical support services from extension staff, low mobility trends of extension staff due to lack of a reliable and flexible transport equipment, low level of monitoring and evaluating domain interventions. **Household sanitation:** At the household level, wide discrepancies also do exist in terms of latrine coverage, quality of latrine structures, individual sensitivity, housing infrastructure, limited access to land (limiting land tenure system, varied areas of residence, varied community preferences in applying on – site sanitation vis – a – vis water borne systems, limited access to technical support services from extension staff, Other effect modifiers would involve low access to sanitation marketing innovations, cultural beliefs and widespread poverty among communities. **Hygiene & Sanitation approaches:** Notwithstanding the above scenario, the country has gone ahead to adopt the community – led total sanitation approach while drawing on the success stories & lessons from India, Nepal and Zambia; this code – named the ODF campaign has highly taken root and many local governments have joined the band wagon to operationalize CLTS alongside the conventional approaches like Home improvement campaigns. The only limiting factors are shortage of trained human capacity, financing and an enabling environment. **School WASH:** Poor sanitation contributes to high rates of school dropout and low literacy rates, especially among girls. As there is no specific or ring-fenced funding for school sanitation within the Water, Education or Health Sector budgets, the performance of these indicators is poor: the percentage coverage of hand-washing facilities is 38% against a target of 45%, and the pupil:stance ratio is for the second year in a row at 70:1, against a target of 50:1. **NGO partners involvement:** A well elaborate NGO network exists in the country but for various reasons, there is poor NGO–government program coordination at the local level. NGOs' heavy use of hardware subsidies and demonstration latrines undermine government policy to promote household responsibility for sanitation and impede private sector investment in sanitation

Key words: Area of residence, Population migration, Population mobility, institutional responsiveness, political interference, priority setting, household sanitation, land tenure, physical planning, public health laws, hygiene education, transport, sanitation marketing, CLTS and Home Improvement campaigns.

Introduction:

The human right to water and the human right to sanitation are part of binding international human rights law. They are derived from the human right to an adequate standard of living, which is enshrined in Article 11 of the International Covenant on Economic, Social and Cultural Rights (ICESCR), a treaty to which 163 United Nations (UN) Member States are party and which an additional six countries have signed. The right to an adequate standard of living is also contained in Article 27 of the Convention on the Rights of the Child (CRC), which has 194 State Parties, including all but three UN Member States, and in Article 28 of the Convention on the Rights of Persons with Disabilities (CRPD), which has 151 State Parties. The rights to water and sanitation are also inextricably linked to other human rights, including the right to health, the right to life, and to fundamental principles such as human dignity. (Source: *Overview of resolutions and declarations that recognise the human rights to water and sanitation – Amnesty International WASH United*).

Recognizing that while an estimated 133 million people living in Africa gained improved sanitation since 1990, the level of progress has not kept pace with demographic change; many countries do not have adequate high-level leadership, financial and human resources to implement existing policies, fail to tackle equity, do not build, manage or maintain sanitation systems and services, or create the large-scale hygiene behaviour change;

Mindful that an estimated 61% of people living in Africa do not have access to improved sanitation and that 21% still defecate in the open;

Noting that this lack of access to improved sanitation together with poor hygiene practices result in a huge burden of disease and that the associated economic, human, social, health and environmental costs are a major burden on African countries;

Reaffirming the human right to safe drinking water and sanitation for all;

Welcoming the aspiration of the draft Sustainable Development Goals which include an explicit target to “By 2030, achieve access to adequate and equitable sanitation and hygiene for all and an end to open defecation, paying special attention to the needs of women and girls and those in vulnerable situations” committing to integrating these in national policies and plans;

And recognizing that the time has come to incorporate the lessons from the eThekweni commitments and replace them by the “Ngor Declaration on Sanitation and Hygiene”, setting out in particular clear indicators for monitoring progress; (Source: *AfricaSan 4, May 2015, Dakar, Senegal – Draft Ministerial Statement - Page 1*)

Sanitation conditions in Uganda:

Uganda was a member of the Human Rights Council when it adopted without a vote **resolution 15/9** of September 2010 and when it co-sponsored **resolution 21/2** of September 2012. Uganda, as a member of the African Group, co-sponsored **resolution 24/18** of September 2013. Uganda also co-sponsored General Assembly **resolution 68/157** of December 2013, adopted without a vote. All these resolutions affirm that the human right to safe drinking water and sanitation is derived from the right to an adequate standard of living. Uganda thereby affirmed that the right to an adequate standard of living includes the human right to safe drinking water and sanitation.

The national household latrine coverage is at 74.8%, while hand washing with soap after latrine usage is at 32.8 % (*Sector Performance Report, MWE 2014*). Estimated 13.8 million Ugandans use unsanitary or shared latrines and 3.3 million practice open defecation causing the country annually loses of US\$ 41million as a result of open defecation, US\$147 million is lost due to premature deaths with approximately 23,000 Ugandans including 19,700 children under 5 dying each year from diarrhea whose cause is 90% poor water, sanitation and hygiene.

The loss of 2.5 days a year spent finding a private location to defecate is also estimated to be causing a loss of US\$ 8.1million while US\$ 21million is spent each year on health care also as a result of diseases and ailments emanating from poor water, sanitation and hygiene.

The UN has recently declared access to water and sanitation to be a basic human right. There are currently 46 nations in which less than 70% of the population has access to sanitation⁴. In Uganda only 34% of the population currently have access to improved sanitation and this percentage is the same in both urban and rural areas (WHO-UNICEF 2013) with government investment in the sector extremely limited.

The informal settlements in many Ugandan towns and cities have complex and contested land tenure systems making slum upgrading in general, and more specifically acquiring land for communal investment in sanitation facilities, very difficult. The small percentage of facilities that slum dwellers can access are normally dilapidated and poorly maintained. Additionally a large percentage of residents are tenants with landowners not living in the settlements where they rent property. The onus of responsibility for sanitation provision is hence a contested issue. (*Source: RESEARCH REPORT Innovative communal sanitation models for the urban poor; Lessons from Uganda, Greg Bachmayer Noah Shermbrucke*).

In October 2007, a team of consultants from the USAID–funded Hygiene Improvement Project (HIP) visited Uganda to determine if sanitation marketing (SM) would be a viable approach in Uganda, and to make specific recommendations to HIP and the donor community that would move the sanitation marketing agenda forward. This report presents the key findings and recommendations stemming from the trip. The overarching conclusion is that sanitation marketing is both a viable and needed approach to increase sanitation uptake among rural households in Uganda. The team based its assessment on an analysis of the following factors concerning Uganda’s rural household sanitation sector:

Policy Environment

The government’s new 10-year Improved Sanitation and Hygiene Promotion Financing Strategy (ISH) recognizes the importance—and unrealized potential—of the private sector in improving household sanitation uptake. National-level budgeting tools, such as the League Tables and the Sector Review process, provide incentives for local-level officials to improve household sanitation coverage. In addition, key donors active in the sanitation sector, including the World Bank’s Water and Sanitation Program (WSP), SNV (Netherlands Development Organization), and GTZ (German Agency for Technical Cooperation), support the sanitation marketing approach and are interested in opportunities for collaborative research and programming. Finally, in Uganda there is a unique opportunity to leverage a renewed emphasis on enforcement of sanitation bylaws. Combining sanitation marketing with enforcement can strengthen the carrot-and-stick approach that is already improving sanitation uptake in Uganda.

Formative Research

The team's analysis of existing consumer/formative research indicates that the principal motivations for household sanitation adoption in Uganda—pride and social acceptance, comfort and convenience, safety and security—are all non-health related. Experience from other countries has shown that these are effective drivers for a successful broad scale marketing approach that can help increase uptake among that portion of target audience not motivated by more traditional, health-oriented models (e.g., PHAST). Moreover, sanitation marketing is very complementary to demand-creation approaches commonly used in Uganda, such as Community-Led Total Sanitation (CLTS), because both focus on drivers not directly related to health and hygiene concerns.

Local-Level Conditions

The team's visits to the field confirmed the heavy focus on health-based, demand-side promotion aimed at motivating rural households to build new, or upgrade existing, latrines. However, very little is being done to address equally important supply-side issues, particularly increasing consumer awareness of, and access to, affordable and attractive latrine technology options. There is clearly both a need and an opportunity to leverage the dedicated cadre of government health staff, NGOs, and community volunteers to facilitate linkages between sanitation demand and supply.

Despite these positive findings, little progress is being made in Uganda toward the Millennium Development Goal for hygiene and sanitation. Rural sanitation coverage is stagnating, with a roughly 1 percent increase in coverage over the past year. Major barriers to developing an effective sanitation marketing program in Uganda remain, including:

FUNDING: At the national level, government funding for sanitation still lags far behind funding for the water supply. At the district level, nearly a total lack of budgetary support exists for rural household sanitation activities, either in the Water and Sanitation Conditional or Primary Health Care Grant mechanisms.

POLICY: Linking water and sanitation as one sector undermines support for sanitation, as represented by funding and policy support decisions. Decentralization further reduces subnational political will for sanitation. Current policies contain very few mentions of, or support for, sanitation marketing, specifically.

PROGRAMS: Messages promoting improved sanitation focus primarily on disease-prevention reasons, which are by themselves insufficient to motivate household investment (Jenkins and Sugden 2006).

For various reasons, there is poor NGO–government program coordination at the local level. NGOs' heavy use of hardware subsidies and demonstration latrines undermine government policy to promote household responsibility for sanitation and impede private sector investment in sanitation. (Source: *Opportunities for Sanitation Marketing in Uganda, HIP Project – USAID*).

Following a brief overview of the Uganda sanitation sector and presentation of key findings from the trip, this report provides multiple options—both short- and long-term—for building the various components of an effective sanitation marketing program in Uganda. The goal of the HIP consultant team visit to Uganda was to identify what activities would be needed (and in what order) to fully develop a new stand-alone sanitation marketing program—including activities such as formative research, best practice options for rural latrine design, a consumer

guide on technology options, a supply-chain study, training and certification of masons and artisans, and a road-map for district-level sanitation marketing. In addition, they sought to provide another set of options for those interested in making targeted contributions to enhance other organizations' ongoing programs—including sanitation marketing advocacy materials and outreach activities, assistance for the Community Sanitation Center, a public-private partnership

International commitments on WASH

The WASH related commitments made at the International level are recognized nationally, operationalised in the national frameworks and eventually included in the prioritization of programmes by Government and the Development Partner (DP) programme/projects as well as the NGO/CBO implemented projects. The main commitments are i) the Millennium Development Goals which is the overarching international commitment and post MDGs ii) Human Right to Water and Sanitation iii) Sanitation and Water for All (SWA) and the African commitment on sanitation. However from the interviews conducted with the various stakeholders, it was noted that although the commitments are recognized, sometimes they are not translated into funding and real work on the ground due to;

a) The long period it takes for the commitments to filter from the global level to the national/local level;

b) The many pressing needs and thus their operationalisation lags behind the envisaged time frames;

The Policy and institutional framework for implementation of rural WASH

The WASH sector is well aligned to the National Development Plan (NDP) 2010/2011 - 2014/2015 (due to be updated) and Vision 2040, which are the overarching national planning documents which guide the prioritization and resource allocation. The NDP target for safe water and sanitation in the rural areas is 77% by 2015. In the medium term framework Government of Uganda (GoU) priorities productive sectors/physical infrastructure, the social sector where rural water and sanitation belongs is not a priority sector and therefore may not receive additional GoU resources over and above the current allocation. At the sector level, all the Policies, Acts and guidelines are appropriate except two areas; i) the Sector Investment Model (SIM) which was developed during the preparation of the Strategic Investment Plan (SIP) for the Water and Sanitation Sub –sector document to guide the resource allocation within the Water and Sanitation sub-sector. The formula is not clear to stakeholders and currently it is not utilized in resource allocation; ii) Community Based Maintenance System (CBMS) lacks appropriate support structures right from the centre.

Sources of funding for rural WASH;

There are mainly five sources of funding for rural WASH namely; i) the District Water and Sanitation Conditional Grant (DWSCG) accounting for 80% of rural water and sanitation provision, it is channeled to all 112 district Local Governments (DLGs) ii) Peace Recovery and Development Plan (PRDP) for districts in northern and eastern Uganda channeled through the MoFPED - they account for 14% of the on budget support of rural Water and Sanitation service provision and the Sanitation grant amounting to 2bn which is also channeled as part of the DWSCG which accounts for 0.4%. The off budget support is mainly comprised of the NGOs/CBOs which account for about 6% of rural WASH and the fifth and

very negligible contribution is the self supply/individual effort in service provision for WASH. The DWSCG is funded by the Development Partners (DPs) and GoU from own sources. DPs contributed about 40% of the DWSCG over the four year period.

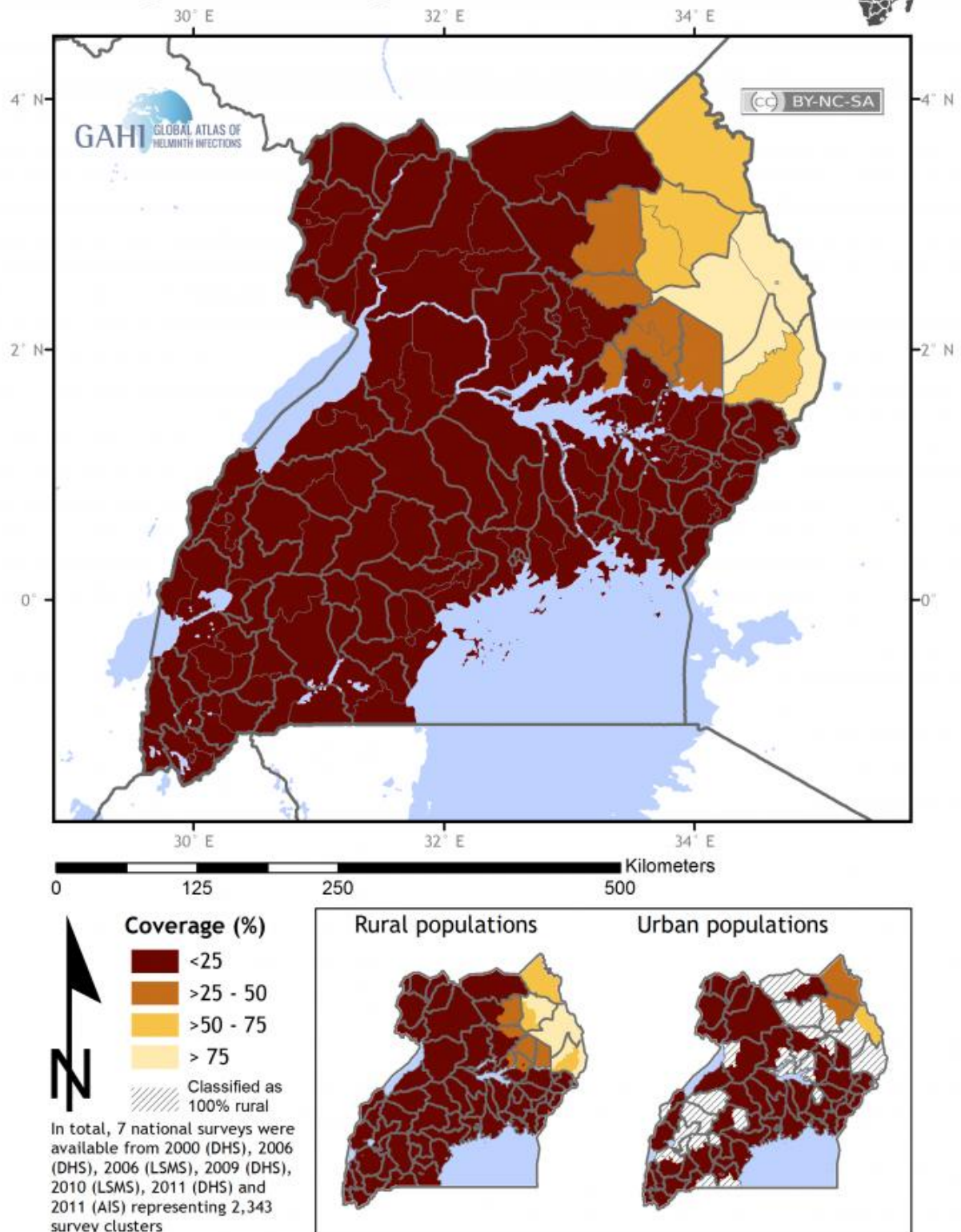
The funding allocation, performance and utilization for rural WASH at the national level and each of the 14 districts: Over the 4 year period 2009/2010 -2012/2013 the fund allocations towards rural WASH has remained more or less at the same level of 58bn except in 2012/2013 when it was increased slightly to 64.95bn UGX. The mandate of MWE regarding sanitation and hygiene activities is stipulated in the Memorandum of Understanding (MoU) that was signed by Ministry of Health (MoH), Ministry of Education and Sports (MoES) and MWE. The role of MWE is limited to development of public sanitation facilities and promotion of good practices of hygiene and sanitation around the water sources, RGCs and small towns. (*A Budget Allocation, Performance and Utilisation study of the District Conditional Water and Sanitation Grants, September 2014*).

Uganda has a population of approximately **35 million** and **10%** of these are believed and still practice open defeacation. (Source: [WHO/UNICEF Water Supply Statistics, 2014](#)). This is clearly demonstrated by the table below.

Date	Value	Change, %
2012	10	-5.94 %
2011	10	-4.72 %
2010	11	-5.36 %
2009	11	-4.27 %
2008	12	-4.88 %
2007	12	-4.65 %
2006	13	-3.73 %
2005	13	-4.29 %
2004	14	-4.11 %
2003	15	-3.31 %
2002	15	-3.82 %
2001	16	

However glaring differences between regions and districts are apparent; with the north eastern region rating as the highest in practising open defeacation. This is clearly demonstrated by the map below

Open defecation: Predicted total population coverage in 2012 for Uganda



Poor sanitation contributes to school dropout and low literacy rates, especially among girls. School sanitation is monitored by the sector through an indicator on hand-washing and pupil:

latrine stance ratio for primary schools. As there is no specific or ring-fenced funding for school sanitation within the Water, Education & Health Sector budgets, the performance of these indicators is poor: the percentage coverage of hand-washing facilities is 38% against a target of 45%, and the pupil : stance ratio is for the second year in a row at 70:1, against a target of 50:1.

The Constraints Lens:

Over and above the routine, there are glaring constraints to HESAN improvement across the country and these in one way or the other, direct and indirect appear to shape the level of improvements in hygiene and sanitation in the country. The constraints are clustered into 3 broad categories and these include:

Cluster of constraint	Components
Institutional	▪ Limited number of environmental health staff in some districts. ▪ Low capacity of EH staff in triggering for CLTS. ▪ Low level of facilitation of EH staff to reach out. ▪ Lack of transport to EH staff ▪ Limited financing for sanitation from some parent ministries (<i>MWE, MoES & MoH</i>). ▪ Limited focus on school sanitation. ▪ Funding for sewerage and treatment remains inadequate. ▪ Political interference ▪ Low priority allotment to sanitation activities. ▪ Low level of political will ▪ Low level of enforcement of public health laws. ▪ High rates of developing un – guided housing in urban centres. ▪ Poor regimes for collecting & managing solid waste in urban centres. ▪ Low level of operationalizing physical planning in urban centres. ▪ Delays in the enactment & approval of sanitation ordinances in districts. ▪ Lack of a framework for promoting highway sanitation. ▪ Low level of documentation and wider sharing of Best of Practices for sanitation.
Technology	▪ Limited options that offer cheap choices by community definition. ▪ Some technologies not applicable to some areas (the water – logged & rocky). ▪ High installation cost of some technologies (Ecosan toilets). ▪ High costs associated with sanitation demonstration facilities (ecosan etc). ▪ Low adoption levels among communities for new sanitation technologies.
Behavioural	▪ Some relative degree of complacency among communities. ▪ Transient nature of communities (highly mobile) especially fishing communities. ▪ High rates of rural to urban migration. ▪ Some cultural beliefs that constrain effective use of latrines by the pregnant women. ▪ Some cultures have phobia for faeces.
Urban Sanitation	▪ Emptying toilets and septic tanks, compounded by lack of access in informal settlements.

and Hygiene	▪ Inadequate faecal sludge transportation and treatment capacity. ▪ High faecal sludge emptying and transportation charges. ▪ Unregulated faecal sludge Collection and treatment services. ▪ Lack of reliable faecal sludge service information centres. ▪ Limited information on the spatial distribution and location of Sanitation facilities. ▪ 50% of latrines in informal settlements have been abandoned; 30% are emptied into the environment. ▪ Low customer awareness on availability of cesspool service and how to access them. ▪ Cesspool service provision is not regulated.
School Sanitation	▪ Schools do not have a budget for emptying of filled facilities. ▪ Unsanitary manual emptying and illegal discharge into the environment In most schools. ▪ Insufficient knowledge and awareness in schools about emptying services.
	▪

Strategic directions:

- There is an imperative need for country – level review of the progress made towards achieving the Millennium Development Goals; and results of which will be used to input into the process of adopting and operationalizing the newly instituted Sustainable Development Goals (SDGs).
- Efforts to scale up Community – Led Total Sanitation across the country should be fast – tracked in the short; building of adequate capacity to trigger and stage effective CLTS – ODF action plans monitoring be prioritized.
- More affirmative action to financing water, hygiene and sanitation projects/programmes is needed in the short – term; and this can best be demonstrated by increasing the National Budget allocation to water , hygiene and sanitation programmes from the current 3% to 6%.
- More effort need to be put to sanitation marketing and more so demand creation for approved new technologies provided they embrace the affordability tenets.
- Inter – Ministerial coordination and collaboration need to be enhanced further; and in such areas of legal & policy development, capacity – building (staff & equipment), budget allocation, monitoring for effectiveness, data collection, analysis, use and reports sharing.
- Heightened joint planning, budgeting/funding and monitoring of WHESAN sector activities between Government, UN Agencies, INGOs and NGOs be promoted further.
- Affirmative action be made towards promoting experience sharing events and these should not be limited to organizing learning visits, participation in International, Regional & National conferences relevant to the sector for water, hygiene and sanitation practitioners.
- There is need to re-engage the political leadership at all levels; to appreciate more of the social & economic dimensions and impacts arising from poor hygiene & sanitation in communities. Their responsiveness to planning & budgeting for water, hygiene and sanitation activities be fast – tracked.
- Promote ventures of how to better facilitate the rural households to access different financing e.g. from village saving schemes, Micro Finance Institutions (MFIs) and commercial banks.

- The institutional arrangement needs to be strengthened to enable active involvement of the private sector in faecal sludge management.
- The faecal sludge demand aggregation model will need to be demonstrated for a cluster of towns.
- The Ministry of Water & Environment will need to liaise with the Ministry of Local Government to provide a long lasting solution to poor management of solid waste in small towns and sludge management in schools.

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ENVIRONMENTAL EPIDEMIOLOGY OF TUBERCULOSIS IN NORTHERN INDIA AND VIEW ON AYURVEDIC IMMUNOMODULATORS AS AN ADJUVANT THERAPY

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ABSTRACT

Persistent diverse environmental and epidemiological conditions change the entire infrastructure of community health. The aim of this study was to determine the clinical-environmental determinants and distribution of *Mycobacterium tuberculosis* infection in different pockets of district Muzaffarnagar (Northern India) and view on the use of Ayurvedic immunomodulators as an adjuvant therapy to the patients taking treatment under DOTS. Purposive sampling was carried out by inventory questionnaires. Due to psychological stress, social stress, malnutrition due to poverty, poor housing and poor hygienic conditions, the regression value for highly endemic area of district Muzaffarnagar was medium ($R^2 = 0.6246$) and for low endemic area was very low ($R^2 = 0.0058$). Because of high impact of malnutrition due to poverty, poor housing and poor hygienic conditions, the tuberculosis prevalence was high in the highly endemic areas and low in low endemic areas. Our survey reveals, the impact of environmental variables especially prolonged deficiency of nutrients in weakening immune responses leading to increased susceptibility to *Mycobacterium tuberculosis* infection. It needs immunomodulators to enhance the immune responses in order to fight against the infection. Almost all animals have their own system to produce different immunomodulators but impaired immune systems are unable to produce desired immunomodulators at the desired moment and direction. Thus, it is recommended to emphasize the potentiality of Ayurvedic doctrine in management of the disease by Ayurvedic immunomodulators as an adjuvant therapy to counteract not merely the side effects of modern therapies but reduce the treatment duration and expenses of the patient suffering from *Mycobacterium tuberculosis* infection and its resistant state. In fact, this combined therapy is useful in challenging problems of human health to reach the desired goal.

Key words: *Mycobacterium tuberculosis*, Environmental variable, Ayurvedic immunomodulators, Adjuvant therapy, Ayurvedic therapy

INTRODUCTION

Persistent environmental and epidemiological variable conditions change the entire infrastructure of community health. The health status of an individual, or a state or a nation is determined by the interplay and integration of an individual with the external environment. Disease is due to disturbance in delicate balance between man and his environment. In this process of disease, three components are involved which are agent, host and environment. While Ayurveda, also defines three components like *Vatta*, *Pitta* and *Kapha*. These all above said components are determinants of healthy or unhealthy state. Much of the ill health in the developing countries is largely due to lack of safe drinking water, malnutrition, poor psychosocial pathology and poor hygienic conditions, which disturb the delicate balance of host and environment due to imbalance in *Vata*, *Pitta* and *Kapha* of host and environment. In our clinical practice the imbalance in these tripods are usually perceive due to poverty, malnutrition, living in crowded places, poor ventilated areas, poor psycho-socio-cultural environment and poor immune functioning. Immune system is the main regulatory system controlling homeostasis of the body and participates virtually in all processes of the life from birth to last breath. The incompetence of the immune system opens door to infectious, malignant, autoimmune, and inflammatory diseases. There are many natural and synthetic interventions directed to stimulation, modulation or suppression of the immunity by various routes but intervention of natural medicines is significantly important because they recover the situation without harming the system. The management and treatment of inflammation and allergic diseases is required suppression and treatment of HIV, immunodeficiency and infectious diseases is required stimulation of the immune system. Several Indian medicinal plants show immunomodulatory activity (Mastan *et al*, 2008, Bafna and Mishra, 2005). Modulation of immune response by stimulation and suppression may help in curing a disease. Certain agents have been shown to possess activity to normalize or modulate pathophysiological processes, which are called immunomodulatory agents. Tuberculosis and its resistant state is an immune regulatory disease. Ayurveda may play an important role in treatment of tuberculosis. But unfortunately, the knowledge of immunotherapy and clinical use of natural products does not perceive in usual practice of physicians, they are totally dependent on RNTCP in most of the governmental sectors of Northern India. In this drug resistant age, the emergence of several immune related diseases, the treatment of tuberculosis seems incomplete in RNTCP due to lack of Environmental therapy and Natural immunotherapy. As a result of which, the number of XDR and MDR tuberculosis patients are increasing in the world rapidly and has become a major threat to community health in developed and developing countries.

National programs are failing to diagnose and treat MDR tuberculosis. Globally, just under 30,000 cases of MDR tuberculosis were reported to the World Health Organization (WHO) in 2008 (7% of the estimated total), of which less than one fifth were managed according to international guidelines. The vast majority of the remaining cases probably were not diagnosed or, if diagnosed, were mismanaged. This problem remains despite the evidence that management of MDR tuberculosis was cost-effective (Tupasi *et al*, 2006) and that treatment of MDR tuberculosis, and even treatment of XDR tuberculosis, was feasible in persons who are not infected with HIV (Kathryn *et al*, 2013).

Once MDR tuberculosis has emerged, however, urgent measures are required to control the disease. For the Stop TB Strategy, the actions are required to implement to remove the global shortage of health care workers (WHO, 2006), although prevalence and incidence rates are reducing persistently but two major challenges: the drug resistant TB crisis and around three million people are missing by health systems. Further challenge identified as TB and HIV co-infections (WHO, 2013), and the urgent need is required to intensified research on new diagnostic tests, vaccine and Ayurvedic immunomodulators.

India has the lowest health spending as a proportion of gross domestic product (GDP). In the Economic Survey, India spends around 4.1% of GDP on health. This makes India the worst performer among the BRICS group (The Times of India, 2013). In virtually all countries with a high burden of MDR tuberculosis, treatment costs per course of treatment for one person are more than 100% of the gross national income per capita (the cost of second-line anti-tuberculosis drugs alone is rupees 1,00,000 to 2,00,000 per patient in India).

Being a growing interest in identifying and characterizing natural compounds with immunomodulatory activity in Medical world, the use of natural products in modern medicine has been suggested but exactly it is not implemented. Indian medicinal plants are rich source of substances that induce para-immunity *i.e.*, the non specific immunomodulation. Being non specific it is expected to give protection against different pathogens including bacteria, fungi, viruses *etc.* and several plant based medicines and synthetic medicines are potentially effective in the treatment HIV infection (Kadam *et al.*, 2010) Thus, Ayurvedic therapy becomes more potential along with allopathic.

METHODOLOGY

Four different types of habitats (sites) were identified. These four habitats were of district Muzaffarnagar, Uttar Pradesh *viz.*, Thanabhawan, Shahpur, Muzaffarnagar city and Jansath. For assessing the magnitude of patients suffering from *Mycobacterium tuberculosis* and prevalence from the different environmental sites of the study area, a careful screening of the records of the Govt. hospitals located in these areas were utilized in addition to personal screening. For assessing the psycho-socio-economic and poor nutrition status and poor hygienic conditions at residential place of the patients; a modified questionnaire was developed with the consultation of medical experts. Diagnosis of pulmonary tuberculosis was made following the clinical manifestations outlined in a modified questionnaire based on RNTCP directed by WHO (2010) for survey. This diagnostic questionnaire was fulfilled by the qualified doctors or posted experienced tuberculosis staff on the surveyed sites of Govt. hospitals. The hundred symptomatic patients including identified TB patients were studied from highly and low endemic sites of district Muzaffarnagar.

After careful screening the records of the Tuberculosis Units of district Muzaffarnagar for the period from January 2009 to December 2010, the data was tabulated. Dyspnoea and dyspepsia symptoms were characterized by most of the pulmonary tuberculosis patients including common symptoms. Monthly, frequencies of acute and chronic cases were also recorded. On the basis of the collected data, the prevalence rate of endemicity was analyzed to ascertain high and low endemic areas in Muzaffarnagar. Two highly endemic (Thana Bhawan and Shahpur) and two low endemic sites (Muzaffarnagar city and Jansath) were identified on the basis of surveillance of district Muzaffarnagar for secondary data collection.

Primary data was obtained for the period from January 2010 to December 2010. Enquiries and diagnosis of 100 patients were made with the help of clinical manifestations and sputum microscopic examinations at the tuberculosis units of the study areas. Chest X-ray reports were also recorded. This experimental data was assessed with the help of diagnostic questionnaire records.

Purposive sampling was carried out by inventory questionnaire form, through which education, family income, and various variables like psycho-social environments, hygienic conditions, nutritional status and habitat status/housing status of the individuals and communities were recorded. The intensity of disease was evaluated by the recorded clinical manifestations in every patient of pulmonary tuberculosis. The observed primary data of different sites were used to find out the regression values and linear equations for the interacting variables *viz.*, psychological variables, socio-pathogenic variables, poverty, poor hygienic conditions, poor nutrition or malnutrition and poor housing or poor ventilation.

Pulmonary tuberculosis was diagnosed on the basis of clinical manifestations and pathological testing including chest X ray following the methods outlined in diagnostic questionnaire format. Clinical symptoms of pulmonary tuberculosis were: a bad cough that lasts 2 weeks or longer, pain in chest, coughing up blood or sputum (phlegm from inside the lungs), weakness or fatigue, weight loss, loss of appetite, chills, fever, sweating at night, dyspnoea, nausea and dyspepsia.

Regression analysis was performed by using variables and disease intensity for prevalence of pulmonary tuberculosis in Muzaffarnagar. The prevalence of pulmonary tuberculosis at high endemic area viz., S₁ (Rural and semi urban area-Thanhawan), site S₂ (Rural area – Shahpur) and low endemic area viz., S₃ (Urban area – Muzaffarnagar), site S₄ (Urban area – Jansath) of district Muzaffarnagar induced by various variables which were correlated with the intensity of disease of that site. The intensity of disease was evaluated by the observed clinical manifestations, pathological testing including sputum microscopy and chest X-ray findings in each patient. The observed correlation of both sites had been used to find out the regression value, regression line and linear equation for the interacting variables.

For obtaining the primary or experimental data, the clinical manifestations of the disease were studied with the help of diagnostic questionnaire and were found high intensity of symptoms in Muslim populated areas of district, Muzaffarnagar and the regression value and linear equation were analyzed by using various variables and disease intensity for prevalence of pulmonary tuberculosis at Muzaffarnagar in Northern India. The secondary data was analyzed which was obtained from various hospitals situated at various sites of district Muzaffarnagar.

For testing the potentiality of Ayurvedic medicine in management of diseases by Ayurvedic immunomodulators as an adjuvant therapy is significantly useful to counteract not merely the side effect of modern therapies but in several immune related diseased conditions independently. For this, the entire ancient Indian Sanskrit literature dealing with the knowledge of ancient people on *Ayurvedic* Medical Science including environmental epidemiology was surveyed. The *Rig-veda*, *Charak Samhita*, *Sushrut Samhita*, and *Madhav Nidanam* were mainly surveyed to elucidate the mode of action of medicine and functioning mechanism of doctrine of natural medicines as explained by our ancestors.

OBSERVATION AND DISCUSSION

At present the southern part of India has highest mortality from tuberculosis and the northern part of India is facing unedited attack of *Mycobacterium tuberculosis* persistently. Usually, it is observed that cold climate give better protection against tuberculosis. The socio-economic, cultural and psychological parameters and nutritional values play an important role in controlling or enhancing the prevalence of tuberculosis because the environmental parameters regularly interact with the human physiological processes.

In a study investigating the influence of the "social complex" on tuberculosis notification and mortality in Glasgow, Scotland, Stein found a highly significant association of tuberculosis disease with various social variables and strongest being crowding (Shah *et al.*, 2003).

Researchers have long recognized the association between lower socioeconomic status and a wide array of diseases, including tuberculosis (Cantwell *et al.*, 1994; Dubos, 1987; Lerner, 1993; McKeown, 1976 and Spence *et al.*, 1993). Malnutrition is a strong risk factor for tuberculosis (Cegielski and McMurray, 2004) and TB itself is a known risk factor for malnutrition. Historically, tuberculosis has been linked with poverty. Poverty conditions during the industrial revolution in the 19th century in Europe were accompanied by disease and death due to tuberculosis (Weiss and Addington, 1998). Our study shows that socioeconomic status and malnutrition due to poverty are the major cause in enhancing incidence of tuberculosis in northern India.

The link between cigarette smoking and tuberculosis is well known. Half the world's population cooks on open fires or traditional stoves fueled by coal or biomass (wood, crop residues, charcoal or animal dung), often indoors in poorly ventilated spaces. These stoves produce smoke with chemical constituents *e.g.*, carbon monoxide, similar to present in cigarette smoke. Smoke is risk factor for pulmonary tuberculosis (Alcaide *et al.*, 1996; Ionescu *et al.*, 1976; Shprykov and Zhadnov, 1994; Mihaltal *et al.*, 1995 and Yu *et al.*, 1998). The smoking is psychosocial problem to which our study shows the involvement of tuberculosis with behavioral practices.

The impact of poor nutrition due to poverty was evaluated at S₂ site for obtaining the correlation value for the incidence of tuberculosis. The positive and high influence of poverty variable was observed at S₂. The correlation value of this variable with the tuberculosis incidence was evaluated as 0.755808712. Because this correlation value was between 0.7 – 0.1 thus, it exhibited close correlation with the disease. Therefore, high tuberculosis incidence rate was observed at this site *i.e.*, rural area-Shahpur. Considerably high influence was observed at S₁ site (rural area-Thanaabhan), where obtained correlation value was between 0.5 – 0.7, *i.e.*, 0.571234779 thus, it exhibited close relationship with the disease at site S₁.

We found that in both the years there was no considerable progress in RNTCP of district Muzaffarnagar. In the month of January, February and March 2009 the *Mycobacterium tuberculosis* infected patients were 1.39% at highly endemic site S₁ (Thanaabhan) and this percentage was increased in the next year 2010 to 1.46% on the same site, S₁, which might be due to lack of adequate attention paid to this site by health authorities or this increase may be due to active participation of DOTS. At site, S₂ (Shahpur), similar results were found *i.e.* it was 0.874% in 2009 and 0.944% in 2010. Results in similar pattern were found in low endemic areas S₃ (Muzaffarnagar City) and S₄ (Jansath). In the same months in 2009 the percentage of sputum positive cases were 0.48% (at S₃) and 0.42% (at S₄), it was increased in 2010 to 0.60% (at S₃) and 0.49% (at S₄) respectively. This pattern was observed in each months of the year 2009 and 2010 at our all the studied sites. The maximum percentage was found at Thanaabhan area(S₁) and Shahpur (S₂) area while the low percentage was found at Muzaffarnagar City (S₃) and Jansath (S₄) sites. It means that Thanaabhan and Shahpur sites were high endemic areas and Muzaffarnagar City and Jansath were low endemic areas. Both the high endemic areas were rural and both the low endemic areas were urban. So the health authorities need to make their attention towards the rural and remote areas of district Muzaffarnagar. The maximum prevalence of tuberculosis was observed in the month of April, May and June for the year 2009 at site S₁. The minimum prevalence of tuberculosis was observed in the months of October, November and December 2009. It was 0.28% at site S₄ for the year 2009 while in 2010 in the same months it was 0.29% which was lowest prevalence of tuberculosis.

At site S₁, the frequency of sputum positive patients among the referred cases was found increasing in two consecutive years from 13.30% in 2009 to 15.17% in 2010. At site S₂, the frequency of sputum positive patients was found increasing from 18.26% in 2009 to 23.36% in 2010. At site S₃, the frequency of sputum positive patients increased in two consecutive years from 12.58% in 2009 to 14.65% in 2010. Similarly, at site S₄, the frequency of sputum positive patients increased from 13.20% in 2009 to 15.87% in 2010. The above said data indicates an increase in sputum positive cases which are the source of further spreading of disease in rural and urban areas. Finally we observed the intensity of the clinical manifestations was profound in Apr-June, 2010 at all the sites which were studied in district Muzaffarnagar. It is concluded that psycho-cultural, socioeconomic, habitat environment and access to health promotional interventions is poor in rural areas as compared to urban and semi-urban areas.

The statistical analysis of data obtained in survey show that highly endemic areas (S₁ Thanaabhan and S₂ Shahpur) have the high intensity of the disease due to high intensity of

the psychological variables, social variables, malnutrition due to poverty and poor hygienic conditions. Therefore, intense clinical manifestations can be perceived in these sites. The obtained regression value for these areas was $R^2 = 0.6246$ which is between 0.5-0.7 thus, these variables exhibit medium impact in enhancing the disease. While very low impact of these variables was found in low endemic areas (S_3 Muzaffarnagar city and S_4 Jansath) of district Muzaffarnagar in northern India. The obtained regression value for low endemic areas was $R^2 = 0.0058$ which is between 0.0-0.5 thus, impact of studied variables was negligible in promoting the disease. This study finally shows that there are some environmental factors and socio-pathogenic factors which enhanced the intensity of the disease and their clinical symptoms. These factors interact during the course of treatment if not properly executed.

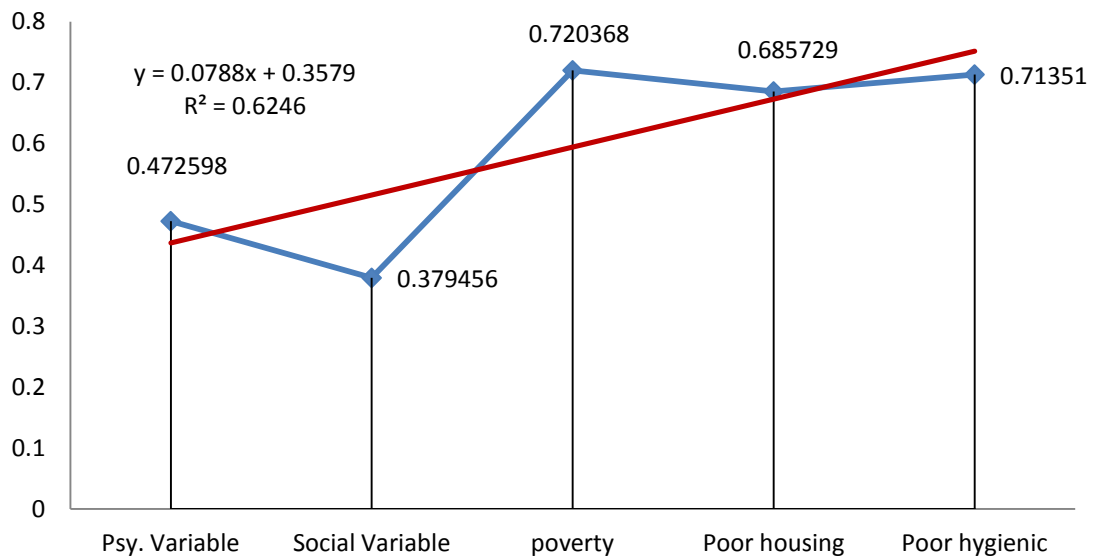
Table 1 Highly endemic areas: Thanabhawan rural area and Shahpur rural area of district Muzaffarnagar, UP, India

Variables	Correlation value
Psychological variable	0.472598
Social variable	0.379456
Poverty	0.720368
Poor housing	0.685729
Poor hygienic conditions	0.71351

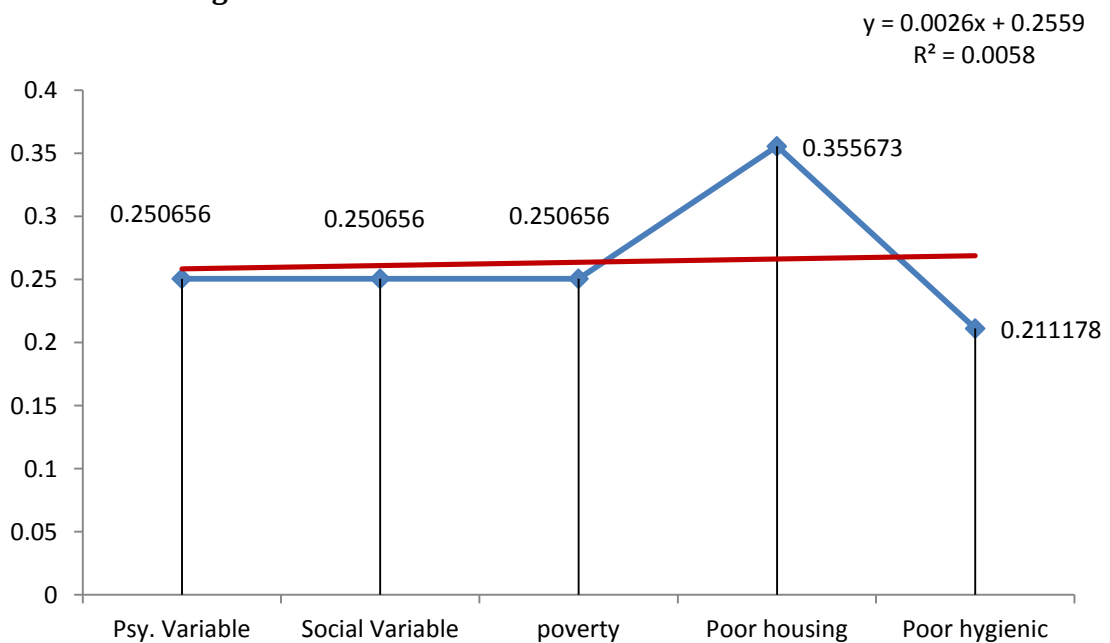
Table 2 Low endemic areas: Muzaffarnagar city and Jansath semi-rural area of district Muzaffarnagar, UP, India

Variables	Correlation value
Psychological variable	0.250656
Social variable	0.236906
Poverty	0.206578
Poor housing	0.355673
Poor hygienic conditions	0.211178

High Intensity of the independent variables show high intensity of *Mycobacterium tuberculosis* infection at highly endemic site of district Muzaffarnagar



Low Intensity of the independent variables show low intensity of *Mycobacterium tuberculosis* infection at low endemic site of district Muzaffarnagar



VIEW ON AYURVEDIC IMMUNOMODULATORS AS AN ADJUVANT THERAPY

The health status of an individual, a community or a nation is determined by the interplay and integration of internal environment of man with the external environment, which surrounds him. Disease is due to a disturbance in the delicate balance between man and his environment. In this process of disease, three components (agent, host and environment) are involved and according to Ayurveda the three components are *Vata*, *Pitta* and *Kapha*, which are the pillars of Ayurvedic doctrine. Much of the ill health in the developing countries is largely due to lack of safe drinking water, malnutrition and poor hygienic conditions, which disturb the delicate balance of host and environment due to imbalance in *Vata*, *Pitta* and *Kapha* of host and environment. Characteristically malnutrition and tuberculosis are closely related. Therefore, it is very difficult to confirm which one is responsible to create other one.

Immune system is the main regulatory system controlling homeostasis of the body and participates virtually in all processes of the life from birth to last breath. The incompetence of the immune system opens door to infectious, malignant, autoimmune, and inflammatory diseases. There are many natural and synthetic interventions directed to stimulation, modulation or suppression of the immunity by various routes but intervention of natural medicines is significantly important because they recover the situation without harming the system.

For elimination of MDR tuberculosis, the prevention is required from its emergence (Reichman, 2009) and the urgent need is required to intensified research on new diagnostic tests, drugs and vaccines (Fauci, 2009) to close the doors of MDR - TB. In treatment of tuberculosis Ayurveda may play an important role but unfortunately, the knowledge of immunotherapy and clinical use of natural products does not perceive in usual practice of physicians, they are totally dependent on RNTCP in most of the governmental sectors of Northern India. In this drug resistant age, the emergence of several immune related diseases, the treatment of tuberculosis seems incomplete in RNTCP due to missing of alternative therapies especially Environmental Therapy and Ayurvedic Immunotherapy. As a result of which, the number of XDR and MDR tuberculosis patients are increasing in the world rapidly and has become a major threat to community health in developed and developing countries. India has the rich knowledge of Ayurveda; it includes a deep clinical study of natural products and its immunotherapeutic approach. It is a matter of sorrow that Allopathy is predominant therapy in India, which may be due to more political reasons while Ayurveda is standing behind despite of its rich therapeutic potential, owing to which the financial budget is too low of Ayurvedic Science in comparison to Allopathic. Natural products are obtained from nature; they are most consistent and successful source of drugs. Plants remain one of the main sources of natural products. Main components of Ayurvedic therapy are natural products and nature. Thus basic principle of Ayurveda was formulated with the consideration of nature or environmental concept.

EPIDEMIOLOGICAL CONCEPT OF TUBERCULOSIS IN AYURVEDA

According to *Sushrut Samhita*, the epidemic diseases are transferred from one individual to other by various means like copulation or clasping with the diseased person, by respiration, by sharing bed, food, clothes and utensils of the patient, for example, leprosy, most of the skin diseases, some fevers, tuberculosis, MDR-TB, Co-infection of HIV or immune related infectious diseases and most of the eye diseases. These epidemic diseases have the different route of infection. As some spreads by touching the skin and some by oral

route of meal and water (like epidemic dysentery) and exhibit its symptomatic effect and severity as per the intensity of symptoms (*Sushrut, Nidan Sthan 5/Shlok 32-33*).

Non-hygienic food and environmental insanitation are the main causes of infection and infestation. Over enjoy in intercourse liberates excessive fluid and heat, which destroys sperm vitality and loose capability to fertilize ova. Environmental abiotic and biotic factors play an important role in fertilization. Air pollution, poor oral hygiene, malnutrition, poverty and infections in respiratory channels are preliminary indications of tuberculosis. In old age, the respiratory infections are common. There are some common factors in communities such as air, water, place and time, which are when deranged and polluted result into epidemic diseases and destroy the community. Due to abiotic (air and intense heat) and biotic (deficient diet and restricting excretory urges) environmental factors, socio-pathogenic environmental factors (indulgence in excessive intercourse and excessive use of alcohol); the *vata* gets vitiated and *jatharagini* (metabolic energy) becomes feeble which results in dyspepsia. The vitiated *vata* pushes fluids (urine, sweat and unabsorbed gastrointestinal fluid) to colon, which disturb the metabolic energy and create malnutrition which results in reduced immunity leading to the mycobacterium to take easy route to spread by droplet infection (*Charak Vimansthanam*, Lesson 3/*Shlok 7-10*; *Charak Sutrasthanam*, Lesson 1/*Shlok 57*; *Charak Chikitsasthanam*, Lesson 19, *Shlok 05*).

PREVENTIVE MEASURES OF TUBERCULOSIS DESCRIBED IN AYURVEDA

The basic principle of Ayurveda reveals that immunomodulators are responsible to modulate immune responses in biological lives. The common immune related diseases in India are autoimmune diseases (such as rheumatic arthritis, leukoderma *etc.*), AIDS and tuberculosis. AIDS and tuberculosis are the causal factors mutually. Malnutrition leads to reduced growth and physiological activity as a result causing major loss in immunity thereby making the body prone to various infections so that use of immunomodulators becomes necessary in these situations, therefore Immunotherapy (*Rasayana* therapy) was suggested in Ayurvedic Science.

Precise observation reveals that Modern System of Medicines has also failed to control the hazardous episodes of epidemic diseases. Therefore, we have to look back to our natural therapies viz., Environmental therapy and Ayurveda to control the environmental atrocities. Ayurveda suggests treating the healthy populations before the appearance of disease and unhealthy populations by Ayurvedic treatment with supporting therapies. Thus, environmental diseases will not appear if, executed before their appearance. This is the primordial prevention to keep healthy our target community (*Charak II, Sharir-Sthanam*, 3/*Shlok 45 p 850*).

Working more than one's capacity to do work, to retain the biological pressures like urination and defaecation, excessive intercourse or loss of semen, odd combination of feeding, closed and congested habitats (*Charak II, Chikitsa-Sthanam*, 8/*Shlok 13 p 279*), reduce the immunity and thus results in emergence of tuberculosis.

IMMUNOMODULATION BY AYURVEDIC IMMUNOMODULATORS

Immunology is advancing during last four decades. Immunology is one of the most rapidly developing sciences of medical biotechnological researches and has great promises with regard to the prevention and control of various diseases (Plaeger *et al.*, 2003) such as the inflammatory dermatological diseases, gastrointestinal diseases, respiratory tract, joints and central organs. Moreover, infectious diseases are now considered as immunological disorders, while neoplastic diseases and organ transplantation and several autoimmune diseases may be immunosuppressive disorders (Rinku *et al.*, 2009). Thus immune system also involved in the etiology and patho-physiologic mechanisms of several diseases

(Muthaliar, 1998). But due to many unfavorable macro and micro environmental conditions, for immune response an external support is required, which can enhance the immune response in order to cope against the diseases, this support may be an immunomodulating medicines. Immunomodulation of the immune responses to alleviate the diseases was the basic and ground therapeutic view of Ayurvedic physicians; therefore, for the therapeutic view immunomodulation refers to any process in which an immune response is altered to a desired level as measured by *saptadhatu* and *tridosha* theory.

Being a growing interest in identifying and characterizing natural compounds with immunomodulatory activity in Medical world, the use of natural products in modern medicine has been suggested but exactly it is not implemented. A number of plant species with medicinal properties have been found in India. Indian medicinal plants are rich source of substances that induce para-immunity *i.e.*, the non specific immunomodulation, the essential granulocytes, macrophages, natural killer cells assist to complementary functioning. Immunomodulators play a key role in immunity of biological entities. Being non specific it is expected to give protection against different pathogens including bacteria, fungi, viruses *etc.* and several plant based medicines and synthetic medicines are potentially effective in the treatment HIV infection (Kadam *et al.*, 2010). Thus, Ayurvedic therapy becomes more potential along with adjuvant therapy with modern medicines.

Immunomodulators can be defined as a biological or synthetic originated substance, which having properties to modulate *i.e.* stimulate or suppress to any of the components of the immune system. In the beginning era of immunomodulation the results of intradermal application of BCG (Patard *et al.*, 1998) and systemic use of levamisole (Kurman, 1993) were significant. Some significant immunomodulators are represented by the discovery of cyclosporine (Walsch *et al.*, 1992); it is a potential immunosuppressant that was useful for graft rejection and autoimmune diseases. Immunosuppressant suppresses the unwanted immune responses. Immunostimulants are envisaged to enhance resistance of host against infections by enhancing the basal levels of immune response and impairment of immune response by immunotherapeutic process.

DOCTRINE OF AYURVEDA AND MANAGEMENT OF DISEASES AS AN ADJUVANT THERAPY

Same natural substances enhance the quality and potentiality of immune responses and different substances decrease and suppress the quality and potentiality of immune responses in the biological entities, while the mixed substances exhibit hybridizing properties (*Charak Samhita, Sutra-Sthan Lesson 1, Shlok 44/p15*). This concept of Charaka signifies the fact that owing to living properties, mostly the Ayurvedic medicines have dextro - configuration in their biochemical structures and genes are present in their natural form, while in allopathic medicines mostly substances present in levo-configuration, due to their synthetic mechanism of preparation, they cause side - effects and change the quality of life to worse and sometimes exhibit non - desirable expressions induced by immune responses in human being.

The dextro-rotation of the substances, Yem *et al.*, (1978) found beneficial in contrast to levo-rotation for the various physiological functions as studied on mice and cat. Many non-natural, synthetic drugs cause the severe side effects that were not acceptable except as treatments of last resort for terminal diseases such as cancer. The metabolites discovered in medicinal plants may avoid the side effect of synthetic drugs, because they must accumulate within living cells (El-Shemy *et al.*, 2007). Therefore, it is suggested that Ayurvedic anti-tubercular and immunomodulatory medicines should be used as an adjuvant therapy along with RNTCP treatment. This study infers that natural substances enhance or stimulate the immune responses and different substances decrease or suppress the immune responses. Thus, this stimulatory and suppressing quality of substances is very useful in Medical

Science. These substances may be natural or synthetic but living systems accept natural or Ayurvedic medicines easily. Although synthetic immunomodulators may modulate the immune responses but they may harm the body in many other ways. It concludes that our doctors in health system should be expert in Ayurvedic therapy with adequate knowledge of immunotherapy. Moreover, this approach of treatment may be very useful in the treatment of MDR, XDR tuberculosis, infection of HIV and immune related diseases.

Our living community is persistently facing pathogenic environmental attack round the clock as a result of which immune system is going to be feeble as our body's immunomodulators are not so potential to recover it, in such scenario *Aachar rasayana* (behavioral medicine) is essential to make our biological functioning strong, which is an indirect and invisible immunomodulator. Behavioral medicine (*Aachar rasayana*) induces balanced secretion of hormones and thereby enhances beneficial immune responses, rejuvenation of health, and prolongation of aging resulting into pleasing style of living.

A majority of patients with HIV reported having significant depressive symptoms. Poorer health status and perceptions, less social support, and lower spiritual well-being were related to significant depressive symptoms, while personal religiosity and having a religious affiliation was not associated when controlling for other factors. Helping to address the spiritual needs of patients in the medical or community setting may be one way to decrease depressive symptoms in patients with HIV/AIDS (Michael *et al*, 2006). Owing to involvement of religious activities, the psychological adjustment power enhances considerably as religious activities have been identified as a coping response in Africans-Americans and positive correlation was found between spirituality indicators and psychological adaptation (Prado *et al*, 2004 and Simoni *et al*, 2002). Bigger *et al* (1999) assessed the role of religious activities in psychological adjustment for women who are HIV infected. Cultural and religious approaches to prevent the HIV infection in Muslim countries are very common in practice (Hasnain, 2004). Consistencies of women with cultural traditions lead to healthier sexual behavior and reduced risk of HIV infection in rural areas of Karnataka and Rajasthan (O'Neil *et al*, 2004) in India. Charak pointed out in his *Samhita* that the *Aachar rasayana* is the adjustment with natural processes. It is an invisible medicine, which affects on hormonal system and enhances para-immunity (*Charak Samhita, Chikitsa-Sthan Lesson 1-4, Shlok 30-8/p58-9*). WHO also says that about three quarters of world population depends upon traditional remedies (Ansari and Inamdar, 2010).

Herbal medicines have been used by the Ayurvedic physicians from centuries for safety, efficacy and lesser side effect. Plants and its products are safe to use for long time as a drug and it is found to be an alternative way to cure the patients (Venkat Subramanian *et al.*, 2003). Ayurvedic physicians are using plants for prevention and control of various diseases. These plants have many therapeutic properties together with immunomodulatory property (Ranjith *et al.*, 2008). Three lakhs medicinal plants are recorded, out of seventy thousand angiosperms for treatment by different civilization all over the world (Pushpangadan, 2006). Some of the plants with established immunomodulatory activity are *Viscum album*, *Panax ginseng*, *Asparagus racemos*, *Tinospora cordifolia* etc. (Satakopan, 1994). Many fruits like Avocado are having beneficial effect on immune system along with their minor cyto-toxic property may be utilized for making natural immunomodulators (Kulkarni *et al.*, 2010).

CONCLUSION

Almost all animals have their own system to produce different immunomodulators at different moments but impaired immune systems unable to produce desired immunomodulators at the required moment and direction for desired immune responses an external support is required, which can modulate the immune response in order to cope against the diseases, it is concluded that the natural products intervention modulates the

immune responses to alleviate the diseases by altering the immune responses to a desired level as administered by *tridosha* theory (Ayurvedic doctrine).

Finally we concluded that the Indian medicinal plants are rich source of substances that is useful in the preparation of immunosuppressants, immunostimulants and immunotolerogens medicines. Immunosuppressants inhibit immune response in organ transplantation and autoimmune diseases. Immunostimulants increase the immune response, useful in infections, immunodeficiency (*e.g.*, AIDS) and cancers; and immunotolerogens induce tolerance and make the tissue non-responsive to antigen. Such intervention of herbal immunomodulators is useful in immune related diseases that modulate the immune responses to desired direction and level. Several plant based medicines with synthetic medicines are potentially effective in the treatment HIV infection (Kadam *et al.*, 2010). Thus, Ayurvedic therapy becomes more potential along with synthetic medicines.

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Experiences of Breast Cancer Women Who Had Undergone Chemotherapy: A Case Study

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Abstract

Introduction: Few qualitative studies explore patients' experience due to receiving chemotherapy agents. Issues, such as how such changes impact daily life and functioning, their consequences, and how patients respond to chemotherapy changes, have not previously been systematically addressed.

Objective: This study describes the experiences of breast cancer women who had undergone chemotherapy.

Design/Methodology: This is a descriptive research, case study approach. The data were collected through conversational semi-structured interview and observations. Data sources were the key informants. Holloway's Strategy was used subsequently to analyze the data.

Result: From the data emerged a trajectory consisting of four themes. The theme identified were the physical, social, spiritual, and emotional effects of chemotherapy to breast cancer women.

Conclusion: There is relief in that their stories were heard with appreciation, their lives gained more value, and meaning to people who matter most to them.

Recommendations: Breast cancer education/information campaign should be intensified. It should not only include the signs and symptoms for its early detection, the various treatment and their side effects and self-care to be practiced correctly but also to present these in a positive perspective through the stories of hope, strength, and love of the cancer survivors.

Keywords: Breast Cancer, Women, Chemotherapy, Experiences to Breast Cancer

Introduction

Breast cancer constitutes a major public health issue globally with over 1 million new cases diagnosed annually, resulting in almost 500,000 annual deaths and about 4.4 million women living with disease. In the Philippines, the Department of Health (2010) and the Philippine Cancer Society confirmed the high prevalence of breast cancer, stating in a report that breast cancer is the most common cancer, taking at least 16 percent of the 50,000 cases diagnosed with cancer. The disease is so common that one of every 13 Filipino women is expected to develop breast cancer in her lifetime. In 2015, there will be an estimated 60,290 new cases of breast carcinoma (American Cancer Society).

Treatment depends on the stage of the disease and includes surgery, radiation therapy, chemotherapy, hormone therapy, and biological therapy (Osteen, 2008). Chemotherapy is the use of drugs to kill cancer cells. However, when most people use the word chemotherapy they are referring specifically to drug treatments for cancer that destroy cancer cells by stopping their ability to grow and divide. Chemotherapy drugs work by attacking cells that are dividing quickly, which is why they work against cancer cells. But other cells in body, such as those in the bone marrow, the lining of the mouth and intestines, and the hair follicles, also divide quickly. These cells are also likely to be affected by chemotherapy, which can lead to side effects. The side effects of chemotherapy depend on the type of drugs, the amount taken, and the length of treatment. Some of the most common possible side effects include hair loss, mouth sores, loss of appetite, nausea and vomiting. Some women may have many side effects while others may have few.

Chemotherapy treatments are acknowledged worldwide as having detrimental physical and psychosocial effects to people with cancer. Also chemotherapy is associated with undesirable effects such as nausea, vomiting, anorexia, constipation, diarrhea, fatigue, mucositis, neuritis and bone marrow depression. The diagnosis of cancer has a considerable social impact on the patients and his or her family's life, and the addition of the collateral effects of chemotherapy may contribute to the patient's feeling of importance to react to the disease and fight for survival (<http://www.cancer.net>).

There is no universal experience of living with breast cancer and complying with chemotherapy, only individuals that have the experience can relate to it. It is interesting therefore to explore the experiences of breast cancer women to chemotherapy and the impact of these experiences to their daily living and functioning.

Objective of the Study

This study aimed to describe the experiences of breast cancer women who have undergone chemotherapy.

Methodology

This is a descriptive research, case study approach wherein the participants of the study were the breast cancer women who had undergone chemotherapy. An inclusion and exclusion criteria were made in the selection of the final participants of the study.

Inclusion Criteria: (1) Breast cancer women who had completed IV chemotherapy, regardless of the duration, age between 25 to 65 years old. (2) Breast cancer women who have or have not undergone adjunctive treatment like radiation therapy. The sources of the data were the key informant interviews, observations, and audio-tape. To describe the experiences of the breast cancer women, the Holloway's Strategy was used in analyzing data.

Results

1. The participants are on their late adulthood, married, aged fifty-two to sixty years old, and with monthly income of more than forty thousand pesos.
2. All are bachelor's degree holder, one of them is a master's degree, wherein most of them are educators and the two others are managers.
3. Most of them have no history of cancer.
4. Most of the participants had undergone six sessions of IV chemotherapy. On the other hand, one had eight sessions while the other one had three sessions.
5. Upon analysis of the data, four themes were identified based on the effects of chemotherapy to the participants which include physical, social, spiritual, and emotional.
6. The top five physical effects of IV chemotherapy were nausea and vomiting, alopecia, loss of appetite and weight loss, body weakness, and dryness of the skin. All of the participants have used strategies to cope with the physical effects of chemotherapy such as eating of dry crackers and fruits such as banana, apple, and oranges. They applied lotion and moisturizer and increased their fluid intake. Most of them took rest after chemotherapy and had taken multivitamins as prescribed. In terms of hair loss, all of them had worn scarf, wig, and hats after the first session of IV chemotherapy.
7. In terms of social aspect, they valued more of their relationships with families and colleagues. Some of them had established rapport with other cancer clients who had undergone IV chemotherapy. They had minimized going to crowded places and they prefer not to attend social activities which they previously do, like attending birthdays and weddings. Two of the breast cancer women involved in breast cancer support group.
8. In terms of emotional aspect, most had experienced disturbed body image because of hair loss. They were anxious on the outcome and side effects of IV chemotherapy. All of them resorted to diversional activities such as listening to music, watching movies, and reading inspirational books.
9. All of the breast cancer women stated that they had become more spiritual after their cancer diagnoses and when they were on chemotherapy. They cited that praying, reading of inspirational books, and the help of pastors and their church families alleviated emotional distress and all of them realized the importance of strengthening their faith.

Conclusions

1. The physical changes brought by chemotherapy did not hinder them to continue their lives, instead they find ways to manage such changes.
2. The emotional and spiritual aspects gave them hope and will to survive which lead to full recovery. Moreover, with the social aspect, they valued their relationships with families and colleagues.
3. Breast cancer women experiences to chemotherapy gave them sense of comfort, belonging, strength, and hope to live longer. It is therefore important for these women to have their stories heard, their lives valued, and their issues validated by others.

Recommendations

It is therefore recommended that breast cancer women education should include information about treatment and side effects, as well as self-care behaviors that might minimize the adverse effects of chemotherapy, decrease symptom distress, and perhaps improve quality of life. The presence of nurses would provide help among breast cancer women with active listening, assistance with discovery of meaning, and bearing witness to their illness. In addition, it is recommended that effective and specific interventions for specific side effects of chemotherapy. Further, health educators should help in implementing and disseminating

the programs and needs of breast cancer women to chemotherapy. It is further recommended that this study could be used as a pilot study for a larger group of breast cancer women or any types of cancer, which would further explore their experiences to chemotherapy.

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FATHER'S ROLE IN BREASTFEEDING PRACTICE

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ABSTRACT

In Indonesia, based on data from the National Socioeconomic Survey in 2007-2008, coverage of exclusive breastfeeding showed a decrease, 62.2% in 2007 to 56.2% in 2008. In 2007 to 2010, Depok had not reached the target of 80 %. The lowest Scope of exclusive breastfeeding since 2008-2010 in Depok was at Harjamukti health center. One of the factors that affect was the role of the father in exclusive breast-feeding practices. Based on the background, this study aimed to determine the relationship characteristics, attitudes, knowledge, and the role of father to the practice of exclusive breast-feeding in infants aged 6-12 months at Harjamukti Village. The research was conducted in July-September 2011 using cross-sectional study design. Sample consisted of 91 people taken by total sampling.

The results showed that there were 59 (64.8%) respondents who did not give an exclusive breastfeeding. The result of chi square test, father's age factor ($p=0.025$), father's knowledge ($p=0.014$), father's attitudes ($p=0.004$), mother's age ($p=0.016$), mother's knowledge ($p=0.007$), and mother's barriers to breastfeeding ($p=0.006$) had a meaningful relationship with the practice of exclusive breastfeeding. The most known factors was the father's knowledge (OR 2,637; 95% CI 0,911-7,628) associated with confounding variable that were mother's age and mother's knowledge.

It's recommended that mothers have positive attitudes through knowledge on family role of breastfeeding, enhancing the father role and attitude to take care the baby, and being proud of his wife who are in period of breastfeeding.

Key words: parent's characteristics, attitudes, knowledge, role of father, exclusive breastfeeding

INTRODUCTION

Health development is part of the national development that aims to raise awareness, willingness and ability to live a healthy life for everyone in order to realize the health of society as high. Unbalanced nutritional status can affect nutritional status. Nutritional problems in Indonesia and in developing countries generally still dominated by issues Protein Energy Malnutrition, anemia iron problems, Iodine deficiency disorders problems, Lack of Vitamin A and especially obesity in large cities.¹

Basic Health Research (RISKESDAS) data in 2010 showed breastfeeding in Indonesia is concerned, the percentage of exclusively breast-fed infants up to 6 months only 15.3 percent. This is due to public awareness in promoting breastfeeding is still relatively low. In fact, breast milk is rich in carotenoids and selenium, so that breastfeeding plays a role in baby's immune system to prevent various diseases. Every drop of breast milk also contains minerals and enzymes and antibodies for disease prevention is more effective than formula milk.²

In Indonesia, in 2010, the rate of breastfeeding is also lacking. According to data from the National Socioeconomic Survey (SUSENAS) in 2007-2008 coverage of exclusive breastfeeding in infants aged 0 – 6 months in Indonesia showed a decrease of 62.2 percent in 2007 to 56.2 percent in 2008. Meanwhile, the provision coverage of exclusive breastfeeding in infants up to six months fell from 28.6 percent in 2007, to 24.3 percent in 2008, while the number of babies under six months are fed formula increased from 16.7 percent in 2002 to 27.9 percent in 2003.³

In Depok, Harjamukti public health centre shows the lowest coverage of exclusive breastfeeding since 2008-2010 which in 2008 amounted to 39.22%, in 2009 amounted 9.02% and in 2010 amounted to 43.46%, where the figure is still far from the target of RPJMN (National Medium Term of Development Plan) in 2010, the target coverage infants aged 0-6 months exclusively breastfed by 65%. As well as targets on achievement of Minimum Service Standards in 2010 that infants exclusively breastfed by 80%, and the target Depok City Health Department in 2010 that infants exclusively breastfed by 80%.⁴

All support for nursing mothers, support of the father is the most significant support for the mother. Fathers can play an active role in the success of exclusive breastfeeding because the father will also determine the smoothness reflex (milk let-down reflex) that is strongly influenced by the mother's emotional. Dad simply provide emotional support and practical assistance.⁵

Father also known to participate in the decision-making process concerning infant feeding patterns,^{6,7} involved in the affairs of childcare,^{7,8} as well as being a risk factor for formula feeding practice.⁶

Until now research on the effect of exclusive breastfeeding (EBF) particular characteristics, knowledge, attitudes, and the role of fathers in exclusive breastfeeding in Indonesia have not been much explored. Knowledge about breastfeeding need to be explored more deeply as a form of father attention support the success of exclusive breastfeeding or being a Breastfeeding father to boost intelligence and health of children. The problem underlying this study to determine the extent of father's knowledge, attitudes, and the role of the father in the practice of exclusive breastfeeding. The role of the father optimally can affect the success of breastfeeding exclusively.

MATERIAL AND METHODS

The type of this research is descriptive analytic study with cross sectional method. This study was conducted in Harjamukti Public Health Centre, Depok with a population is couples who have babies aged 6-12 months as many as 157 people. Data were collected in July-August 2011. The sample in this study is that couples who have babies aged 6-12 months with a sample of 91 infants. Sampling in this study conducted by sampling total. The research instrument used is a questionnaire that was conducted by examining the validity and reliability first.

The primary data is done after test the questionnaires through interviews with respondents using a questionnaire that has been prepared by the reduction and modification of Juherman questionnaire entitled Knowledge, Attitude, and the role of father to Exclusive breastfeeding.⁹ To test the validity and reliability of the instrument be tested questionnaires to 20 pairs fathers and mothers who have children 6-12 months in Sawangan Public Health Centre. The secondary data is used as a support of primary data in the form of a list of names around the father of a baby aged 6-12 months in Harjamukti village, Depok City, in 2011.

The analysis used is the analysis of univariate, bivariate to see the relationship between the characteristics of the father, the role of the father, the father attitude, knowledge of the father, mother's characteristics, mother's knowledge, mother's attitudes, barriers to breastfeeding, and family support, and multivariate multiple logistic regression test because of variables in this study is categorical. The model used in this test is a risk factor model, because the modeling is done validly relationship one major variable and dependent variable control some variables confounding (mother's characteristics, mother's knowledge, mother's attitudes, barriers to breastfeeding, and family support).

RESULT

Table 1. Characteristic of Respondents Distribution

No	Variable	Category	N	%	No	Variable	Category	N	%
Mother's Characteristic					Father's Characteristic				
1	Age	>30 years	59	64,8	8	Age	< 33 years	50	54.9
		≤ 30 years	32	35,2			≥33 years	41	45.1
2	Education	Low	16	17,6	9	Education	Low	10	11.0
		Medium	66	72,5			Medium	67	73.6
		High	9	9,9			High	14	15.4
3	Occupation	No	73	80,2	10	Occupation	Unemployment	2	2.2
		Yes	18	19,8			Informal Sector	83	91.2
4	Breastfeeding's Barriers	No	55	60.4			Formal Sector	6	6.6
		Yes	36	39.6	11	Outlay	Low	40	44
5	Family's Support	High	55	39.6			High	51	56
		Low	36	60.4	12	Attitude	Negative	40	44
6	Knowledge	Low	29	31.9			Positive	51	56
		High	62	68.1	13	Role	No	45	49,5
7	Attitude	Low	38	41.8			Yes	46	50,5
		High	53	58.2	14	Knowledge	Low	37	40,7
							High	54	59.3

In Table 1 looks majority of 64.8% of mothers don't exclusively breastfeed their babies, the majority of mothers who breastfeed their age > 30 years old (64.8%), with secondary education (72.5%), don't work (80.2%). Mothers who breastfeed mostly don't have breastfeeding barriers (60.4%), lack of family support (60.4%), have good knowledge (68.1%), and have a good attitude (58.2%). Most of the fathers of infants aged less than 33 years old (54.9%), secondary education, namely junior and senior high school graduates (73.6%), work in informal sector (91.2%), and high outlay (56.0%). On average the father of the baby have positive attitude about exclusive breastfeeding (56.0%), contributed positively role to exclusive breastfeeding (50.5%), and have high knowledge (59.3%).

Table 2. Exclusive Breastfeeding Practice Distribution

Practice	Yes		No		Total	
	N	%	N	%	N	%
Exclusive Breastfeeding	32	35.2	59	64.8	91	100

Table 2 depicts a mother who does not perform any practical EBF almost two times higher than EBF mothers (35.2%)

Table 3. Mother's Characteristics Distribution and Exclusive Breastfeeding Practice

Variable	Category	Exclusive Breastfeeding				Total		OR (95% CI)	P value
		Non EBF		EBF					
		N	%	N	%	N	%		
Age	>30 years	44	74.6%	15	25.4%	59	100	3.324 (1.340-8.247)	0.016
	≤30 years	15	46.9%	17	53.1%	32	100		
	Total	59	64.8%	32	35.2%	91	100		
Education	Low	11	68.8%	5	31.2%	16	100		0.922
	Medium	42	63.6%	24	36.4%	66	100		
	High	6	66.7%	3	33.3%	9	100		
	Total	59	94.5%	32	35.2%	91	100		
Occupation	No	46	63.0%	27	37.0%	73	100	0.655 (0.210-2.040)	0.586
	Yes	13	72.2%	5	27.8%	18	100		
	Total	59	94.5%	32	35.2%	91	100		
Breastfeeding's Barriers	Yes	30	83.3%	6	16.7%	36	100	0.223 (0.080-0.621)	0.006
	No	29	52.7%	26	47.3%	55	100		
	Total	59	64.8%	32	35.2%	91	100		
Family's Support	High	23	63.9%	13	36.7%	36	100	0.934 (0.388-2.247)	1.000
	Low	36	65.5%	19	34.4%	55	100		
	Total	59	64.8%	32	35.2	91	100		
Attitude	Low	25	86.2%	4	13.8%	29	100	5.147 (1.601-16.550)	0.007
	High	34	54.8%	28	45.2%	62	100		
	Total	59	64.8%	32	35.2%	91	100		
Knowledge	Low	29	76.3%	9	23.7%	38	100	2.470	0.086

High	30	56.6%	23	43.4%	23	100	(0.980-6.226)
Total	59	64.8%	32	35.2%	91	100	

From Table 3, chi square test results showed that means mothers aged ≥ 30 years 3,324 times likely not to give exclusive breastfeeding than mothers aged < 30 years. Barriers to breastfeeding mothers have 0,223 times likely not to give exclusive breastfeeding than mothers who do not have the breastfeeding barriers. Mothers who are have low knowledge 5,147 times likely not to give exclusive breastfeeding than mothers with high knowledge.

Table 4 Father's Characteristics Distribution and Exclusive Breastfeeding Practice

Variable	Category	Exclusive Breastfeeding				Total		OR CI 95%	P value
		Non EBF		EBF		N	%		
		N	%	N	%				
Age	< 33 years	38	76.0%	12	24.0%	50	100	3.016 (1.236-7.361)	0.025
	≥33 years	21	51.2%	20	48.8%	41	100		
	Total	59	64.8%	32	35.2%	91	100		
Education	Low	4	40.0%	6	60.0%	10	100		0,142
	Medium	47	70.1%	20	29.9%	67	100		
	High	8	57.1%	6	42.9%	14	100		
	Total	59	64.8%	32	35.2%	91	100		
Occupation	Unemployment	2	100.0%	0	.0%	2	100		0.340
	Informal Sector	52	62.7%	31	37.3%	83	100		
	Formal Sector	5	83.3%	1	16.7%	6	100		
	Total	59	64.8%	32	35.2%	91	100		
Outlay	Low	24	60.0%	16	40.0%	40	100	0.686 (0.288-1.630)	0.526
	High	35	68.6%	16	31.4%	51	100		
	Total	59	64,8	32	35,2	91	100		
Attitude	Negative	33	82.5%	7	17.5%	40	100	4.533 (1.696-12.116)	0.004
	Positive	26	51.0%	25	49.0%	51	100		
	Total	59	64.8%	32	35.2%	91	100		
Role	No	29	64.4%	16	35.6%	45	100	0.967 (0.409-2.286)	1.000
	Yes	30	65.2%	16	34.8%	46	100		
	Total	59	64.8%	32	35.2%	91	100		
Knowledge	Low	30	81.1%	7	18.9%	37	100	3.69 (1.385-9.857)	0.014
	High	29	53.7%	28	46.3%	54	100		
	Total	59	64.8%	32	35.2%	91	100		

From Table 4 shows father aged <33 years 3,016 times likely not to give exclusive breastfeeding compared to fathers aged ≥ 33 years. Fathers who act negatively 4,533 times likely not to give exclusive breastfeeding compared to fathers who are positive. Fathers that have low knowledge 3,695 times likely not to give exclusive breastfeeding compared with fathers who have good knowledge.

Table 5. Multivariate Analysis Result Between Father's Knowledge, Mother's Knowledge And Mother's Age With The the Practice of Exclusive Breastfeeding (The Last Models)

Variable	B	Wald	P wald	OR CI 95%
Father's Knowledge	0.969	3.199	0.074	2.637 (0.911-7.628)
Mother's age	1.363	6.770	0.009	3.908 (1.400-10.909)
Mother's Knowledge	1.701	6.798	0.009	5.481 (1.526-19.689)
-2 log likelihood = 96.789 ^e				
Negelkerle	R	G = 0.208 Square	P value =	0.000
				0.286

Father's knowledge variable has a value of coefficient B = 0,969, this indicates that the respondent's behavior will change by 2,637 times not to give exclusive breastfeeding after control mother's age and mother's knowledge. Based on the results of the analysis of the final model known value Negelkerle R Square of 28.6%, meaning that the variable knowledge of the father can explain the incidence of exclusive breastfeeding amounted to only 28.6% and the remaining 71.4% is explained by other variables not examined in this study. It can be concluded that the most associated factors with exclusive breastfeeding is father's knowledge (2,637) with confounding variables such as mother's age and mother's knowledge.

DISCUSSION.

This study has some limitations include cross sectional design that can't see a causal relationship, recall bias, in addition to the limited manpower so that only some of the variables studied.

From the results illustrated that the percentage of EBF showed only 35.2% of the 91 respondents who provide their babies EBF and as many as 64.8% are not exclusively breastfed. Where most of the baby's mother gives food like formula milk (49%), porridge and formula (4%), bananas (2%), bananas and milk formula (2%), water (2%), pap (2%), milk formula and slurry (1%), bananas and porridge (1%), biscuits (1%), porridge and biscuits (1%). The Reasons they don't do exclusive breastfeeding like mothers feel less milk production, breastfeeding constraints such as nipple down, the milk does not come out or get out a little every few days after birth, giving caesar as a baby entry in incubator, give formula milk, and some foods such as bananas, porridge, and water.

The results of bivariate analysis showed that there are several variables related to mother's characteristics are age variable, knowledge, and breastfeeding barriers. As for the characteristics of the father is knowledge variable, age, and attitude.

Age affects the perception and mindset of a person. The increasing age will be growing perception and thought patterns, so that the knowledge gained is getting better.¹⁰ In this study, the higher of father's age is also accompanied by a level of knowledge that is better. The low practice of breastfeeding initiation and breastfeeding practices related to age, education, and father's occupation.^{7,11}

It is also in line with research obtained there is relationship between mother's age factor with a value of $p = 0.039$ to the exclusive breastfeeding practice. So that it can be concluded that the age factor is a factor that plays a role in the practice of breastfeeding.¹²

And also which states that father supports the practice of breastfeeding when the father has a good knowledge about matters related to breastfeeding, have a good relationship with the mother, and is also involved in the tripartite relationship in harmony breastfeeding pattern (between father, mother, and baby). If the father understand information about exclusive breastfeeding and proper feeding techniques, the father can assure, assist and cooperate with the mothers about how to give EBF.⁷

The test results also show that there is a relationship between knowledge of highly educated father with the practice of exclusive breastfeeding. Based on the results of multivariate analysis showed that the respondent's behavior will change by 2,637 times to not give exclusive breastfeeding after control the mother's age and mother's knowledge. This study is in line with research which states that there is a relationship between knowledge, attitudes, and father support with exclusive breastfeeding.¹³

The research also found that there is a relationship between father who has a good attitude with exclusive breastfeeding in which the mother who had less attitude towards breastfeeding has three times higher chance to not give exclusive breastfeeding. This is probably due to a father who had less attitude about breastfeeding is not going to motivate mothers to breastfeed exclusively. Father's involvement in decision-making about how to feed children and have a positive attitude towards life of marriage affect the practice of exclusive breastfeeding.⁷ It is also described that by creating a positive attitude about breastfeeding and breastfeeding can increase the success of breastfeeding exclusively.¹⁴ Furthermore, father has an important role in supporting breastfeeding, especially if the father has a role or a positive attitude towards breastfeeding.¹⁵ Father's involvement in making decisions about how to feed children and a positive attitude to married life affect the practice of EBF. The strong correlation between feeding method with an attitude indicates that the attitude of the father is a proxy that must be to the attitude of mothers to breastfeed or not to breastfeed exclusively.⁷

Knowledge is very important role in providing the formation of attitudes and will be followed by actions in terms of the implementation of breastfeeding. If the mother already knows the stimulus or health object on the breastfeeding, lactation management, and advantages of breast milk, then held an assessment of what he knows will give rise to behavior of exclusive breastfeeding.¹⁶

The loss of the opportunity to obtain exclusive breastfeeding, more than 5 million children under five suffer from malnutrition and 1.7 million children under five suffer from malnutrition. This is due to lack of knowledge about breastfeeding. While the results of analysis showed that there is a relationship between mother's knowledge that have secondary education with the practice of exclusive breastfeeding.¹⁶ It is also consistent with the results of research which concluded that there is a relationship between mother's knowledge about exclusive breastfeeding with exclusive breastfeeding.¹⁷

In this study, in accordance with states that approximately 40% of American women choose not to breastfeed their babies, and many who experience breast pain and swelling. Milk leakage, swelling, and breast tenderness peaked at 3 to 5 days postpartum. Up to 10% of women reported severe pain up to 14 days postpartum, and a quarter to a half of women using breast analgesia for pain during childbirth. Women who do not want to breastfeed should be convinced that milk production is not a major problem. During the stage of swelling, breast tenderness and must be supported by a bra that fits. To relieve the pain, it may take an ice pack and oral analgesics for 12 to 24 hours. The parkland Hospital, commonly used breast corset, instead of giving the hormone to suppress lactation in women who do not want to breastfeed.

ADVICE

Dissemination of information related to exclusive breastfeeding to the whole society, especially mothers and fathers to provide counseling to pregnant and nursing mothers and women of childbearing age. Besides the need for surveillance in private practice midwives not to give formula in newborn babies, to give appropriate information about breastfeeding and about breastfeeding, to encourage mothers to breastfeed exclusively.

The family complete knowledge about breastfeeding, give praise, spirit and encouragement, fellow nursing mothers share experiences, exchange information, encouragement. The father gives support to accompany his wife while breastfeeding, took care for the baby, giving words of praise/encouragement, complete knowledge about breastfeeding, as well as the proud wife who are in a period of breast-feeding to the baby.

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Fatty liver MRS analysis as the feeding period of high fat diet 60% in rat

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1. Introduction

Non-alcoholic fatty liver is a common disease, from which 10-24% of the world's population suffers. It progresses to chronic liver disease such as liver fibrosis and cirrhosis (1-2). In the USA, 32-37% of nonalcoholic fatty liver disease (NAFLD) patients progressed to liver fibrosis in 3-6 years, and 12% of them experience liver cirrhosis in 8-10 years (3-5). NAFLD is usually associated with a metabolic syndrome (MetS) such as type 2 diabetes, insulin resistance, hypertension, and dyslipidemia, which are accompanied by abdominal obesity.

Liver biopsy is accepted as a golden standard for diagnosing NAFLD. However, the method is not only invasive but also clinician-dependent, which often causes sampling errors(6). Magnetic Resonance Spectroscopy (^1H -MRS) is widely used to diagnose NAFLD non-invasively. MRS is a non-invasive and in-vivo method with high sensitivity and specificity. The total lipid (TL), total saturated fatty acid (TSFA), total unsaturated fatty acid (TUSFA), total unsaturated bond (TUSB), and polyunsaturated bond (PUSB) can be calculated with the liver fatty acid analysis using ^1H -MRS through the signal integration of the lipid methyl protons ($-\text{CH}_3$; 0.9 ppm), methylene protons [$(-\text{CH}_2)_n$; 1.3 ppm], allylic protons ($-\text{CH}_2-\text{C}=\text{C}-\text{CH}_2-$; 2.0 ppm), diallylic protons ($=\text{C}-\text{CH}_2-\text{C}=\text{C}-$; 2.8 ppm), and methene protons ($-\text{CH}=\text{CH}-$; 5.3 ppm)

The purpose of this study is to observe the change the fatty acid depending on the high fat diet feeding period.

2. Methods and Results

The animal experiments were in accordance with the National Institutes of Health Guidelines for Animal Research "Guide for the Care and Use of Laboratory Animals" and were conducted according to protocol approved by the Korea Basic Science Institute (KBSI) committee (KBSI-AEC 1305).

2.1 Fatty liver rat Model

Ten male, 8-weeks-old, Sprague-Dawley weighing 100-150 g were housed with ad libitum access to water with weight matched. The base-line MRI and MRS data were already acquired before fed the HF diet 60% and acquired MRI and MRS data every 2weeks for 8weeks as the schedule of ^1H -MRS experiments.

2.2 In vivo Liver ^1H MRS

We use a point-resolved spectroscopy (PRESS) sequence for localized ^1H -MRS with $\text{TR} = 1,500$ msec, $\text{TE} = 35$ msec, $\text{NEX} = 64$ and total scan time = 10 minute. A $8 \times 8 \times 8 \text{ mm}^3$ voxel was placed within a homogeneous liver parenchyma to avoid large blood vessels

2.3 MRS Analysis

The ^1H -MRS raw data were analyzed using LCModel software (version 6.3-1H, Stephen W. Provencher). The ^1H -MRS raw data were analyzed using LCModel software (version 6.3-1H, Stephen W. Provencher). The integrating areas under peaks were measured as follows: signal integrals in lipid methyl protons ($-\text{CH}_3$; 0.90 ppm), methylene proton ($(-\text{CH}_2)_n$; 1.30 ppm), allylic protons ($-\text{CH}_2-\text{C}=\text{C}-\text{CH}_2-$; 2.02 ppm), diallylic protons ($=\text{C}-\text{CH}_2-\text{C}=\text{C}-$; 2.77 ppm), and methane protons ($-\text{CH}=\text{CH}-$; 5.30 ppm). In addition, for relative quantification, total lipid ($(-\text{CH}_2)_n$ / noise) (TL), total saturated fatty acid (TSFA), total unsaturated fatty acid (TUSFA), total unsaturated bond (TUSB), and polyunsaturated bond (PUSB) were quantified by separating each peak area of $(-\text{CH}_2)_n$, $-\text{CH}_2-\text{C}=\text{C}-\text{CH}_2-$, $=\text{C}-\text{CH}_2-\text{C}=\text{C}-$, and $-\text{CH}=\text{CH}-$ by $-\text{CH}_3$.

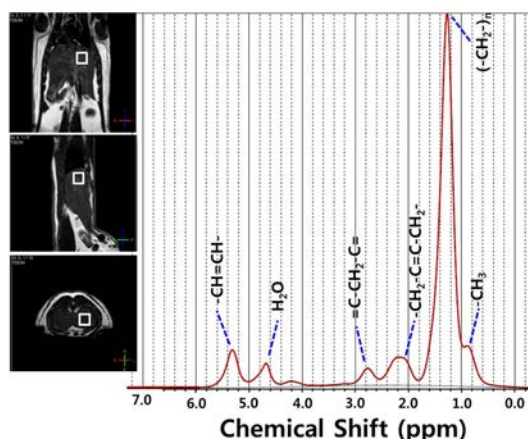


Fig. 1. Typical liver ^1H proton magnetic resonance spectroscopy spectra from 8 weeks after start of high fat diet 60% administration, with a typical voxel ($0.8 \times 0.8 \times 0.8 \text{ cm}^3$) placement shown in the T2 weighed axial, sagittal and coronal turbo spin images. The water (H_2O); 4.7 ppm) signals were effectively suppressed in the spectra

2.4 Statistical Analysis

A Wilcoxon signed-rank with kruskal-wallis test was used to compare the each week's fatty acid mean quantification with a significance level of $p < 0.05$ and the results were expressed as mean $\pm$ standard deviation.

2.5 Results

The highest mean TL value was measured 8 weeks (0.278 ± 0.10) after the administration of the high-fat diet 60%, followed by Weeks 6, 4, 2, and 0. The TL value at Week 2 was 0.201 ± 0.07 , which was insignificantly lower than that at Week 8 ($p = 0.123$). The TL value increase at Week 2 from the baseline Week 0 was the most significant among all the increases ($p = 0.005$). The mean increase in the TL values at Weeks 2 and 4 was also significant ($p = 0.017$). The concentration level (16.99 ± 2.29) of the TSFA at Week 4 was the highest. A statistically significant mean difference in the levels was observed only between the baseline and Week 2 ($p = 0.043$). No significant difference in the concentration levels of TUSFA, the TUSB, and the polyunsaturated bond PUSB was observed across the weeks.

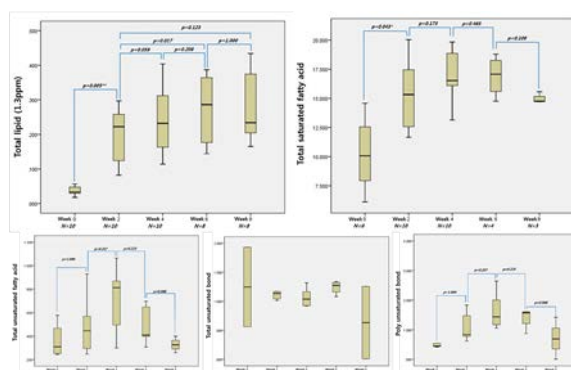


Fig. 2. The mean differences from the fatty acid comparisons of each week's mean quantification. The total lipid and TSFA showed the highest concentrations on week 8 and week 6, respectively. There was no significant mean difference in TUSFA, TUSB, and PUSB for any of the weeks.

3. Conclusions

The administration of the high-fat diet to the rats gradually increased the TL and TSFA levels in the liver parenchyma, after which the liver parenchyma became saturated. In the meantime, the levels of TUSFA, TUSFB, and PUSB did not show statistically significant changes.

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Gintonin from Korean Red Ginseng suppresses inflammation in RAW 264.7 cells by targeting NF- κ B and MAPK pathways and revives the levels of mir-34a and mir 93

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Abstract:

The potential benefits of ginseng range from energizing the body to providing the longevity. In the past two years, a new ginseng compound has been discovered which functions via LPA receptors and is different from other ginsenosides due to its specific signal transduction. The compound called Gintonin has been tested for its LPA receptor signal transduction and efficacy in Alzheimer's disease neuropathies. Here we investigated the anti-inflammatory activity of gintonin in vitro on murine macrophages RAW 264.7 cells. The MTT assay for dose dependent concentrations of gintonin show no cytotoxicity and Nitric oxide concentration show a decreasing trend with increase in dose. The mRNA expression of proinflammatory cytokines like IL-1 β , IL-6, iNOS, COX-2 and TNF- α show the same trend like that of Nitric oxide production. In addition to this the western blot analysis show the same trend for protein expression of COX-2 and iNOS like nitric oxide production confirming the anti inflammatory effects of gintonin. For the signal transduction, gintonin followed classical NF- κ B and MAPK pathways. Gintonin has also been found to revive the levels of mir-34a and mir-93 in LPS stimulated RAW 264.7 cells further validating the importance of anti- inflammatory effects of gintonin in these relatively new microRNAs to inflammation.

Key words: Gintonin, inflammation, proinflammatory cytokines, JNK pathway, ERK

Introduction:

Inflammatory cascade besides other cells includes macrophages and neutrophils, which recognize invading infectious pathogens via Toll-like receptors (TLRs). These toll like receptors are specific molecules that specifically recognize Pathogen associated molecular pattern (PAMP) [1-3], For example TLR2 recognizes lipopeptides, TLR4 associated with Lipopolysaccharides (LPS) and TLR 3, 7, 8 and 9 are involved in the signaling of microbial nucleic acids. Lipopolysaccharides when bind to TLR 4 causes the activation of inflammatory cascade inside cell by induction of various proinflammatory cytokines like iNOS, COX-2, TNF- α , IL-6, IL-1 β and so on [4]. Also this association leads to the activation of mitogen activated protein kinase (MAPK), Nuclear Factor- kappa B (NF- κ B) and Phosphoinositide-3-kinase (PI3K/AKT) pathways. There are various signaling factors for MAPK pathway like p38, Extracellular signal regulating kinase (ERK) and c-Jun N-terminal kinases (JNK). In case of NF- κ B pathway, IKK ubiquitinates and disassociates I κ B/ α which exposes NF- κ B to translocate to nucleus where it causes the activation of inflammatory genes of interest like iNOS, COX2, IL-6, IL-1 β and TNF- α [5]. Activation of these genes then initiate inflammation in a very systemic manner depending on the dose of the ligand attached to TLR-4 receptor. In other words, more level of LPS, more intensified is the inflammatory response.

Ginseng is a diversely unique herbal medicine that has been used since centuries as a vitalizing and vigorating tonic most commonly in countries like China, Japan and Korea. However the marvelous effects exerted by ginseng in different systems of the body are now also being hailed by most developed countries. Ginseng is particularly known for its mood elevating and longevity properties and as a wonder herbal agent for stress associated anomalies. Ginseng like many other herbal agents consists of diverse chemical constituents called ginsenosides (also termed as ginseng saponins), polyacetylenes, polysaccharides and other minor components [6]. Out of all of these components, it is the ginsenosides that are considered as potential agents for exhibition of ginseng's pharmacologic and therapeutic characteristics. Recently another ginseng compound called Gintonin has been discovered. It differs from other ginsenosides in terms of G-protein signal transduction via LPA receptors and ability to mobilize calcium channels in xenopus oocytes at low concentrations [6, 7]. Previous studies have shown different methods of extraction for gintonin, its LPA significant signal transduction and efficacy in certain neuropathies.

However until now, the effects of gintonin in inflammation as an inflammatory suppressor had not been explored.

MicroRNAs are 21–22-nucleotide (nt), non-coding small RNAs which are originated from the genomic loci of eukaryotic cells. These MicroRNAs have been discovered recently and had been found to possess potent effects on almost all bodily nervous and non-nervous functions. The expression of MicroRNAs themselves is often subjected to regulation by transcriptional factors in particular response to cellular stimuli [8]. The formation of MicroRNAs occurs when the enzyme Drosha processes the regular MicroRNA into pre-mirs which are then are exported to cytoplasm where enzyme dicer processes them into mature MicroRNA. Now these mature MicroRNAs along with dicer and argonaute proteins forms MicroRNAs induced silencing complex. This MicroRNA silencing complex through base pairing, results in repression of translation of certain protein or degradation of target gene mRNAs [9]. Up till now thousands of MicroRNAs have been discovered. In our study we selected member of mir-34 family, which is mir-34a along with mir-93. Until now there are many studies being carried out in validation of these two MicroRNAs for tumor suppression, in inflammation produced by LPS, in adipocyte differentiation, stem cell differentiation and proliferation and other neural conditions [10-13]. However we selected these two MicroRNAs primarily because in the

section of inflammation many MicroRNA candidates are being studied but these two are relatively new to being discovered in any natural product like ginseng.

Here in our study, we report for the first time the microRNAs being involved in the anti-inflammatory activity exerted by gintonin and general anti-inflammatory effects of gintonin invitro in RAW 264.7 cells via the expressions of different inflammatory mediators like iNOS, TNF- α , COX-2, IL-6 and IL-1 β . The probable pathway of anti-inflammatory action of gintonin via NF- κ B and MAPK is also being explored. Our results show that Gintonin is a potent anti-inflammatory agent with specific MicroRNAs in particular context to anti-inflammatory response. This research is valuable for Gintonin expression for relatively new and unusual MicroRNAs to inflammation.

Materials and methods:

Materials:

Dulbecco's modified Eagle's medium (DMEM) [Daegu, Korea], fetalbovine serum (FBS) (WelGene Co., Korea), streptomycin and penicillin (Lonza, MD, USA), TRIZOL® reagent (Invitrogen, Carlsbad, CA, USA), oligodT (Bioneer oligo synthesis), iNOS, COX-2, TNF- α , IL-6 and IL-1 β primers were obtained from Bioneer, LPS (Escherichia coli 055:B5) and 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazoliumbromide (MTT) were purchased from Sigma. Specific antibodies used against phospho- and/or total form of ERK, JNK, p38, IKK α/β , I κ B, NF κ B p65, iNOS, COX-2, β -actin and secondary antibody rabbit HRP linked antibody were purchased from Cell Signaling Technology. All other reagents and chemicals were obtained from sigma Aldrich

Cell culture:

Murine macrophage cell line RAW 264.7, originating from American Type culture collection were cultured in Dulbecco's Modified Eagle Medium (DMEM) supplemented with 8% Fetal Bovine Serum (FBS) (WelGene Co, Daejeon) and 100 IU/ml penicillin and 100 μ g/ml streptomycin sulfate (Lonza, MD, USA). The incubating conditions were humidified 5 % CO₂ at 37 °C.

Nitric oxide (NO) assay:

Nitric oxide was measured by the method based on Griess reaction assay. Briefly, RAW 264.7 cells were seeded in 96 well plate and incubated with or without LPS (0.1 μ g/ml) in absence or presence of Gintonin at indicated concentrations for 18 h. The cell culture supernatants (100 μ l) were mixed with griess reagent (0.2 % naphthylethylenediamine dihydrochloride, and 2 % sulphanilamide in 5 % phosphoric acid) in DDW at equal volumes and incubated for 5 min at room temperature. The absorbance in each well was then analyzed at 540 nm in microplate reader (Versamax) thereafter.

Cell Viability (MTT) assay:

To determine the cytotoxic effects of gintonin, cell viability assay was done using 3-(4, 5-dimethylthiazol-2-yl)-2, 5- diphenyltetrazolium bromide reagent which was added to culture medium at a final concentration of 0.1 mg/ml. After 4 h of incubation at 37 °C in 5 % CO₂, the resulting violet colored crystals were dissolved in Dimethyl sulfoxide (DMSO) 100 μ l/ well and absorbance values were measured at 560 nm.

RNA extraction and qRT-PCR:

RAW 264.7 cells were pretreated with or without Gintonin at indicated concentrations for 30 min and then stimulated with LPS (0.1 µg/ml) for 18 h. Total RNA was extracted using TRIZOL[®] reagent (Invitrogen, Carlsbad, CA, USA) following the manufacturer's instructions. Total RNA (2 µg) was annealed with Oligo dt (Bioneer Co, Daejeon) for 10 min at 70 °C and cooled for 5 min on ice, reverse transcribed using reverse transcriptase pre-mix (Bioneer Co, Daejeon) in 20 µl of reaction mixture and run for 90 min at 42.5 °C using thermal cycler. The reactions were terminated at 95 °C for 5 min to inactivate the reverse transcriptase. The reverse transcription polymerase chain reaction was performed using aliquots of cDNA obtained from RT reaction in a PCR premix (Bioneer Co, Daejeon). The PCR products were then electrophorised on 1 % agarose gel stained with ethidium bromide and visualized using Eagle Eyes image analysis software (Stratagene, LA Jolla, CA). The intensity of band densities was normalized for corresponding GAPDH, which is housekeeping gene used as an RNA internal standard and ratios were compared. Quantative PCR primers sequence is given in Table 1.

Western blot analysis:

RAW264.7 cells were treated or left untreated with gintonin (6.25– 50 µg/ml) in the presence or absence of LPS (0.1 µg/ml). Cytosolic and nuclear proteins were extracted according to the instructions of NE-PER[®] Nuclear and cytosolic extraction reagents (Thermo scientific, #78833 & #78835). Proteins were then measured using PROMEASURE assay kit (PRO-PREP, iNtRON Biotechnonology). They were then separated by 10 % SDS-PAGE and transferred onto PVDF (Millipore, Immobilon[®]-P, Billerica MA, USA). Nonspecific binding on the nitrocellulose filter paper was minimized with a blocking buffer containing 5 % non-fat dry milk and 0.1 % Tween-20 in TBS. The membranes were then incubated with specific primary antibodies overnight at 4 °C followed by 1 h incubation with horseradish peroxidase-conjugated anti-rabbit antibody (1: 3000 dilution, Cell signaling). Bound antibodies were visualized using enhanced chemiluminescence (Supex) and images were analyzed using ImageJ software. β-actin was taken as internal control.

Transient transfection and luciferase assay:

HEK 293T cells were cultured in 60 mm well plates for 24 h and then transfected with TK-renilla (pRL-TK) and NF-κB firefly luciferase (pNF-κB-Luc) constructs according to Calcium-Phosphate method. 6 h after transfection the media was changed to normal DMEM supplemented with FBS and penicillin streptomycin antibiotic and then again incubated for 18 h. After that the cells were seeded in 24 well plates and after 18 h were pretreated with gintonin (6.25-50 µg/ml) for 30 min before PMA stimulation for 6 h. Next cells were quantified for luciferase activity using Promega Dual- Glo[®] luciferase assay kit according to manufacturer's instructions. Glomax luminometer (promega) was used for measuring luciferase activity. Luciferase activity was normalized to TK renilla. The similar protocol was followed for the expression of AP-1 transcription factor.

Real-time PCR

RAW 264.7 cells were seeded in 6 well plates and pretreated with gintonin (12.5 - 50 µg/ml) 30 min before LPS treatment (5 µg/ml). Total RNA was extracted from cells using the miRNeasy Mini Kit (Qiagen). RNA then underwent reverse transcription using the miScript[®] RT II kit (Qiagen). All gene transcripts were measured by Real-Time PCR with the SYBR Green Master Mix using miScript SYBR[®] (Qiagen). The primer assays for real-time PCR analysis are as

follows: Mm_miR-34a_1, Mm_miR-93_1 and Hs_RNU6-2_11 (Qiagen). RNU6 was taken as internal control for expression of above mentioned microRNAs.

Statistical analysis:

Data were presented as mean $\pm$ SEM. One way ANOVA and Dunnet's test were applied for the statistical evaluation of data. Statistical analyses with $p^{***} < 0.01$ and $p^{**} < 0.005$ were considered significant.

Results:

Gintonin attenuated LPS induced inflammation in a dose dependent manner:

LPS is a well documented inducer of NO. In addition to this LPS acts as immunostimulatory factor for gram negative bacteria and can induce systemic inflammation if excessively stimulated. Therefore we investigated whether gintonin affects LPS induced NO production in RAW 264.7 cells. As shown in figure 1A, gintonin sharply attenuated LPS evoked NO production when injected to culture media 30 min after the sample injection. Moreover it did not show any cytotoxic effect over this concentration range in study as shown in figure 1B.

Effects of Gintonin on the expression of proinflammatory cytokines in RAW 264.7 cells:

It is an established fact that the expression of proinflammatory cytokines serves as major response of biological system towards inflammation. So we analyzed whether gintonin can affect the pro inflammatory cytokine expression in RAW 264.7 cells. Gintonin significantly abolished the expression of iNOS, COX-2, IL-1 β , IL-6 and TNF- α mRNA expression in a dose dependent manner as shown in Figure 2 (A-B).

Gintonin suppresses protein expression levels of iNOS and COX-2:

To investigate if attenuating effect of Gintonin on NO production arises from attenuation of iNOS and COX-2 expressions at translational level as well, we performed immunoblotting to detect their expression. As shown in figure 3, Gintonin inhibited the protein expression of both iNOS and COX-2 in a concentration dependent manner further validating that gintonin is effective at translational levels of these proinflammatory cytokine proteins.

Signal transduction of gintonin via NF- κ B pathway:

NF- κ B is one of the top-characterized transcription factors. It regulates the expression of numerous genes and particularly those genes related to inflammation and immunity. This pathway is primarily activated when LPS attaches to its TLR 4 ligand. After this receptor-ligand association, a series of factors are activated. As shown in figure 4A, gintonin on the very first hand has inhibited the phosphorylation of IRAK-1 in a dose dependent manner. Afterwards in figure 4B, gintonin has dose dependently diminished the phosphorylation levels of TAK-1. In figure 4 C-D, it is shown that gintonin dose dependently decreased the phosphorylation levels of IKK α/β that caused degradation of I κ B/ α . This cascade further continues in the translocation of NF- κ B inside nucleus so causing a strong inhibition in its phosphorylation as shown in figure 4E. So in this manner gintonin has been shown to follow classical NF- κ B pathway for its signal transduction.

Gintonin attenuates c-Jun N-terminal Kinase(JNK)/MAPK pathway:

The inflammatory cascade involves cellular signaling pathways such as nuclear factor kappa B/ mitogen activated protein kinases. NF- κ B pathway has already been elucidated in above mentioned results. Therefore we pursued to check the effects of gintonin on MAPKs activation (ERK, JNK, p38). Gintonin showed dose dependent inhibitory effect on MAPK pathway starting from the very level of the inhibition in phosphorylation of MEK and MKK as shown in figure 5(A-B). From the dose dependent diminution in the phosphorylation of JNK and p38 as shown in figure 5 (C-D), it is clear that gintonin follows MAPK pathway as well for its signal transduction. However it didnot inhibit phosphorylation in ERK as shown in figure 5E. This slight deviation from regular pathway is in contradiction to the results shown by Sung Hee Hwang et al [6], where gintonin suppresses ERK phoshorylation in cells that express LPA receptors endogenously.

Gintonin inhibits NF- κ B and AP-1 activity in HEK 293T cells:

HEK 293T cells were transfected with NF- κ B and renilla luciferase plasmid. Figure 6A shows that gintonin has dose dependently inhibited the levels of NF- κ B further confirming that potent pathway for signal transduction that is being followed by gintonin is NF- κ B. In a similar manner, HEK 293T cells were transfected with AP-1 and TK-Renilla plasmids. As shown in figure 6B, Gintonin in a dose dependent manner suppressed the luciferase activity of AP-1 transcription factor.

Gintonin revived the levels of mir 34a and mir 93 in LPS stimulated RAW 264.7 cells:

It has been demonstrated previously by Jiang et al and Xu et al that LPS downregulates the expression of mir-34a and mir- 93 with increase in concentration. In reference to these speculations, we geared to seek the levels of these microRNAs in LPS stimulated RAW 264.7 cells with gintonin treatment. The real-time PCR result for mir-34a showed revival in its levels after RAW 264.7 cells were treated with gintonin Figure 7A. Similar result was found for mir-93 levels in presence of gintonin treatment Figure 7B.

Discussion:

Ginsenosides have been always considered as the active primary components of ginseng since their actual isolation from whole ginseng in 1960's. However in 1990's crude ginseng total saponin (cGTS) effects were also tested. It was surprisingly found that this cGTS fraction activated calcium levels in xenopus oocytes [7]. And since it is known that elevation of calcium in xenopus oocytes occur when via activation of $G\alpha$ q/11 protein coupled receptors, so this experimentation eventually led to the conclusion that gintonin is the unique non-saponin fraction from total ginseng that consists of a huge amount of endogenous LPA receptors which are GPCRs (G-Protein coupled receptors)[14]. Since then, much work has been done on this feature e.g. gintonin inhibited amyloidogenic pathway in Alzheimer's disease via activation of LPA receptors [15-18]. Sung et al. reported that gintonin inhibited ATX activity in melanoma cell metastasis because of an LPA C fraction which is highly abundant in gintonin [19]. However research on the anti-inflammatory activity of gintonin has not been done until now. Here we have shown for the first time the anti inflammatory activities of this novel ginseng fraction.

Nitric oxide (NO) is basically a gaseous signaling molecule and is the most intensively studied target for research particularly corresponding to inflammation and therapeutics. Marletta and Stuehr in second half of 19th century reported that murine macrophages can produce nitrate and

nitrite in response to bacterial lipopolysaccharides [20]. In our cell line, LPS was taken as inflammatory mediator and as have been shown in figure 1 A, gintonin has efficiently and dose dependently inhibited NO production proving its anti-inflammatory properties at the first place. Cell viability which is taken as percentage of cells alive in proper condition after the treatment with any exogenous agent is well observed in our study. As shown in figure 1 B, we observed no cytotoxicity at any levels of gintonin used. This further strengthens the position of gintonin as a novel agent for further studies and probably therapeutics. Cytokines play a critical role in the development or suppression of inflammatory and are major players in inflammatory cascade. They are classical regulators for host defensive response to inflammation, trauma and other immunological anomalies [21, 22]. Here we found that gintonin suppressed the production of proinflammatory cytokines in a dose dependent manner for iNOS, COX-2, IL-1 β , IL-6 and TNF- α . Up till now there are hundreds and thousands of natural agents being tested for the suppression of these proinflammatory cytokines and so in a similar context gintonin passes this characteristic.

Nuclear factor kappa B (NF- κ B) is a family of transcription factors that are the key regulators for inflammatory and immune responses in both infection and injury [23]. NF- κ B rest in cytosol and is inhibited by I κ B in dormancy state. Activation of IKK (I κ B kinase) phosphorylates the inhibitory I κ B subunit of NF- κ B in cytoplasm. Due to this phosphorylation, I κ B is degraded and NF- κ B is set free. Figure 4 A-E in our results show that starting from IKK, gintonin has caused a dose dependent diminution of phosphorylation, and subsequently causing strong reduction in phosphorylation of I κ B which in turn has translocated NF- κ B into nucleus where gintonin treated nuclear fraction has diminished phosphorylation of NF- κ B in a dose dependent manner, suggesting that gintonin follows primarily NF- κ B classical pathway for its anti-inflammatory signal transduction. Another family of kinases that is responsible for the activation of NF- κ B pathway is Interleukin Receptor associated Kinase 1 (IRAK) [3]. Figure 4 A show that gintonin decreases the phosphorylation of IRAK -1 in a dose dependent manner so exhibiting its anti-inflammatory regimen with NF- κ B and MAPK pathway.

Signal transduction from extracellular receptors to intracellular targets is being carried out by a series of proteins which are the participating members of one or the other pathway [24]. One of the most commonly followed pathway along with NF- κ B is Mitogen activated protein kinases (MAPK pathway) which is a key player in regulation of innate immune response to microbial insult. Now since past few decades scientists have characterized different isoforms of this signaling cascade and it can be distinguished as MAP3K, MAP2K, MAPK and MAPKAPK. Furthermore these different isoforms are classified on more distinct names as ERK, JNK and HOG for MAPK level [25]. As shown in figure 5 B-C, E, gintonin caused a dose dependent reduction in phosphorylation of JNK and MEK but it showed no effect on ERK. Previous reports that have shown work on other than RAW 264.7 cells, suggest that gintonin caused suppression in phosphorylation of ERK; however in our case of inflammatory action, ERK pathway remained undisturbed.

p38 is being activated by one of the isoform of MAP2K i.e., MKKs. Upstream regulator of JNK i.e. MKK4 can also regulate p38 expression. Besides these, further upstream signaling kinases for JNK and P38 include isoforms from MAP3K which are TAK1, ASK1/MAPKKK5, DLK/MUK/ZPK, and MEKK4. Overexpression of these MAP3Ks mostly leads to the dual activation of both JNK and P38 [26, 27]. This is in direct conjunction with our results as shown in figure 4 B and figures 5 A-D that gintonin in a dose dependent manner decreases the phosphorylation trend of TAK-1, MKK, P38 and JNK. In addition to these signal transduction pathways the suppression of luciferase activity for NF- κ B and AP-1 by gintonin is also in direct

accordance to our results that gintonin potentially follows NF- κ B pathway at every level for its signal transduction Figure 6 A-B.

During the past 10 years, numerous studies have been done on microRNAs ranging from minor ailments to disastrous metastatic tumors [8, 28]. Some of the microRNAs have been very well characterized for inflammation like mir-146, mir-155, mir-125, mir-467, mir-101, mir-132, mir-210, mir-92a, mir-147 [9, 29-38]. Recently it has been reported that mir-34a can target stem cell marker, CD44 thereby repressing prostate cancer. Also the role of mir-34a in connection to NF- κ B in human esophageal cancer cells has also been discovered [39-42]. Jiang et al. reported the anti-inflammatory aspect of mir-34a by founding that mir-34a inhibits LPS induced response in murine macrophages RAW 264.7 cells by targeting Notch-1 [43]. In relation to the down regulation of mir-34a that happens in presence of LPS in RAW 264.7 cells, we found that in the presence of gintonin treatment, mir-34a levels are being revived in these cells as shown in figure 7 A. Here we have demonstrated that in the presence of our natural product i.e. gintonin which in the previous sections have been clearly characterized as to possess anti inflammatory properties, it also effects the expression of microRNA in particular mir-34a in these cells.

Yan et al. recently reported that mir-93 targets IRAK 4 and suppresses the expression of proinflammatory cytokines in LPS treated murine macrophages RAW 264.7 cells [44]. However the expression of mir-93 in presence of gintonin is first of its kind. Here we have reported that mir-93 expression was revived in presence of gintonin when RAW 264.7 cells were stimulated by LPS. It is known that when LPS binds to its ligand TLR4, it recruits, adaptor molecule, myeloid differentiation primary response gene 88 (MyD88) and the members of Serine Threonine kinases IL-1 receptor associated kinase (IRAK) family which includes, IRAK-1, IRAK-2, IRAK-4 and IRAK-M [45]. Because of the indispensability of IRAK-1 and IRAK 4 in activation of NF- κ B pathway and with further confirmation of IRAK 4 as the target of mir-93, we selected this microRNA as the second potent candidate for validating gintonin's anti-inflammatory effects. In presence of mir-93 primer, there is a revival of LPS expression in RAW 264.7 cells when treated with anti inflammatory agent gintonin as shown in figure 7B.

Conclusion:

So all in all, in the present study, we observed a significant suppression on the levels of nitric oxide production and proinflammatory cytokines exerted by gintonin. We have also shown that gintonin exerts its anti inflammatory effects via canonical NF- κ B and MAPK pathway with the exception that in MAPK pathway it does not effect the level of ERK that is not in conjunction with the previous reports that showed that gintonin phosphorylated the levels of ERK. Gintonin efficiently reduced the luciferase activity of NF- κ B and AP-1 so further strengthening its signal transduction via NF- κ B pathway. In case of our potent microRNA candidates i.e. mir-34a and mir-93, we have shown that gintonin treatment revived the levels of mir-34a and mir-93 in LPS treated RAW 264.7 cells. Finally, although ginseng might also contain other unidentified ingredients and the diverse beneficial effects of ginseng could not be attributable to only gintonin, it is hoped that gintonin-related functional food or novel natural medicine will emerge in the near future and reveal new insights into ginseng efficacy with particular reference to several microRNAs that are suppressed or revived.

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Figure legends:

Table 1. Sequence of primers used for RT-PCR for gintonin gene expression.

Table 1

Gene	Primer	oligonucleotide sequence (5'-3')
GAPDH	F	5'CAATGAATACGGCTACAGCAAC3'
	R	5'AGGGAGATGCTCAGTGTGG3'
iNOS	F	5'CCCTTCCGAAGTTTCTGGCAGCAGC3'
	R	5'GGCTGTCAGAGCCTCGTGGCTTTGG3'
COX-2	F	5'-TCTCAGCACCCACCCGCTCA-3'
	R	5'-GCCCGGTAGACCCTGCTCGA-3'
IL-1 β	F	5'CAGGGTGGGTGTGCCGTCTTTC3'
	R	5'TGCTTCCAAACCTTTGACCTGGGC3'
TNF- α	F	5'TTGACCTCAGCGCTGAGTTG3'
	R	5'CCTGTAGCCACGTCGTAGC3'
IL-6	F	5'-GTACTCCAGAAGACCAGAGG-3'
	R	5'-TGCTGGTGACAACCACGGCC-3'

Figure 1. Gintonin suppressed LPS mediated NO release without any cytotoxicity.

RAW 264.7 cells were seeded in 96 well plate for 18 h and then preincubated with gintonin (6.25 µg/ml - 50 µg/ml) for 30 min and then stimulated with LPS (0.1 µg/ml) for 18h. The cell supernatant was transferred to a 96 well plate and reacted with equal amounts of Griess reagent, and then NO production was measured at 540 nm (A). Effects of gintonin on cell viability were measured by MTT assay and absorbance was measured at 560 nm (B). Values in bar graph are mean $\pm$ SEM of atleast 4 independent experiments. ***p<0.001 compared to LPS only.

Figure 1

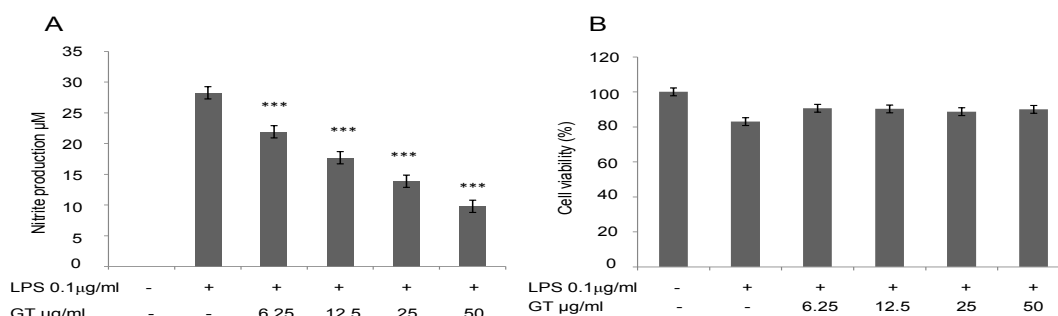


Figure 2. Gintonin suppressed mRNA expressions of COX-2, iNOS, IL-1 β , IL-6 and TNF- α in RAW 264.7 cells under LPS stimulation. For mRNA expression, RAW 264.7 cells were pretreated with gintonin (6.25 µg/ml - 50 µg/ml) for 30 min and then stimulated with LPS (0.1 µg/ml) for 18 h. Total RNA was isolated by Trizol RNA extraction reagent and mRNA expression of COX-2, iNOS, IL-1 β , IL-6 and TNF- α was determined by RT-PCR. GAPDH was used as housekeeping gene. Images are representative of 4 independent experiments. Values in bar graph are mean $\pm$ SEM of 4 independent experiments. ***p<0.001 and **p<0.005 compared to LPS only.

Figure 2

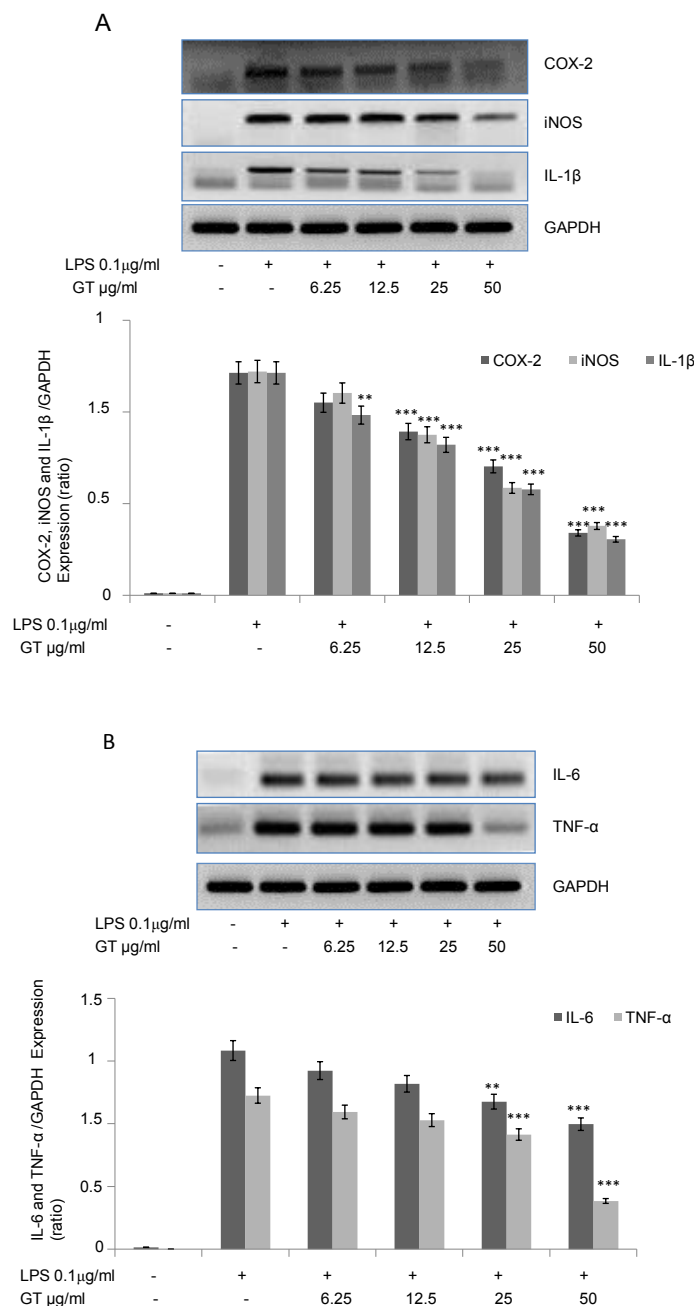


Figure 3. Inhibitory effect of gintonin on protein expression of iNOS and COX-2. For protein expressions, RAW 264.7 cells were seeded in 6 well plate and treated with indicated concentrations of gintonin (6.25 μg/ml - 50 μg/ml) for 30 min and then stimulated with LPS (0.1 μg/ml) for 18 h. Total protein was extracted from RAW 264.7 cells using Pro-prep lysis reagent. Protein quantitation was done by Pro-Measure and then proteins were run on SDS-PAGE and analyzed by ECL chemiluminisence. Western blot images are representative of 3 independent experiments. Bar values of ***p<0.001 were considered statistically significant.

Figure 3

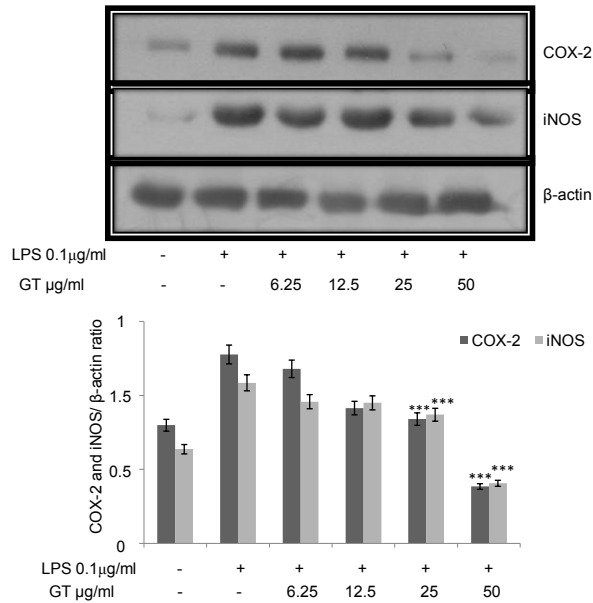
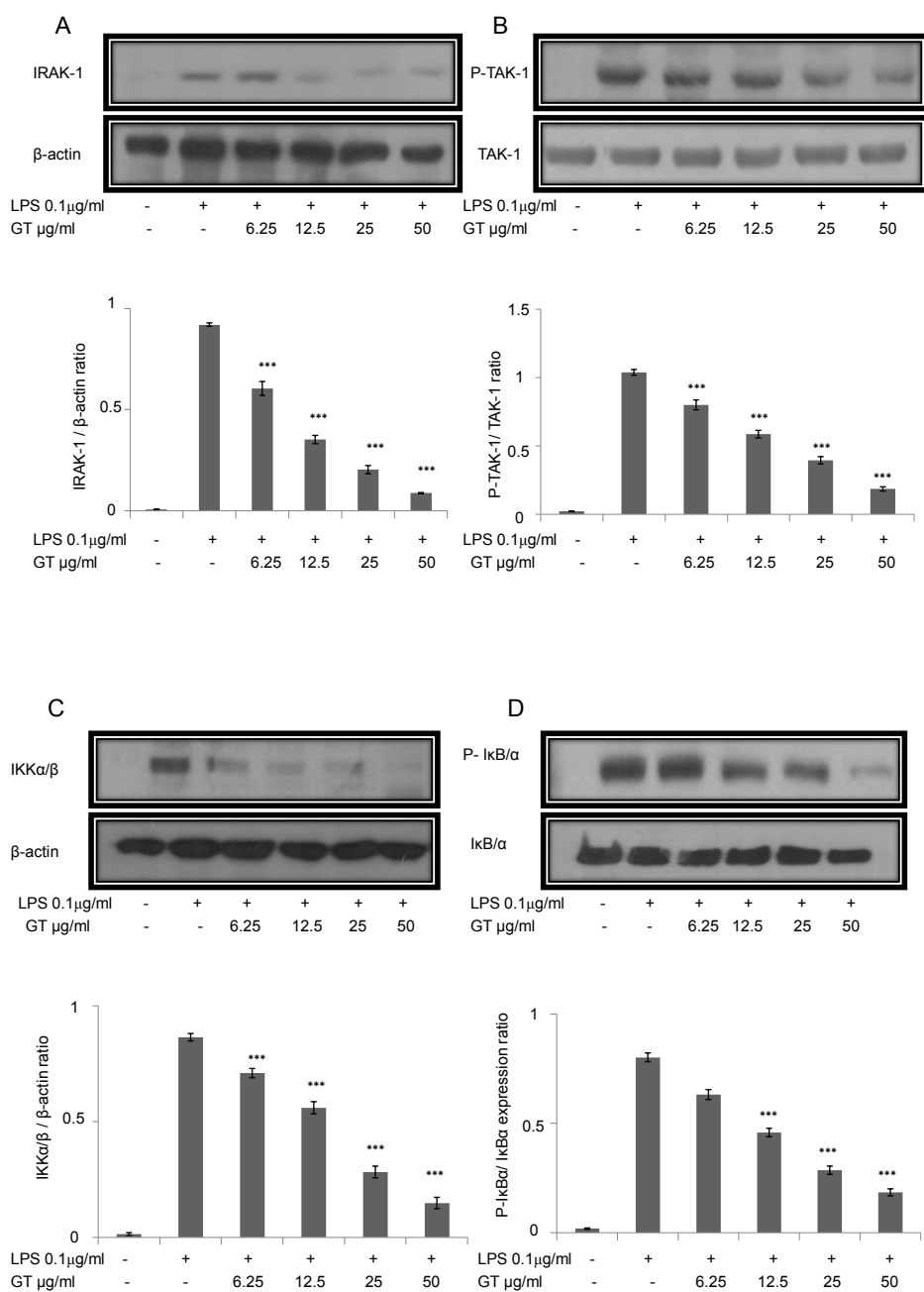


Figure 4. Diminution of NF- κ B pathway by gintonin. RAW 264.7 cells were pretreated with gintonin in the indicated concentrations (6.25 μ g/ml - 50 μ g/ml) and then stimulated with or without LPS (0.1 μ g/ml) for 18 h. Nuclear and cytosolic proteins were extracted using NE-PER extraction kit. Proteins were run on SDS-PAGE and treated with primary antibodies overnight followed by incubation with secondary antibodies for 2 h. The membranes were analyzed by ECL chemiluminescence systems. Data are mean $\pm$ SD (n=3); ***p<0.001 compared with LPS only. **(A)** Phosphorylation of IRAK-1 compared to β -actin. **(B)** Phosphorylation of P-TAK-1 compared to Total TAK-1. **(C)** Phosphorylation of IKK α/β compared to β -actin. **(D)** Phosphorylation of P-I κ B α compared to Total- I κ B α in. **(E)** Phosphorylation of NF- κ B compared to β -actin.

Figure 4



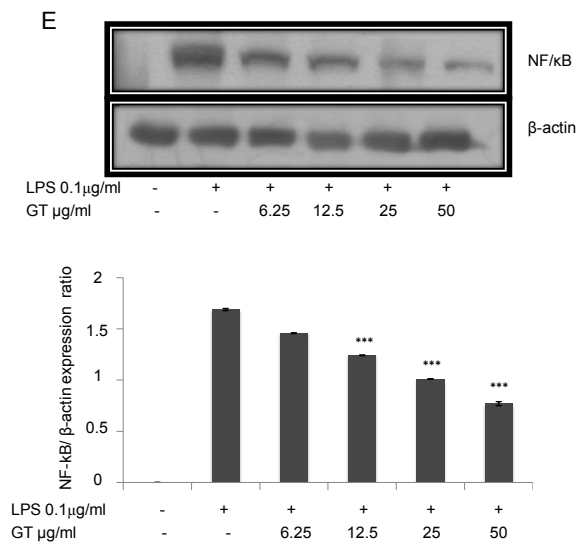
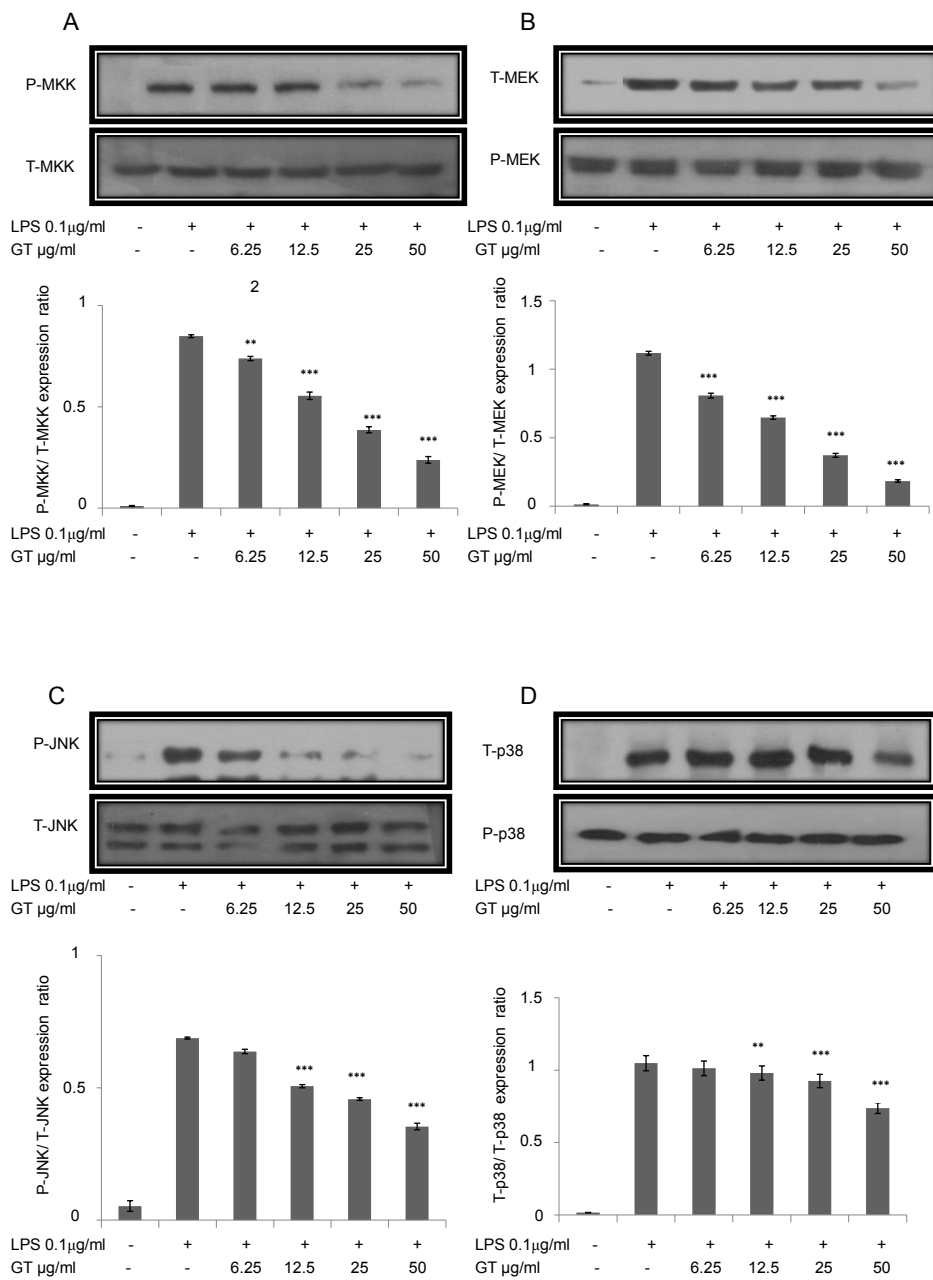


Figure 5. Attenuation of MAPK pathway by gintonin. RAW 264.7 cells seeded in 6 well plate were pretreated with gintonin (6.25 μg/ml – 50 μg/ml) and then stimulated with or without LPS (0.1 μg/ml) for 18h. Total protein were extracted and run on SDS-PAGE. Membranes were then incubated with primary antibodies overnight followed by treatment with secondary antibody for 2 h. Proteins were then analyzed by ECL chemiluminisence system. Images are representative of at least 3 independent experiments. Data are mean $\pm$ SD (n=3); ***p<0.001 and **p<0.005 compared with LPS only. **(A)** Phosphorylation of P-MKK compared to T-MKK. **(B)** Phosphorylation of P-MEK compared to T-MEK. **(C)** Phosphorylation of P-JNK compared to T-JNK. **(D)** Phosphorylation of P-p38 compared to T-p38. **(E)** Phosphorylation of P-ERK compared to T-ERK .

Figure 5



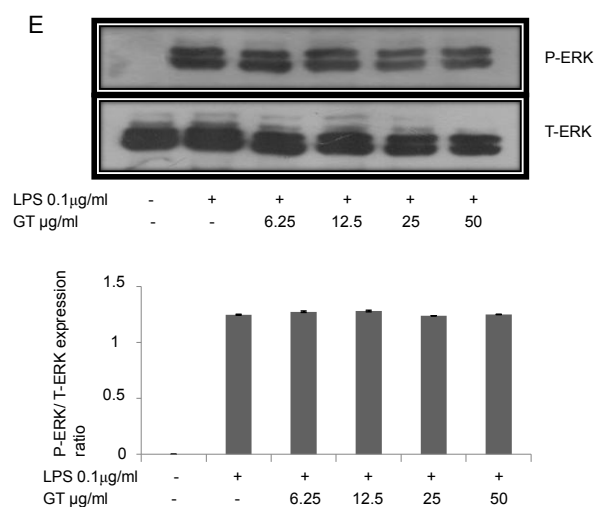


Figure 6. Suppression of transcriptional activity of NF- κ B and AP-1 by gintonin. HEK 293T cells were cultured in 24 well plate and after 18 h on incubation were transfected with NF- κ B and TK-Renilla plasmids using Calcium-Phosphate method. 48h after transfection, cells were pretreated with indicated concentrations of gintonin (6.25 μ g/ml – 50 μ g/ml) and then stimulated with PMA (0.1 μ M/ml) for 6 h. Afterwards luciferase activity was measured using Dual-Glo luciferase assay system. NF- κ B activity was normalized to TK-Renilla activity and concentrations were compared to PMA Renilla luciferase activity. Bar graph is $\pm$ SEM of triplicates. *** p <0.001, ** p <0.005 and * p <0.01 were considered statistically significant **(A)**. Similar approach was applied for AP-1 expression. **(B)**

Figure 6

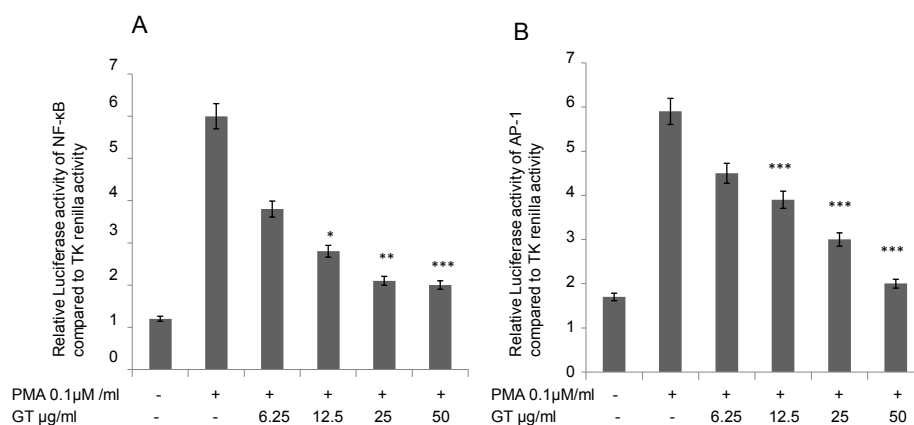
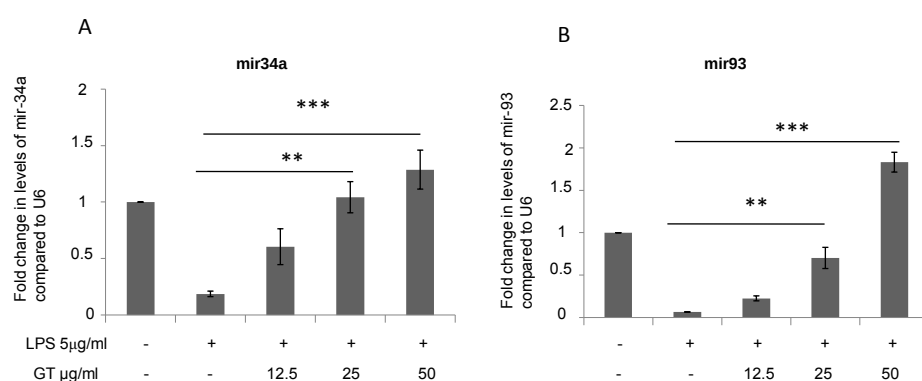


Figure 7. Revival in the levels of mir-34a and mir-93 by gintonin.

(A) RAW 264.7 cells were treated with gintonin (12.5 µg/ml - 50 µg/ml) in indicated concentrations and then stimulated with or without LPS (5 µg/ml) for 18 h. Total RNA was extracted and then mRNA expression of mir-34a was observed using Real-Time PCR. Bar values are ± SEM of atleast 3 independent experiments. ***p<0.001 and **p<0.005 compared to LPS only. (B) RAW 264.7 cells were treated with gintonin (12.5 µg/ml – 50 µg/ml) in indicated concentrations and then stimulated with or without LPS (5 µg/ml) for 18 h. Total RNA was extracted and then mRNA expression of mir-93 was observed using Real-Time PCR. Bar values are ± SEM of atleast 3 independent experiments. Statistic comparison is same as for mir-34a.

Figure 7



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Health Communication Effectiveness of Liver and Gallstone Detoxification Project: Case Study of Santi Asoke Group's Projects

Prof. Dr. Lucksana Klaikao

Abstract

The research titled “Health Communication Effectiveness of Liver and Gallstone Detoxification Project: Case Study of Santi Asoke Group's Projects” aimed to study communication process between the program leaders and supporters in creating reliability to participants, media uses and the messages presentation during the training to evaluate its effectiveness. This qualitative research was conducted by selecting two case studies in two locations and in-depth interviews were used to study two groups of key informants: 1) leaders, 2) 40 participants. The findings were that there were five leaders and two supporting groups with different roles. The program key messages were the eight activities of holistic health care along the training process for body detoxification. The medium used in the program were brochures, books, posters, video, power point presentation and activities in a relaxing and enjoyable environment. The participants knew the program from family members and friends, books, internet and other social media as well as satellite television stations. Before they joined the program, most of them had a positive attitude and expected to have better health. When the program finished, almost all were satisfied with it and would recommend it to whoever may be interested in alternative health care.

Introduction

Natural therapy is one type of alternative medicine that applies detoxification, herbs and diet formula to build equilibration of body elements and its biochemicals. Since 2009 detoxification programs along the path of natural therapy, such as body detox, colon cleansing, and liver and gallstone detox, have been recognized and become the trend of alternative health care in Thailand. The renowned detox program which is mainly spread by viral communication and through some media is the liver and gallstone detoxification project by Santi Asoke group.

Santi Asoke's detox remedy was derived from the integration of detox courses in different countries with Thai local wisdom and herbal medicine. Kanfah Sanmuang recovered from Hepatitis B because of liver detox courses. He then worked with Kwandin Singkham, a Santi Asoke colleague, to develop the liver and gallstone detoxification project to a four-days training program on behalf of Santi Asoke in coordination with Maj. Gen. Chamlong Srimuang, to develop a so called "liver and gallstone detoxification program on behalf of Kwandin's formula"

The program has initially been operated at the Institution of Leaders' Training established and run by Maj. Gen. Chamlong in Kanchanaburi. From 2009 to September 2012, the institution delivered 28 courses to approximately 2,600 participants and around 70 centres were set up by a number of participants as a network of Santi Asoke's detoxification project. Within a few years, there were around 20,000 program participants around Thailand. The program information itself was disseminated as a healthy lifestyle for liver detoxification (Panthep Pourpongpan, 2013: 126-7)

The study of Santi Asoke group's liver and gallstone detoxification project is, therefore, an update case and interesting phenomenon in term of health communication process. The research aims to study communication process of the program leaders in creating reliability to participants, media uses and the messages presentation during the training as well as attributes, media exposure, attitude and satisfaction of the participants to evaluate its effectiveness. The aim of the research was not only to understand the communication process for health development, but also reveal health care behaviors of Thai people in natural therapy and alternative medicine.

Research objective

To study health communication effectiveness of liver and gallstone detoxification project by Santi Asoke group

Research Questions

- 1) What are the communication approaches of the program leaders in creating reliability to participants?
- 2) What kinds of the messages and the media using in the program?
- 3) What are the attributes and attitudes toward the program of the participants?
- 4) What is the effectiveness to the project participants?

Research Methodology

This qualitative research was conducted by selecting two case studies in two locations which were the Institution of Leaders' Training in Kanchanaburi and ThanyaSamui Holistic Health Care Center in Suratthani. The methods of participant observation and in-depth interviews were used to study two groups of key informants which were; 1) leaders and main supporters of the projects , 2) 40 participants of the training programs, and documentary and media research were also employed to analyse the information.

Communication approach of the project leaders

Maj. Gen. Chamlong Srimuang is the project manager who established the training center, Institution of Leaders' Training. He manages the program and became one of the

lecturers talking about life and good health. He is not only one of the leaders of Santi Asoke, but also the political movement group, PAD (People's Alliance for Democracy). With his remarkable achievements in politics, public administration and social development, he, therefore, became the spiritual leader who is the center of faith for participants. He truly believes in the program because of his own experience, feedback of intimate friends and participants as well as observing activities in many countries. The program information and news is widely disseminated from word of mouth without any public relations policies or any advertisements.

Kwandin Singkham is the program disseminator who has been one of the Santi Asoke group's head. She studied the liver detox formula because her friend and niece were healed from serious sickness by a similar course in Malaysia. She initiates the project, adapts the formula as well as disseminates the program to insider friends, group's members who then become the trainers and the public. The liver and gallstone detoxification program by SantiAsoke group, therefore, acknowledges her name. She has a major role in lecturing about the core principles of liver functions and the detox process during the training. Her lectures are clearly explained its procedure along with instructional media.

Kanfah Sanmuang, as the originator of Santi Asoke's liver detox formula, implemented his knowledge of engineering, non-chemical agriculture and herbal medicine to the health care and healing remedy which brought him back to good health from Hepatitis B. He did research from many sources and joined the liver detox courses in different countries, then, adapted the knowledge to Santi Asoke's detoxification program as a natural therapy alternative to orthodox medicine. As the folk wisdom teacher, he is able to describe the concept of detoxification in comparison to principles of mechanical engineering along with the media in his lectures. His social and cultural group is the same as Kwandin in that they are both SantiAsoke's leaders who faithfully follow Buddha teachings, practice a simple life and are devoted to a self-sufficient ideology.

Panthep Pourpongpanis is the program researcher who joined the PAD and is a host of the television program on ASTV. Since his uncle passed away from cancer that inspired him to study about body detoxification as an alternative medicine and has published 2 books. He conducted documentary researches on this topic to endorse the principles of liver and gallstone detoxification in health care and treatment. His talks on television programs and sometimes lectures during the course inform participants its objectives, principles and effectiveness. He has confidence that Santi Asoke's liver detox formula is currently the best in and outside the country.

Chayaboon Petchprom, as the applied leader, is a member of PAD group and joined Santi Asoke's liver detox course to treat a disease. After getting well, she latterly set up the holistic health care and detoxification resort named "Thanya Samui" in Suratthani province. The original 4-days Santi Asoke's liver detox program was changed to 6-days and drinking 4 to 6 glasses of olive oils mixed with lemon juices. The direct experiences of toxin analysis from liver detox procedure and knowledge learnt from enormous case studies of participants' toxins gave her more confidence in the program's effectiveness. The participants of Thanya Samui program are mostly from PAD's members and their family connections who have similar values and trust the program leaders.

There are also two groups of assistant teachers and volunteers as the operational leaders of the program. The assistant teachers are members of Santi Asoke who had roles as lecturers and trainers providing any help, necessary support and information to participants. They had experiences and knowledge of the liver detox procedure and are able to solve health problems that may happen during the course. The volunteers are mostly members of PAD group who have joined the course and have returned to good health. They facilitate the program and accommodate the participants in both body and mind support. Both groups had

good attitude and experiences with the course from their health approval as well in faith in all the project leaders.

The liver detoxification program and its effectiveness

The concept of the eight ways to holistic health care is implemented as the program key messages which were; 1) 4 paths of accomplishment, 2) attitude, 3) diet, 4) exercise, 5) relaxation, 6) detoxification, 7) breathing, and 8) vocation. The process of body detoxification is divided into 2 types; liver detoxification and general health care including other kinds of detoxification. The liver detox process comprises of fasting, colon cleansing, drinking herbal juice, drinking olive oil mixed with lemon juice, and investigating toxins. The program also arranges other health care activities for participants such as mouth oil pulling, face masking and feet cleansing, body massage, Chinese medical massage for healing (Guasa), bone adjustment, and acid-alkaline balance. Regarding to mind detoxification, the program leaders have lectured on the following topics; mentally dealing with illness, relationship between diseases and behaviors, the four paths of happiness accomplishment, spiritual well-being, and chanting for mind detox. The activities are organized in public places of a meeting hall and a pool side surrounded with natural environments that create a relaxing atmosphere. The medium used during the training are brochures, books, posters, informational boards, video, power point presentation and activities in public places.

Regarding to attributes, media exposure and attitude of the participants, they are divided into four age groups from 20-35, 36-45, 46-55 and over 56 years old and each group comprises of five men and five women. Most of the 40 informants had bachelor degrees and earned at least 20,000-baht monthly income. They, excluding 20-35 years, mostly had chronic diseases but have good health care, such as, exercise and healthy dietary, while some of them did not care much. The middle-age groups (over 46 years old) are more enthusiastic to the program as an alternative natural therapy to orthodox medicine. Women tend to take a better health care of themselves and family members than men do. They seek for program information and convince family and friends to join with them. This relates to the research by Praiya (1998) in that age factor was associated with health care and behaviors due to the experiences of health problems. The older they are, the more they are concerned with health media. Women are more active than men and would share their opinions with others.

Some have joined the program more than once while it has been a first experience for others. They, however, had attentive personality, positive attitude toward the program, confidence in the leaders as well as expecting to have better health afterwards. They knew the program from family members and friends, books, internets and other social media as well as ASTV; satellite television station by the People's Alliance for Democracy (PAD), and FMTV by Santi Asoke group. Regarding attitudes, there are some differences between the groups of 25-35 and over 36 years old. Before participating in the program, the younger groups were worried about the procedure and result while some do not pay much attention because of its strangeness. However, the course training which provides academic information along with the support from leaders and others in a relaxing environment helped them change their attitude. On the other hand, the older groups (over-36-years-old) have positive attitudes toward natural health care and therapy, believes in its safety and trust the leaders. They expect to have better health and beneficial knowledge to improve life-being. However, some expect little the first time apart from relaxing body and mind in natural surroundings.

According to its effectiveness, almost all were satisfied with the program in terms of better health, practical knowledge, expert leaders, and friendly society in natural surroundings. They would pass along to whom may concern alternative health care and natural therapy as well as return to join with them depending on the opportunity. While a few people had questions with the results and want to search more information or recheck with

regular medical tests. These associate with the concept of KAP (Knowledge-Attitude-Practice) in that the participants became interested in the program, then searched for information to increase their knowledge, had more confidence and decided to join the course.

Conclusion

In sum, the project is an alternative health care and promotion training program along the path of natural therapy focusing on body and mind detoxification. The health communication process is to educate themselves in the procedure of liver and gallstone detox as a holistic health care that anyone can do by themselves. Moreover the empirical results from toxin analysis have shown that body, mind and lifestyle are root cause of chronic disease. The participants, therefore, have not only realized the importance of daily health care but also possibly change non-healthy behaviors. Most of all, the participants are willing to pass along program information to their networks and convince them to participate the course. This relates to Suhuang (1998) and Palisa (2010) in that alternative medicine does not use medical drugs for healing and could be done by expertise concerning core principles of holistic health care and integration of body, mind and society or environments. Referring to Jacob Vadakkanchary(cited by Srisuda et al, 2010), natural therapy is a healing process by nature which our body is able to heal itself through the detoxification by four means which are breathing, sweating, excreting, and fasting. The most important is the spirit of mind that controls the body. A medical doctor has duty to give advice to patients while they have to look after their own selves. The philosophy is contrast to the world of orthodox medicine.

The communication process of the liver and gallstone detox project relates to the concept of health communication of Kanchana (2013) that commencement of health interest and its communication are from their own health problems or the closed network and become social trend of health care. Health behaviors are influenced by personal opinions and attitudes and disseminated to groups, community and cultural society (Suree, 2009). The importance of health communication is two-way, easy information access, participatory knowledge management as well as shared experiences among participants (Sukanya, 2008).The Santi Asoke liver detox project accords with the definition of health communication by the National Cancer Institute which is the competency in enhancing health knowledge and recognition of its problems as well as solutions. It affects perception, beliefs, and attitudes that lead to behavioral changes so health care is passed along to others in the wider society.

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Health Promotion through Learning Experience in Primary Care in Higher Education Institutions

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School Health Promotion, the core object of the investigation, was reviewed, and its practice investigated. The influencing internal and external factors were surveyed to establish the depth of the program's implementation. Likewise, awareness and skills of the administrators, faculty, staff and students were measured ascertaining employability of the concepts and skills of Primary Health Care to School Health Promotion and developing an enhanced program.

In conclusion, HEIs were responsive in adopting the "Healthy Settings" recommended by the Department of Health and Department of Education, but lacked in conforming to the standards of health promoting university where skills based learning is recommended.

The researcher recommended:

- 1.1. HEI's need to integrate health into their culture by invigorating leadership and management priorities.
- 1.2. HEI's should program themselves as key partners in sustaining healthy community by not only adapting the primary and secondary schools' health program, but also by affording provisions which integrate healthcare learning experiences at primary level to the present "Healthy Settings" strategy.
- 1.3. HEI's make a strong commitment to uphold Public health through strict policies to endorse resilient health actions so that the community which it is serving can continue to enjoy continued wellness, sustained quality of life, and challenge the out of the budget costs due illnesses.
2. Conceptualize a school health program customized for the Higher Education Institutions including primary level healthcare skills.
- 3 To favor and adopt the endorsed design of school health promotion tailored for young mature adults to take the recommended health skills.
4. An outlined health and healthcare school program that will serve as an entry point towards development of an enhanced school health promotion program.
5. Some limitations and constraints; other researchers can either replicate investigations in the same field of academic endeavors using other settings and variables.

Key words:

Health Promotion
Primary Health Care skills
Higher Education Institutions

health policies
school health program

Introduction

The principles and functionalities of Health Promotion and Primary Health Care, inspired the researcher to apply them in this research study in order to enhance health promotion program for Higher Education Institution. This is enhanced by the researcher's experiences in academic and public health industries

School Health Promotion, the core object of the investigation, is reviewed, and its practice investigated. The influencing internal and external factors are to be surveyed to establish the depth of the programs implementation. Likewise, awareness and skills of the administrators, faculty, staff and students are measured to ascertain whether

employability of the concepts and skills of Primary Health Care to School Health Promotion and come up an enhanced program which is the main intention of this research.

Statement of the Problem:

In general, this study aimed to evaluate and assess the status and condition of health care promotion in HEIs. The result would be used to develop a responsive school health promotion strategy that would ease the burden of scarce health resources at primary level.

More specifically, the researcher sought answers for the following questions:

1. What is the status of the Higher Education Institutions in terms of:
 - 1.1. Implementation of public health policy
 - 1.2. Creating a supportive environment
 - 1.3. Developing skills at primary health care level by assessing the awareness of the students, faculty and staff on the following:
 - 1.3.1. doable home monitoring;
 - 1.3.2. care giving and management of chronic diseases; and
 - 1.3.3. taking proper actions during emergencies in the home?
2. How do the school administrators, faculty, staff and students of Higher Education Institutions assess the implementation of their health promotion program particularly concerning the implementation of public health policy and supportive health environment?
3. Is there a significant difference in the assessment made by the respondents on the implementation of their health promotion program as regards to the variables mentioned above?
4. How do the respondents assess the public management issues and concerns encountered in the implementation of the school health promotion program in terms of:
 - 4.1 internal factors;
 - 4.2 external factors
5. Is there a significant difference in the assessment made by the respondents in the implementation of the school health promotion program in terms of internal and external factors?
6. What area in primary health care program improve the development of an enhanced school health promotion to sustain healthy community?

Hypotheses

This study hypothesizes that:

1. There is no significant difference in the assessment of the HEIs administrators, faculty and staff regarding the effectiveness in the implementation of the health promotion program.
2. There is no significant difference in the assessment on the HEIs regarding the level of implementation/observance of public health management.

Summary

To obtain the objectives of the study in order to enhance the Higher Education Institution's health promotion program through related learning experience at primary health level, the researcher conducted a survey on the current status of the said program using quantitative and qualitative data to determine the appropriate actions to be considered to come up with an innovative health promotion program that will help sustain a healthy community.

The study made use of four (4) groups of respondents: thirty eight (38) administrators, ninety six (96) faculty, one hundred sixty (160) staffs, and one thousand four hundred eighty two (1482) students making a total of one thousand seven hundred seventy six (1776). These were drawn from three privately-owned and three government-ran Higher Education Institutions using purposive and convenient sampling.

Using validated survey questionnaire, data from the respondents were gathered and utilized to generate answers to specific problems posed in the study.

The status and effectiveness of the implementation of the school health promotion were revealed following the significant findings of the study:

1. Status of HEIs in terms of:

a. Public Health policy

The Higher Education Institutions adheres to the policy set by the Department of Health and Department of Education for Health Promoting Schools. They abide to the guidelines and standards regarding prevention and control of some infectious diseases, worksite safety, dental and oral care, nutrition, alcohol and substance abuse, mental health and emergency responsiveness. Specifically, the guidelines stressed on the following: curriculum program with health topics, healthy eating policy, first aid and emergency, violence and bullying. Existence of evidences to establish the true status in the implementation of public health policies like memos, activity reports or copy of the policies were not seen by the researcher.

b. Creating a health supportive environment

It can be induced that the HEIs supportive environment catered their populace the venue that encourages health maintenance at work through the effective implementation of the worksite safety policy. HEIs have health team that also posed as the health promotion team. The health promoting team is primarily represented by the medical officer, dentist and nurses. Faculty and students involvements are through organizations that cater health-related activities whose members come from medical and paramedical courses. There are at least two health care providers that afford first aid and emergency services to HEI stakeholders when needed.

Other evidences of supportive health environment are the presence of staffs handling emotional instability, trauma and suicidal attempts and student mentor system; but in severe cases, referral to medical advice is done.

The moderate effectiveness on the assessment made by the respondents pictured the demand to invigorate the HEIs' health promoting team and/or committee, officers and organizations. Step-up efforts that will cater exposures to holistic health and work-life balance are also needed.

c. Primary Health Care Skills of the Respondents

The level of awareness on doable home monitoring of the four respondents is unanimously high in areas where there is massive dissemination of information in school and media. This pertains to life-skills in the prevention and control of sexually transmitted diseases and interventions for diarrhea. On the awareness of the respondents on the practical health management exemplified by immediate intervention against cuts, vomiting, fever and asthma by most of the respondents, results demonstrated a fair discernment to take appropriate actions toward the conditions. Considerable responsiveness is called for to increase the awareness level of most respondents, specially the students, in applying home care for chronic diseases like tuberculosis, cancer and diabetes. A moderate awareness is deemed not sufficient to improve the quality of care to household member afflicted by either of the mentioned illnesses.

Regarding the awareness and skills of the respondents on first aid and emergencies, results demonstrate the need for more action-driven efforts that will help instill into them the ability to take appropriate actions in times of health related tragedy.

2. Assessment of the respondents in the implementation of their health promotion program particularly concerning the implementation of public health policy and supportive health environment

The evaluation by the researcher and respondents in the implementation of public health related policies exposed the need to further improve in order to conform to the standards of university health promotions. Interventions are sought for in areas that necessitate prevention and control of infectious disease, deterring of the development of chronic diseases and its complications, and lowering the prevalence of the top ten leading cause of illnesses and deaths.

HEIs support for health promotion is moderately effective. The assessment made by the respondents pictured the demand to invigorate the HEIs' health promoting team and/or committee, officers and organizations. Step-up efforts that will cater exposures to holistic health and work-life balance are also needed.

3. Comparative analysis on the assessment of the respondents in the implementation of their health promotion program particularly concerning the implementation of public health policy and supportive health environment

To determine whether significant differences existed in the assessment of the respondents in the implementation of health promotion program, F-test was applied.

Significant difference was found with regards to the implementation of the public health policy. Corroborating this finding was the critical F value of 2.89 which is above the computed F value of 2.66, with alpha 0.05 as standard, hence, null was rejected. This preliminary test suggests further investigation of the data at hand.

On the implementation of the school health promotion program, specifically on the area of supportive health environment, no significant difference was obtained. Statistical support to this finding was the obtained F value of 4.31 which was way down the Tabular value of 4.31 with alpha 0.05 as standard. Accordingly, the null hypothesis was accepted.

4. Assess in the implementation of their health promotion program particularly concerning the implementation of the effects of the following:

a. Internal Factors

The administrators and faculty were highly conscious on the issues and concerns influenced by autonomy, school culture, management support, implementer's biases, school records and development concerns in the implementation of the program. On the other hand, faculty and student involvements were low moderately observed. These two issues are very relevant in as much that the plight of the program is dependent on them. It can be inferred that the internal factors blighted the render of the school health promotion program, considering that the program is within the control of leadership, budget and knowledge and skills on promoting health.

B. External Factors

The effect of external factors in the program implementation was on the upper level bracket of the moderately observed, with overall weighted mean of 3.37. However, Intensive public moral and force ranked highest among the observed peripheral issues that affect school health program implementation. This factor is a critical consideration because schools reach out into the community where it seeks to develop its key role in building partnerships and alliances.

5. Comparative assessment made by the respondents on the implementation of their health promotion program

No significant variation was evident in the assessment structured by the HEI respondents on the effects of internal and external public management issues and concerns encountered in the implementation of school health promotion program. This result points into accepting the null hypotheses.

6. Area in primary health care program that can improve the development of an enhanced school health promotion to sustain healthy community

Outcome of the ranking suggests that the primary concern of the respondents is dealing on the relevance to upshot preventive measures that will improve life skills and deter the onset of a life-style related diseases. Secondary interest moves around the value of being prepared to cope with chronic illnesses and injuries.

Priority topics to be considered in the formulation of an enhancing the school health promotion program at primary health care level

The respondents ranked ten (10) health topics considered to provide substantial contributions in the practice of primary health care. These topics are well thought-out to effect morbidity and mortality rates by lowering the risks to some illnesses. The overall ranking based on priority are as follows: stress management education, occupational and safety education, nutrition and weight education, cancer prevention, emotional and trauma/mental counseling, first aid/emergency management, CPR education, asthma management education, immunization and AIDS/HIV, smoking and drug cessation.

Conclusions:

From the findings of the study, the researcher arrived at the following conclusions:

1. The HEIs are responsive in adopting the "Healthy Settings" recommended by the Department of Health and Department of Education, but lacks in conforming to the standards of health promoting university where skills based learning on health is recommended.

Recommendation:

1. Higher education Institutions
 - 1.1. HEI's need to integrate health into their culture by invigorating leadership and management priorities.
 - 1.2. HEI's have to program themselves as key partners in sustaining healthy community by not only adapting the primary and secondary schools' health program, but also by affording provisions which integrate healthcare learning experiences at primary level to the present "Healthy Settings" strategy.
 - 1.3. HEI's make a strong commitment to uphold Public health through strict policies that will endorse resilient health actions so that the community, to which it is serving, can continue to enjoy continued wellness, sustained quality of life, and challenge the out of the budget costs due illnesses.
2. Department of Health
 - 2.1. Conceptualize a school health program customized for the Higher Education Institutions which include primary level healthcare skills.
3. Center for Higher Education and Development
 - 3.1. To favor and adopt the endorsed design of school health promotion tailored for young adults who have the maturity to take the recommended health skills.
4. The researcher hereby presents an outline of health and healthcare school program that will serve as an entry point towards the development of an enhanced school health promotion program.
5. The study encountered some limitations and constraints; and in this context, other researchers can either undertake replications or conduct investigations in the same field of academic endeavors using other settings and variables.

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Identifying and Modeling Risks in Health Insurance:

A Systems Dynamic Approach

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Abstract

Iran health insurance organization (IHIO) covers more than half of population. Recently, according to the fifth program of development, it must cover all population. Thus, IHIO has an important role in protecting and promoting universal health. Designing strategic plan for sustainable services needs total understanding about IIO's functions and its related risks. Clearly, the environmental of IHIO is very complex and there are various risk factors such as economic, social and political. Therefore, system dynamics (SD) has been utilized to understand and to identify existing risks and their effects. In this way, the identified risk factors are categorized using WHO model (2009) and casual loop diagrams (CLDs) are developed for each category. Theses diagrams provide a suitable platform to fully understand this system. In addition, based on the literature, this framework has not been developed yet. These diagrams could also help decision makers and researchers in finding best scenarios.

Keywords: System dynamics, Risks, WHO, Health Insurance Organization, Casual Loop Diagrams (CLDs)

Introduction:

Treatment costs form a significant portion of household cost basket. Hence management and control of these costs are one of the issues that require causal loop survey, modeling and planning. In this regard, any prediction or planning to manage these costs would be certainly faced with risks; sometimes some of the treatment cost gets out of the tolerance threshold and challenging the household cost basket and make the insured individual bear high expenses. On the other hand, lack of health service stratification and comprehensive referral system has led to over consuming of services and economic inefficiency with improper use of financial and human resources. Lack of clinical guidelines has aggravated this inefficiency (1).

Moreover, policies and measures taken by policymakers can improve the health with influencing target factors related to people and their communities, which covers the modality to access quality cares (2).

The health insurance organization of Iran also plays an essential role in these factors and with nearly 40 million people insured, has an important mission in service and health insurance coverage for a large portion of population. Obviously, without planning and assessment of associated risks, providing satisfactory services would be failed and such an organization is always in debt and unable to provide services specified in the defined service package. In this paper, two main concepts of dynamic system and risk have been benefited to get better results briefly described below.

-Dynamic system: Is an analytical modeling technique that Gay Forrester developed with work on industrial dynamics in Massachusetts Institute of Technology. This system uses both quantitative and qualitative perspective to understand a known issue and improve its structural and causal relations between the variables to address system behavior. Qualitative perspective of dynamic system as the more important aspect of this approach has been increasingly noticed in the recent years and is able to visualize identified elements of a system or causal loop diagram and connection between them in a model and make it possible to study different interactions, also make the output result possible and provide variable options and scenarios for the planners and policymakers (3,4, 5).

Since the planning and policy-making in the health system has been of special importance and complexity and several variables from different areas of economic, social and political impact on it, the need to benefit the dynamic system in this field is increasing. Unscientific and inaccurate planning has faced the health macro policymakers with direct problems in this area and even would have a great impact on other areas of social and economic.

-Risk identification: Risk identification techniques have been evolved over the time and become more complex. As well, simultaneous use of them does not mean that identification process has a better quality. Eventually many underlying factors recommend the appropriate technique. In other words, diagnosis and selection of risk identification technique is one of the important steps of identification. Some of these techniques are summarized as follows:

Lists (6), documents, brainstorming, interview with experts, the nominal group technique (8), Delphi technique, risk fracture structure, scenario analysis (7), identifying the root factors (9), analysis the drawing techniques hypotheses (10) and classification based identification and prescriptive models. In this study, according to the subject, some of the above techniques are used, which would be mentioned later.

-Types of risk: the term risk has a broad meaning and includes all the states that there is a possible result other than the expected result. Risks have variable types that may include financial and non-financial risks, fixed and variable risks, general and special risks and healthy and dangerous risks. Therefore, the use of risk management models and specifically causal loops identification put different scenarios in access to plan with a higher confidence for reducing mentioned costs.

As well, the insurance in addition to risk elimination for individuals which is done through risk transfer, reduce the overall risk in economic system by substituting certain costs for uncertain losses. These fees are determined based on predictions made using the law of large numbers.

The original paper is ready to extract the possibility of prediction of risk different scenarios and simulation of these risks using dynamic system and consequently the risk management models in health insurance organization of Iran and organizing the intervening options in the form of computable programs and put them in the hands of health insurance policymakers. In the second section of paper, literature review and related research background is investigated and in third section the methodology and its process are described. Then in fourth section of the paper, variables and basic factors affecting the main subsystems of the problems are identified and described. Also in this section, the main causal loops are drowned and the resulting behaviors are described. Section V is dedicated to discuss and analyze the results of created conceptualization and explains future research opportunities in this area.

Methods

In this study conducted in 2014, the field method is used for designing the final model and for its simulation we used statistical methods needed in simulation systems. Also because of addressing health risks in the field of management sciences and health sciences, we conducted multilateral surveys including political and social surveys. Locative domain of this study was mainly in health insurance organization of Iran, but because of varsity, it can be operable in the entire health system of Iran.

In summary, it can be said that systemic approach is an appropriate formulated method for analyzing the components of a system that has cause and effect relationships and logical infrastructure (12). In this paper, the cause and effect loops were used as a useful research tool in systemic studies. These loops enable users to easily connect with feedback structure and the main hypotheses of the system (13). Cause and effect loops are frequently used in academic works and developing their position in the business. The main application of the loops includes (14):

- Obtaining quick hypotheses about causes of a system dynamics
- Extraction and obtaining mental models of individuals and teams
- Communication between effective loops

In the process of this investigation, the following steps were performed:

-initial studies: include a review of respective systemic models in the literature review and assess related global patterns and reports considering the principles of systemic approach.

-primary design: in this study, a series of semi-structured interviews were performed with senior managers, selected experts and consultants of health insurance organization of Iran, including the board of directors, research and development of Insurance services assistance, health insurance assistance, strategic shopping center, planning and budgeting, planning assistants and experts,

experts in the field of health, health insurance domain expert at Johns Hopkins University, experts in the field of modeling and dynamic system.

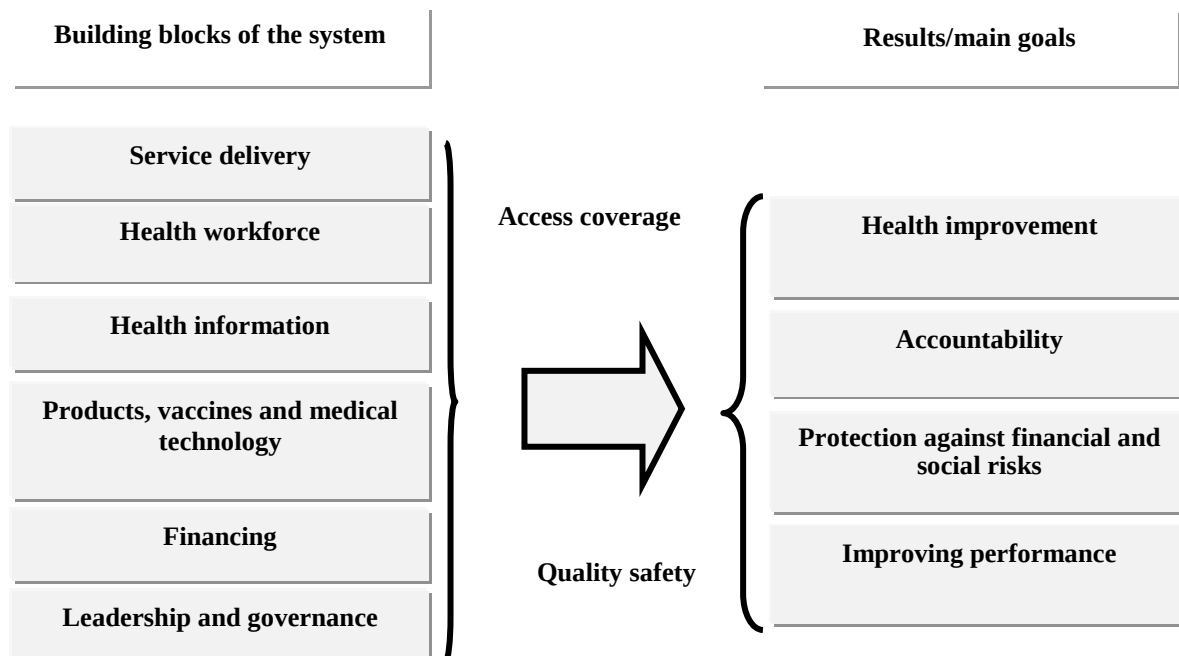
-summary and analysis of the results: after the initial analysis and collection of proposed risks in health system, based on the existing combination patterns, the proper classification was performed.

-drawing causal loops: after the initial identification and classification of risks based on the concept of dynamic system and the principles governing drawing causal loops, these loops were formed and drawn in primary and secondary categories. At the end, integration of risks resulted in developing conceptual model of risk management in health insurance.

-reliability and validity: to assure the reliability and validity, since data collection in this study was performed based on semi-structured interviews with senior managers, selected experts and consultants of health insurance organization of Iran, in the field of modeling and dynamic system, the causal loops affecting studying problem and variables affecting in each one were refined, completed and validated.

Results

The World Health Organization on its 2009 report investigated health system and presented a systemic framework similar to diagram 1. This framework consists of six building blocks including service delivery, health professionals, health information, products, vaccines and medical technology, financing, guidance and governance (15).



-Identification and classification of risk sources in health system: as mentioned in previous sections, risks have various domains and dimensions and identification of them requires experience and expertise in this field. For this reason, to identify most of them, we benefited the comments and interviews with experts and senior executives of insurance and health area. In other words, after initial classification of risks in several subgroups using Delphi technique and gathering experts comments, of many identified and suggested risks, the mentioned classification was finalized in sixteen subgroups, which might be resulted from integration and development of some items (16).

On the other hand, an acceptable authenticity occurred between the following sixteen subgroups and six building blocks (15) of the World Health Organization that these sixteen subgroups were adjusted into the form of mentioned blocks and as shown in table 1, the identified risks were classified. With effective use of six building blocks, it is expected that level and quality of health are improved, accountability and response to request are optimized, individuals and patients are protected from financial and social risks and system performance is enhanced (15).

Six building blocks with results are shown in diagram 3 and risks related to them are identified and studied as follow.

-service delivery block including two subgroups as service and suppliers.

-Medical products, vaccines and medical technology block including two subgroups as insurance cost management and unrealistic prices (mispricing).

-health information block including four subgroups as spread of diseases, insured population, social and environmental factors.

-financing block including three subgroups as Per capita income, insurance income management and insured pay out of pocket.

-leadership and governance block including three subgroups as health insurance organizations, political factors and rules.

- Health workforce block and two subgroups as elements and tools of human resources and practitioners.

Table 1: Identification Risk Sources in Health Insurance Based on the Six Building Blocks of Health System, the World Health Organization Report 2009

Service delivery	Service	Service quality, efficiency, service delivery duration, monopoly
	Suppliers	Service delivery, service compensation, financing, induced demand, pricing, monitoring, referral system, drug, Medical science, strategic shopping, guidelines, access, under the table, medical errors, medical Abuse
Medical products, vaccines and medical technology	Insurance cost management	Payment models, rationing of services, monitoring, resource allocation, service pack
	Unrealistic prices	Medical technology, induced demand, referral system, tariff, drug trafficking, medical device market, monopoly
Health financing	Per capita income	GDP, oil, currency prices, the share of health from resources, the share of insurance from health resources, the insured's participation rate, household spending, inflation, subsidies, business, taxation
	insurance income management	Insured insurance premium, insurer insurance premium, government aid, subsidies, investments, receivables, foreign financial resources in health
	insured pay out of pocket	Costs leads to poverty , catastrophic expenses, participation rate (insurance premium), under the table, franchising, insurance
Health information	Spread of diseases	Emerging diseases, re-emerging diseases, incurable diseases, certain diseases, epidemic diseases, catastrophic diseases, mental disorders and psychosis, contraception, disability, vaccination
	Population growth	Birth rates, population age, life expectancy, population aging, migration, mortality, urban population, increases in single households
	Social factors	Addiction, culture, poverty, employment, education, behavior, divorce
	Environmental factors	water, food health, natural disasters, vehicle safety, accidents
Leadership/ governance	Health insurance organization	Parliament, the Medical Council, Ministry of Health, Ministry of Welfare, Management organization , supreme Council of insurance
	Political factors	Election tariff, war, embargo, neighbor countries, foreign relations, service pack
	Rules	Frequent changes, pricing, service delivery systems, the focus of decision, corruption, administrative structure, internal processes
Health workforce	elements and tools of human resources	Corruption, administrative structure, internal processes, education, medicine, guidelines, under the table, the focus of decision
	Practitioners	proficiency, professionalism, accountability, equity, efficiency, responsibility

Causal loops of health financing:

Addressing all the above sixteen subgroups is outside the scope of this paper. But for instance, the health financing block consisting of three subgroups has been studied. Besides, one of the loops affecting creation and continuity of risks in them and overall insurance and health care system and their communication with other economic, social and political sectors was presented.

Pay out of pocket (OOP) loop: insured pay out of pocket is among the most important loops defined in this paper. In other words, the greatest impact of health financial risks appears in this index. As shown in diagram 2, high risk points such as franchising, under the table, supplementary insurance, participation rate (insurance premium) greatly increase the risk of OOP, which these costs in long-term and for expensive diseases would have an additive effect on catastrophic costs. The highest risk of insured pay out of pocket would appear when very heavy cost resulted in costs lead to poverty.

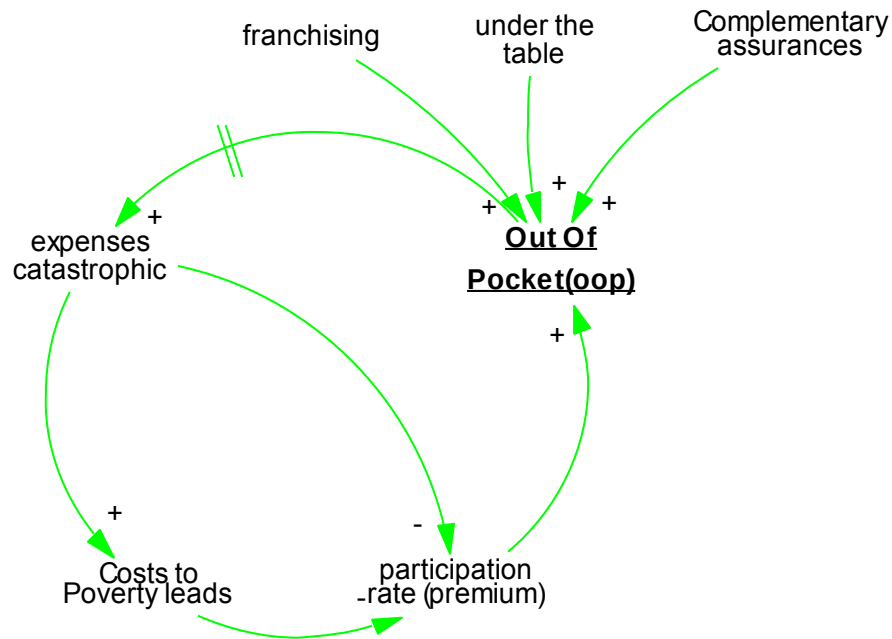


Diagram 2: Causal Loop of out of pocket (OOP)

-Combination loop (health financing): according to diagram 3, intra-loop effects of each one of causal-loop diagrams were briefly stated in the above survey. But the effects of these loops on each other are important, whether they may have neutralizing or resonator effect upon each other. Therefore, its evaluation has a higher importance and creates new effects. As is evident, there are new effects regarding intra-loop relationship of per capita income and insured pay out of pocket, as with growth of insured pay out of pocket, there would be an increase in the household costs and household costs growth would lead to increased catastrophic costs in the same primary loop. This impact on Per capita income and insurance income management loops and eventually increasing the share is defined as insurance management of health resources. In this way, an unknown shadow risk in the primary loop becomes apparent. This would increase the chance of identifying risks using cause and effect loops; obviously when more risks are identified, there would be more chance to designs plans to prevent them.

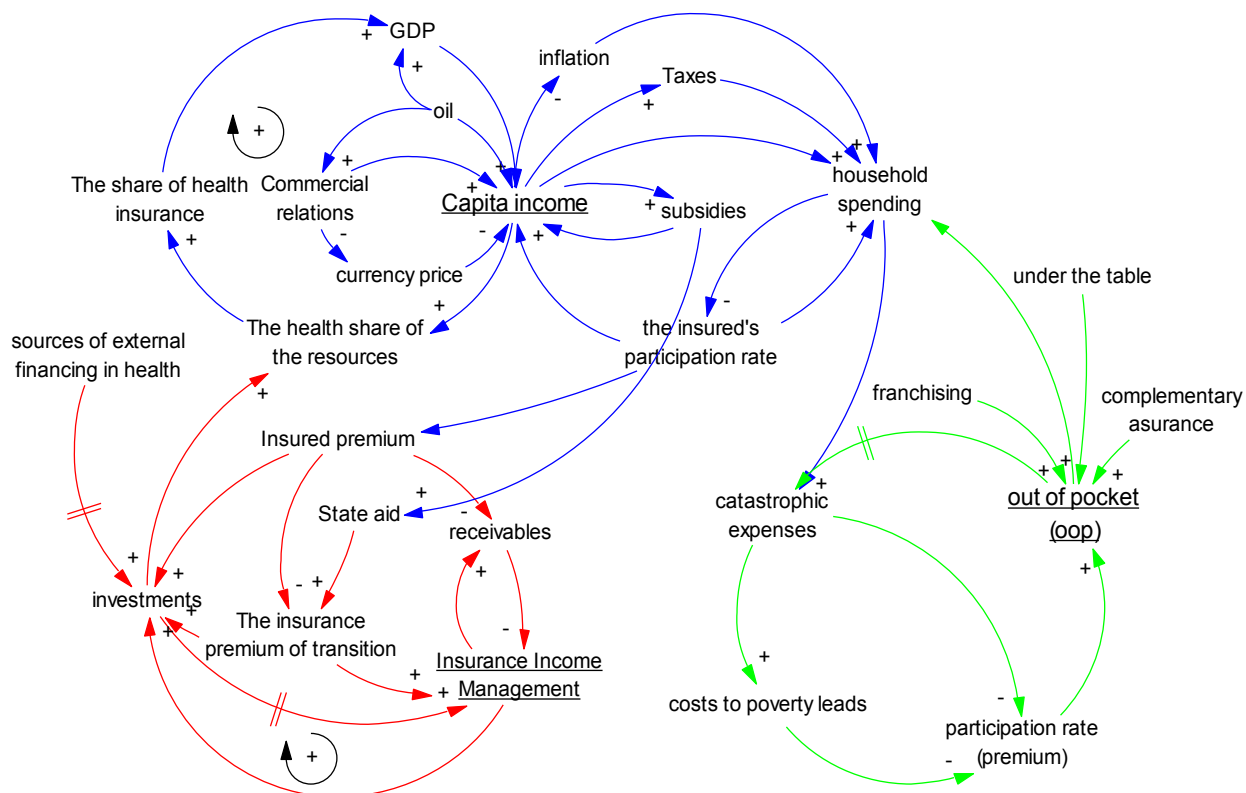


Diagram 3: Causal Loop of Health Financing (combined)

Discussion:

This research provided causal loops in modeling and dynamic environment for use in health system and health insurance. The important point is that by designing and using these loops in health system, many of the events can be predicted, and if necessary, appropriate preventive action is arranged. This subject would be presented through design of flow diagram using simulation software. As is evident in exterritorial researches described in this paper, the biggest affecting difference on health risk in Iran in comparison with developing countries is related to social and political factors and unrealistic prices. These options in Iran have a major role in establishing causal loops, while in developing countries factors including health workforce, environmental conditions and Per capita income play the key role. Also in Iran health service suppliers and lack of stability and unity of them are among the groups affecting public health risk, which are noticed in causal loops of this research and as well causal loops of other countries in similar manner, but in Iran they are detected as high intensity risks. Ambiguity of health macro-policies and social factors barriers in Iran have been limitations for application of these models.

Conclusion:

The purpose of this study was to explore public health risks and analyze factors affecting them to reduce the risk and persistence of low risk circumstance in health insurance. According to this purpose, using a systemic approach, we were trying to create a comprehensive understanding of complex health systems as one of the main demands of citizens in developing countries. After a

review of similar studies around the world and using expert opinions, risk points in health cycle were identified; also an effective causal-loop diagram in health insurance was identified using previous experiences. Eventually six main and effective loops in insurance system of Iran were determined and after identifying the main risks and the relationships between them, issues facing health insurance organization of Iran were identified. A better understanding of this organization and related rules can result in health risk reduction and thus improving public health in Iran by facilitating adoption of effective strategies

Suggestions

In this paper, a conceptual systemic model from a part of factors affecting risk control in health insurance and challenges ahead was made. Considering the importance of this subject and lack of appropriate activities in this area, it is recommended to develop this conceptual model and provide a quantitative model by creating other six known causal diagrams, able to analyze and evaluate the matter studied more accurately.

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IMPROVEMENT OF STUDENTS SELF-CONFIDENT THROUGH PEER COUNSELOR ACTIVITY IN THE CENTER OF INFORMATION AND COUNSELING STUDENTS (PIKM) LARAS HATI IN 2014

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ABSTRACT

Background: The ability to counseling is a skill that must be mastered midwifery students. These skills support midwives competence in midwifery care. Peer counselors is part of the activities in PIKM Laras Hati. Activity became a peer counselor can train students to communicate effectively and solve the problem.

Objective: Demonstrate increased self-confidence of students who become peer counselors in PIKM Laras Hati in 2014 and its application in Midwifery clinical practice.

Method: Mix quantitative followed by qualitative study. Samples are active students become peer counselors and students who did not become a peer counselor as many as 50 students. Sampling was based on purposive sampling technique. Instrument used was a questionnaire statistical analysis using the formula z test. Data amplified by performing in-depth interview in which students become peer counselors.

Results: Students who indulge become peer counselors as many as 25 people and 100% have a high confidence level, while students who do not indulge into peer counselor 20 of them have a moderate level of confidence and the remaining 5 had a high level of confidence. The result of the analysis shows the value of z count equal to -9.798 where $z < z_{table}$ (-9.798 < -2.011) with a significance level of 0.05 and p value of 0,000. Depth interview results shows that student feel more confident in counseling and did not see difficulties meaningfully.

Conclusion: There is a significant difference between the confidence of students who become peer counselors and which are not. Being peer counselors help students when they do midwifery clinical practice.

Keywords: Confidence, Students, Peer Counselor

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Introduction

Human beings can not live with outthe other and always try to establish a relationship with another person. Forms of social relationships for example such as peer groups. People will developing and suffered changes both physically and psychologically in accordance with the concept it self(Sarwono, 2006:20). The concept of self is important for the lives of individuals because the concept itself determine show people actin different situations (Sobur, 2003:510). Confidence is one of the characteristics of individuals who have apositive self-concept.

Every student has basically different confidence levels. Uqshari (2005: 31), stated that self-confident can be improved and does not present itself. We can trying to improve the confidence of students, among others, by following various kinds of non-formal education, active in organizations that existon campus and follow the Student Activity Unit(SMEs), Student Executive Board, Leadership Training Basic Level, and others (Hakim, 2005:149-154).

Counseling ability is a skill that must be mastered midwifery students. These skills support the competence of midwives in midwifery care. Students should practice these skills through intra-curricular and extracurricular activities. One form of extracurricular activities of students is to become peer counselors. Student Activity Unit, Student Information and Counseling Center (PIKM) Laras Hati is anorganizational unit that is in the Yogyakarta Academy of Midwifery. One part in the management in PIKM are peer counselors. According to the observations of researchers at the Academy of Midwifery students in Yogyakarta who became a peer counselor, they look more confident to give an opinion, active in the discussions, did not hesitate in action. According to the researcher interviews to members of the peer counselor after midwifery clinical practice that they can provide counseling to patients well and did not hesitate because it has gained previous experience is currently active as a peer counselor, so as to actively become a peer counselor can increase the confidence of current students provide midwifery care counseling. Based on these descriptions, the researchers intend to determine whether the activity becamea peer counselor can increase student's self-confidence.

Research Methods

This study is a mix of quantitative followed by qualitative study. The study was conducted in Yogyakarta Academy of Midwifery campus and in the Student Information and Counseling Center (PIKM) Laras Hati Yogyakarta Academy of Midwifery. The population in this study are students who move into a peer counselor in PIKM Laras Hati and students who did not become a peer counselor. While the sample is taken using purposive sampling technique, in which the sample was taken based on judgment by researchers about who those who deserve (meets requirements) to be sampled (Kuntoro, 2009). In accordance with the inclusion and exclusion criteria were determined by the researchers, then the samples obtained in this study were 50 respondents. Independent variable in this study is the activity became a peer counselor. while the dependent variable in this study is the increased confidence of students

The data used is primary data obtained directly from the distribution of questionnaires followed by in-depth interview to the respondent. Interviews were conducted to students who are active as a peer counselor who has completed the clinical practice of midwifery. Questionnaire consists of 30 items of questions regarding confidence.

In addition top rimary data, researchers also used secondary data obtained from members of PIKM. This data includes PIKM organizational structure, vision, mission and activities. Data processing by editing first, then coding, and grouping data (tabulating). Then the data was analyzed by two-ways analysis are univariable and bivariable. Univariable analysis conducted by using the frequency distribution formula while the bivariable analysis was analyzed using the z test.

Research Result

1. Characteristics of Respondents

Based on a study of 50 respondents note the following characteristics:

Table 1
Frequency Distribution Characteristics of Respondents by Age and Semester

Characteristics	Frequency	Percentage	Σ
Age			
18 years old	5	10	5
19 years old	17	34	17
20 years old	19	38	19
21 years old	9	18	9
Semester			
II	12	24	12
IV	19	38	19
VI	19	38	19
Total			50

Source: primary data 2014

Table 1 shows that the majority of respondents was 20years(38%) and only a small proportion of respondents was 18 years (10%), so it can be ascertained that the majority of respondents were in semester IV and VI with each as much as 38%, while the rest are in the second semester(24%).

2. Respondents Activity

table 2
Respondents Frequency Distribution Based Activities

Student Activity	Frequency	Percentage	Σ
Being a Peer Counselor	25	50	25
Not Being a Peer Counselor	25	50	25
Total	50		50

Based on Table 2 above can be seen that of the 50 respondents, 50% of whom indulge into peer counselor and the other 50% do not become peer counselor.

3. Confidence

Tabel 3

Frequency Distribution of Respondents by Confidence Level

Confidence level	Frequency	Percentage	Σ
High	30	60	30
Moderate	20	40	20
Low	0	0	0
Total			50

Source: Primary Data 2014

Table 3 shows that the majority of respondents have high confidence (60%), while the rest have moderate confidence (40%) and was not found respondents with low confidence.

4. Difference Confidence Students who indulge Being Peer Counselor with Students Not Being Peer Counselor

The comparative test conducted to determine whether there are differences confidence in students who become peer counselors with confidence of students who did not become a peer counselor, then analyzed by the z test with the aid of statistical program

Table 4 z test Results		
variable	Z	p sig (2-tailed)
confidence	-9,798	

Rule decision of this analysis is if the z count is larger than -z table, so H₀ is accepted and H_a rejected. Whereas if the z count is smaller than -z table, so H₀ is rejected and H_a accepted. Form hypotheses of this study are:

H₀: there is no difference confidence in students who become peer counselors with confidence of students who did not become a peer counselor.

H_a: there is a difference confidence in students who become peer counselors with confidence of students who did not become a peer counselor.

The level of trust or confidence interval of 95%, then the value of $\alpha=5\%$, and the value of $z=-9.798$, while the value of $z_{1/2}(1-\alpha)=2.011$. Therefore z arithmetic (-9.798) is smaller than z table (-2.011) then the conclusion H₀ is rejected, meaning that there is a difference confidence in students who become peer counselors with confidence of students who did not become a peer counselor.

5. Depth Interviews Results To The Active Students That Being Peer Counselor

In-depth interviews conducted to students who have followed the clinical practice of obstetrics and actively be a peer counselor. Results of interviews to 20 students expressed that after active in peer counselor they become more confident when doing counseling midwifery care to patients. This reinforces the the results of previous analyzes that are actively becoming a peer counselor can increase student confidence when providing counseling midwifery care.

Discussion

Results of research on the characteristics of the respondents indicated that the majority of respondents who indulge be a peer counselor 20 years old with a percentage of 20%, while the majority of respondents who do not indulge into a peer counselor average age was 19 and 20 years respectively with percentage of 18%. Results of this study are comparable with the results of research Hadi (2007), which shows that the majority of respondents who attended training personality development are students in the age range 19-20 years. This is in line with the opinion of Hurlock (2006), which states that the late teens (19-21 years) is the age at which adolescents experience intense intellectual development so that the interest of teenagers in the outside world is very large and at that teens do not want to be kids again

Wrightsmann Tridayakisni & Hudaniyah (2009), says that adolescents at the age of 19-21 years is the age of the process of presenting themselves are realized in a variety of activities and sharing information with others. While Morton, Barker & Gautin Tridayakisni & Hudaniyah (2009), says that adolescence to the age of 19-21 years are the years when teens want to show themselves to be appreciated, cared for and trusted by others through a variety of communication/interaction with their peers.

A similar opinion was expressed by Kartono (2007), which states that at the age of 19-21 years, the teens has been steady and stable. At that time he was a teenager already know and want to live with life style outlined itself with courage. Teens begin tounder stand the direction of his life and realize his life. Teens already have a particular establishment based onaclear patternnewly found. Another thing thatcaused the number ofrespondents aged 20 years who indulge be a peer counselor is that in this study the respondent must meet the criteria has become a peer counselor for approximately one year. This was done to measure the emphasis differences that students become peer counselors with students who did not become a peer counselor. These criteria, it is certain that the respondents who became a pee rcounselor is the respondents with an average age of 19-20 years.

Based on the study duration has been exceeded, the majority of respondents who become peer counselors are on average half of the fourth with a percentage of 26%. While the majority of respondents who do not indulge into a peer counselor were in the second semester with percentage of 20%.

Results of research on cross-table between the characteristics of the respondent and his confidence showed that respondents with high confidence the 19-year-old majority (22%) andwere in fourth semester (28%). Respondents who have the confidencebeingthe majorityaged20years(18%) andwerein the second semester(16%).

The age ofthe majority of respondents who were in late adolescence showed maturity to dare to take on the role ofteens in the midst of his peers. Seniority status on health education models such as midwifery may also generate confidence for senior respondents to stand at the front for juniors. It is evident from the high confidence of respondents who were in fourth semester compared to respondents who were in the second semester. In addition, respondents who are in the fourth semester is considered to have a lot more experience and knowled get han those who are in the second semester. Experience and knowledge of the respondent fourth semester are considered more able to control the situation, quieter and does not have a sinking feeling. Respondents who were in the second semester also generally have not got the right place because it is considered as a junior and has not been reliablyable to overcome the problems that must be faced.

According to Guilford and Lauster (in Elvadentia2008:54), confident people will believe once against him and have peace of attitude. This is based on a belief in the power and capabilities. People who believe them selves to be calm, not nervous, quite tolerant of a wide range of situations. Students who become peer counselors have confidence in handling any situation with calm without any hindrance feeling inferior.

The results showed that all students become peer counselors have high confidence (100%), while most of the students who did not become a peer counselor have moderate confidence (40%). This result proved for the mean value (106.76) confidence of students who become peer counselor larger than the mean value (89.00) confidence of students who did not become a peer counselor. This is reinforced with the results of in-depth interviews to 20 students who are active as a peer counselors tating that all students who have followed the clinical practice of obstetrics and active as a peer counselor had high confidence when doing counseling to patients. It is comparable to the results of Hadi's research (2007), which showed that confidence in students who join the training personality development of students is higher than confidence in students who do not attend the training personality development of students, which is indicated by the mean value (93.70> 89 , 63).

The above results indicate that one of the ways that can be done tobe able to shape individuals who have high confidence are by following the many activities both inside and outside the campus as well asPIKM Laras Hati. By participating various activities, students will learn to interact with others, learn to make decisions, learn to communicate and learn to express opinions. Based on this, the confidence of students will be more refined by itself.

One container activities that allow for increasing confidence of students in the Yogyakarta Academy of Midwifery isPIKM Laras Hati. Of the many activities planned by

PIKM Laras Hati, almost all of which require the role of peer counselor. This suggests that being peer counseling is an important part of PIKM Laras Hati. Important part is what is ultimately expected to distinguish students who move as a peer counselor and students who do not move as a peer counselor. Basically, the role of peer counselor and tasks directly related to the others, so that a peer counselor explore all his potential in the face of various types of friends. Based on the experience it will display confidence in her abilities, so it will give rise to an attitude of confidence is high. The result of calculation with the formula z shows that there is a difference between confidence in students who became a peer counselor with confidence in the students who did not become a peer counselor, it is shown that the value of z arithmetic (-9.798) which is smaller than the z -tables (-2.011). There is a difference of student self-confidence on a result of this study are due to the student who became a peer counselor familiar with the role and work program they are always in touch with many people, both among students, the community and school-age children. The role would require them to be open, accustomed to receiving criticism, suggestions, complaints and be able to solve the existing problems. That is, a student who became a peer counselor has many activities that can stimulate their confidence. These activities include training such as counseling, education, dialogue, and others.

In general, the activities that all allegedly implicates increased confidence in a peer counselor. This is consistent with that proposed by Winkel (2010: 56), that the number of task or activities performed by a peer counselor is a process of socialization itself on the environment and increase one's knowledge. Increased knowledge of a person by being a peer counselor will be able to increase confidence. Based on the exposure it can be concluded that students who indulge become peer counselor tend to be more confidence than students who do not indulge into a peer counselor. The research result is in line with research conducted by Achmat (2006), which states that there are significant differences confidence UMM new students before and after the training personality development and leadership.

Conclusion

The results showed that all students become peer counselors have high confidence, while the majority of students who did not become a peer counselor have the confidence of being. It was concluded that there was a significant difference between confidence of students who become peer counselors with students who did not become a peer counselor indicated by the value of z count equal to -9.798 where $z < z$ table (-9.798 < -2.011) with a significance level of 0.05 and a p -value of 0.000. Thus, active as a peer counselor effective in increasing student confidence in PIKM Laras Hati.

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Knowledge and Attitude of Rural Tshivenda Speaking Teenagers towards Choice of Termination of Pregnancy on Vhembe District, South Africa

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Keywords Knowledge. Attitude. Choice. Termination. Teenagers. Tshivenda. Pregnancy

ABSTRACT This paper explored knowledge and attitudes of rural teenagers towards choice of termination of pregnancy. The paper adopted a quantitative approach using a descriptive survey design. Data was collected from a total of 176 randomly selected females, age 14-18 years from 10 secondary schools that makes up a rural Vhumbedzi circuit in the Limpopo province using a self-administered questionnaire. Validity and reliability of the instrument was ensured. Permission to enter the schools was obtained from the circuit manager. Parents/learners informed consent was obtained. Statistical package for Social Sciences was used to analyse data in terms of frequency and percentages. The majority of respondents thought that termination of pregnancy is not a safe procedure and it cannot be done as many times as possible. Most of respondents thought termination of pregnancy is not a form of family planning. The majority of respondents thought termination of pregnancy is dangerous. The majority of respondents said no to termination of pregnancy even if they are pregnant. The majority of respondents thought that a person should regret or feel guilty after termination of pregnancy. The paper concluded that rural female teenagers in South Africa have negative attitudes towards termination of pregnancy despite having adequate knowledge.

INTRODUCTION

Abortion has been a controversial topic around the world, which is perceived differently by individuals in different countries. While some people see it as a reproductive right of women, some perceive it as morally wrong. However, in most developed countries such as the United States and Canada abortion is legalized.

In South Africa, abortion was considered a criminal act until 1975 when the Abortion and Sterilization Act was passed. This Act only allowed abortion under certain circumstances, limiting most women especially adolescents to legal abortion. Therefore, backstreet/illegal abortion and its adverse effects became a serious problem among adolescents in South Africa. In response to the backstreet/illegal abortion health challenge, the government passed the Choice of Termination of Pregnancy (CTOP) Act in 1996 (as amended in 2008) in order for women 12 years above to access legal abortion under conditions such as when the pregnancy endangers the woman's life and poses a risk to her physical and mental health; when there is a possibility that the foetus will be born with serious physical or mental congenital disability; when the pregnant woman is unable to mother a child due to permanent mental defect; and if the pregnancy resulted from rape, incest or other unlawful intercourse. The Act allows legal abortion to:

- Women of any age who wants to terminate a pregnancy upon request during the first 12 weeks of gestation without the consent of their partners, but under restrictions between 13-20 weeks and under special circumstances beyond 20 weeks.
- Minors from the age of 12 years who wants to terminate their pregnancies in the first trimester without permission from their parents or partners in public hospital by professional health practitioners such as registered nurse and midwife free of charge (Sigcau 2014).

However, despite the CTOP Act No 92 of 1996 in place, most women and adolescents still seek backstreet abortion. Three years down the line after enactment of the Act, it was reported that about 40 000 legal termination of pregnancy were carried out each year (Reproductive Rights Alliance, 2012). In 2003 illegal abortions had increased to about 70 000 per year (Makiwane 2013). Although the International Pregnancy Advisory Services [IPAS] (2009), has recorded that since the passing of the Termination of Pregnancy Act of 1996 about 529 410 women have had safe and legal abortions in South Africa; and that maternal morbidity from abortion has been reduced by 90%, Singh (2013), has revealed that globally 46 million pregnancies result in induced abortion, and that in estimation 20 million of these abortions were unsafe. In addition, the National Research Council [NRC] (2005); the Institute of Medicine [IOM] (2005); and the United Nations Family Planning Association [UNFPA] (2011) purport that yearly, in developing countries up to 2.2 - 4 million backstreet abortions are undertaken by adolescents, which endanger both their lives and health. According to the World Health Organisation [WHO] (2004), adverse effects of unsafe abortion have contributed to 13% of pregnancy related maternal death and obstetric complications around the world annually. In South Africa (SA) backstreet/illegal abortion was common among black women before 1996 (Morroni et al. 2006). Morroni et al. (2006) believes that lack of knowledge about the CTOP, the social stigma attached to the CTOP service particularly when it comes to teenagers, traditional morals and values, religion and fear of rejection by the community and parents tend to influence the view of adolescents about CTOP which may affect the use of the service. This paper aimed to explore attitudes of rural teenagers towards choice of termination of pregnancy.

METHODOLOGY

Study design

Based on the purpose of the study, a quantitative cross-sectional descriptive survey design was adopted. A descriptive research design is deemed suitable by the researchers because it describes and interprets phenomena that are in existence, while at the same time using a cross-sectional survey method to collect data from subjects at one point in time to describe a phenomenon (Brink et al. 2006).

The Study Setting

The study was conducted at Vhumbedzi educational circuit which is situated in the east of Sibasa in the Vhembe District and north of Kruger National Park. The circuit consists of 10 secondary schools, 24 primary schools and one independent primary school. The target population of this project is all secondary school learners from grade 8 – grade 12 in Vhumbedzi circuit.

Population and Sample size and sampling procedure

Ten secondary schools in the Vhumbedzi educational circuit had a total female population of 2515, which included grades 8 to 12 learners. Thus, the population of 2515 learners was targeted for this study. Based on the sampling frame of 2515, sample size of $n=205$ was calculated using Slovin's formula $[n=N / \{1+Ne^2\}]$ where n and N denote the sample and population sizes respectively thus allowing a margin error of $e= 0.05$. Thus, learners were randomly selected within based on population proportional to size procedure which ensured proportional representativeness of grade in the final sample.

Data collection instrument

A semi-structured self-administered questionnaire comprising of ranking scale questions was adapted from the 2011 high school Youth Risk Behaviour Survey (YRBS) of the Centres for Disease Control and Prevention (2011). The instrument was written in English and required approximately 60 minutes to complete. Caution was taken to ensure that it was user-friendly and understandable. The questionnaire was divided into 3 sections namely demographic profile of the participants; learners' knowledge of CTOP; and learners' attitudes towards CTOP.

Instrument validity

To ensure validity, the instrument was adapted from the YRBS questionnaire of the Centres for Disease Control and Prevention (2011) to suit the local conditions. A wide range of literature was also consulted on the variables of interests. Also, the instrument was pre-tested on some volunteer learners in one school similar to the target population next to the university. Pre-testing results were used to rephrase and modify some aspects of the questionnaire thus making it suitable and comprehensible to the participants.

Instrument reliability

The reliability of the instrument was bolstered by adapting a questionnaire based largely upon the Centers for Disease Control and Prevention 2011 national high school *Youth Risk Behaviors Survey* (YRBS). The YRBS is a standardized instrument developed by the CDC to measure risk behaviors of high school students with generally high reliability rating [Kappa=61 – 100%] ((Brener et al. 2002; CDC 2011).

Ethical considerations

The Research and Innovation Directorate of the University of Venda issued an ethical clearance certificate (SHS/12/PH/03/0812) for the project titled “Community health diagnosis of secondary school learners in Vhumbedzi circuit, South Africa” in August 2012. Permissions to conduct this research project and to enter schools were obtained from the Department of Health – Limpopo province and the Vhumbedzi circuit office respectively. Final access to the participating schools was negotiated with the school authorities. Written informed consent was obtained from learners and their parents before the administration of the instrument. In addition, participants’ names and identities were not required and at the same time, no staff member was allowed at the survey venue during the time the questionnaires were administered to ensure learners anonymity, confidentiality and voluntary participation.

Data collection or Survey procedure

The study was conducted over a three-week period between October and November 2012. All 10 schools were visited by the research team to identify the learners who were to participate in the study. Questionnaires were distributed to 205 female learners proportionally. Dates for data collection were pre-arranged by circuit office and school authorities; and within each participating school, a special class was organized where the research team briefed the participants and assisted in facilitating the administration of the instrument and addressing issues arising thereof. The administration of the questionnaires lasted approximately 60 minutes and the response rate was 86% (n=176 females learners).

Data analysis

Survey responses were coded and analysed the Statistical Package for the Social Sciences (SPSS) version 21.0 software. Descriptive statistics (frequencies and percentages) were used to summarize the data.

RESULT

Demographic characteristics of the respondents

Though self-administered questionnaires were distributed to 205 female learners proportionally according to grades, the response rate was 86% (n=176) females learners. Thus, (see table I for details). The results are presented according to the objectives of the study:

Table I: Summary of the demographic profile of the respondents

Gender	Frequency	Percentages
Females	176	86%

Knowledge of the choice of termination of pregnancy

The findings of the study revealed that very few (6% n =11) of the learners thought abortion is always a safe procedure and can be done as many times as possible. The majority (73% n = 128) thought that it is not a safe procedure and it cannot be done as many times as possible. Few (21% n=37) learners were not sure if abortion is a safe procedure.

Also, few (17% n=30) learners thought that abortion is a form of family planning. Most (65% n=114) learners thought abortion is not a form of family planning while some (18% n=32) of the learners are unsure if abortion is a form of family planning.

The majority (84% n=149) of the learners thought doing abortion is dangerous. A few (10% n=17) learners thought doing abortion is not dangerous and 7% (n=12) were unsure.

Attitude of the learners about choice of termination of pregnancy

Surprisingly, the majority (81% n=142) of the learners said no to abortion even if they are pregnant. Very few (7% n=13) learners said they will consider abortion if they get pregnant. Few (12% n=21) learners were unsure if they would consider abortion if they are pregnant.

Of the learners 95% (n=163) have never had abortion before in their lives and 1% (n=2) had had abortion before. Amazingly, 4% (n=6) of the learners were unsure if they have ever had abortion in their lives.

Almost all the learners (88% n=153) said they would not recommend abortion to someone. A few (7% n=12) learners said they would recommend abortion to someone and 5% of the learners were unsure if they would.

The majority (84% n=145) of the learners said they would not tell their parents that they want to do abortion. Few (11% n=19) learners said they will tell their parents that they want to do abortion whilst 5% of the learners are not sure if they will let their parents know about them wanting abortion.

Most (85% n=146) of the learners said no to abortion if their parents refuse whilst a few (2% n=4) learners said they would have abortion even if their parents refuse and other (12% n=21) learners are not sure if they would have abortion if their parents refuse.

Some (38 % n=67) of the learners knew more than five people who had had abortion in year 2012. About 35% (n=61) of the learners were not sure if they knew more than five people who had had abortion that year. Few (27% n=48) learners said they did not know more than five people who had had abortion in the same year.

The majority (68% n=121) of the learners thought that a person should regret or feels guilty after abortion. A few (12% n=21) learners felt a person should not regret or feels guilty after abortion whilst 20% (n=36) of the learners were not sure if a person should regret or feels guilty after abortion.

DISCUSSIONS

The findings of this study revealed that most of the respondents had adequate knowledge about CTOP since the majority considered it unsafe and dangerous. On the contrary, a study conducted by Ehlers (2003) in Tshwane among adolescent mothers revealed that though, CTOP and other contraceptive service are available free of charge for those adolescents but they did not use it because they lack knowledge about these services. Ehlers (2003) further revealed that most of the adolescent mothers need to see the services as being safe for them to be able to make use of it effectively. Similarly, a study by Ratlabala et al. (2007) among

adolescents in rural Limpopo province also reported low levels of knowledge about CTOP. Although, in Kwazulu Natal a research study in 2006 showed that there was an increase in knowledge levels about TOP among women in comparison to their knowledge back in 1998 (Morroni et al. 2006).

The majority of the learners (80%) indicated that they would not consider TOP even if they are pregnant which revealed that most of the learners have negative attitudes towards TOP. This result is supported by Ratlabala et al. (2007) in a study carried out among adolescents residing in the Nkumpi-Lepelle in the Limpopo Province on perceptions of adolescents in low resourced areas towards pregnancy and CTOP. The study indicated that the negative attitudes of adolescents are associated with lack of information about CTOP and the fact that most of the adolescents considered public clinics and hospitals not youth friendly.

In addition, Varga (2002) state that the fear of stigmatization of teenage pregnancy and CTOP by the society also serve as a barrier to legal abortion among adolescents. Varkey (2000) asserts that attitudes of some health care workers and general public did oppose women's right to CTOP, and that there is hesitation among medical staff when it comes to minors having an abortion without parental permission. A research conducted by Althaus (2000) focusing on the expansion of access to abortion services in South Africa revealed that only 10% of South African inhabitants thought that abortion was a woman's right, 41% agreed to CTOP in case of rape whilst almost half (48%) of the people in SA deemed CTOP as immoral act. Althaus (2000) further indicated that more black (54%) than white (19%) South Africans considered abortion as immoral act.

CONCLUSIONS

This study had revealed that though female secondary school learners of Vhumbedzi Circuit had adequate knowledge about abortion, they still have negative attitudes towards CTOP.

RECOMMENDATIONS

Although, studies have documented positive impact of the CTOP on morbidity and mortality associated with abortion in SA a lot still need to be done to make the services acceptable to the general population especially adolescents in rural communities. Thus, in order to ensure that most adolescents especially in rural areas make use of CTOP service, behaviour change modalities such as the Health belief model (HBM) should be applied in order to change the perceptions of teenagers toward CTOP.

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NOTES

This paper is part of a bigger project titled *Community health diagnosis of secondary school learners in Vhumbedzi circuit*, which was conducted in 2012 in rural areas of Vhembe district South Africa.

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Medicine Price, Availability and Affordability in China:

A Case From Harbin City

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Abstract

This article aims to analyze the price, availability, and affordability of selected medicines in China urban areas with the standardized methodology developed by the World Health Organization and Health Action International. The survey is undertaken in one city since the prices of essential medicines have been strictly regulated in China before June 1, 2015. The results of the survey show that the affordability, availability and price of medicines should be improved in order to ensure equity in access to basic medical treatments, especially for the poor. This requires multi-faceted interventions, as well as the review and refocusing of policies, regulations and educational interventions.

Key words: Medicine, Availability, Affordability, Price Structure

1. Introduction

The medicine exorbitant price caused by the high mark-ups between ex-manufacturers and wholesalers in China is one of the key problems that has been increasingly focused on by the public. In order to constrain the rapid growth of unreasonable health expenditures and reduce patients' financial burdens of pharmaceutical consumption, Chinese government has already adopted various policies to lower pharmaceutical prices since the government re-regulated pharmaceutical price in 1996. Although these measures have prevented pharmaceutical price from further going up in some extent, the problem of the pharmaceutical exorbitant price has not been entirely solved. Since 2000, the governmental regulation of pharmaceutical price has attracted more attention of domestic academe who concentrates on exploring the reasons of pharmaceutical exorbitant price and improving the policy recommendations of pharmaceutical price regulation (Chen, 2005; Liang, 2006; Zhu, 2007; Ye et al, 2010; Shen et al, 2012). Although some researches have systematically analyzed the government pharmaceutical price regulation from the China's existing health system, they did not measure essential medicines' availability and affordability to the common Chinese people. Other researches referred to the issue of medicine affordability and availability, but they did not use the lowest government employee's wages (Sun, 2006; Lu, 2006). Under the above consideration, this study will employ the standard WHO/HAI methodology to investigate the issue of medicine availability and affordability and their relevance to medicine price level. The article include three sections. Section 1 is about the methodology and data collection; section 2 refers to the analysis of medicine availability and affordability; the last section is policy recommendations and conclusion.

2. Methodology

Overview

The survey of the prices, availability and affordability of pharmaceuticals in Harbin was conducted using the standardized WHO/HAI methodology (WHO/HAI 2008). Data on the availability and final (patient) prices of pharmaceuticals were collected in pharmaceutical outlets in the public and private sectors. Government procurement prices were also surveyed.

A total of 50 pharmaceuticals were surveyed – 30 from the WHO/HAI core list (14 global pharmaceuticals and 16 regional pharmaceuticals), and 20 supplementary pharmaceuticals selected at the country level. For each pharmaceutical in the survey, up to two products were monitored, namely:

Originator brand (OB) - the original patented pharmaceutical product (identified centrally)

Lowest-priced generic equivalent (LPG) - the lowest-priced in the facility at the time of the survey

All prices were converted to US dollars using the exchange rate (buying rate) on September 1st 2010, the first day of data collection, i.e. 1 USD = 6.8188 Yuan.

2.1 Selection of pharmaceutical outlets

Sampling was conducted in a manner consistent with the WHO/HAI methodology, which has been shown through a recent validation study to yield a nationally representative sample.

In the first step, four regions were selected as "survey areas" for data collection. The

major urban center of Harbin was selected as one survey area, and an additional three areas were chosen at random from those which could be reached within a one day's drive from Harbin. This resulted in the following four survey areas: Nangang, Daoli, Daowai, Xiangfang.

In each survey area, the sample of public sector pharmaceutical outlets was identified by first selecting the main public hospital. An additional four public pharmaceutical outlets (e.g. hospital out-patient pharmaceutical outlets, dispensaries) per survey area were then selected at random from those within a 4 hour's drive from the main hospital. In Harbin, this selection was made from all public facilities expected to stock most of the pharmaceuticals in the survey, namely tertiary, secondary hospitals, primary health care centers and township hospital. Since rural health posts are not expected to stock the majority of pharmaceuticals in the survey, these were excluded from the sampling frame. The public sector sample therefore contained five public pharmaceutical outlets in each of the four survey areas, for a total of 20 public outlets. The private sector sample was identified by selecting the private sector pharmaceutical outlet closest to each of the selected public pharmaceutical outlets, yielding a total of 30 private outlets.

Table 1. Sample of public and private pharmaceutical outlets

	Nangang	Daoli	Daowai	Xiangfang
Public sector	-1 tertiary hospital	-1 tertiary hospital	-1 tertiary hospital	-1 tertiary hospital
	-2 secondary hospitals	-2 secondary hospitals	-2 secondary hospitals	-2 secondary hospitals
	-2 primary care centers	-2 primary care centers	-2 primary care centers	-2 primary care centers
	-5 pharmacies nearest to the selected public hospital	-5 pharmacies nearest to the selected public hospital	-5 pharmacies nearest to the selected public hospital	-5 pharmacies nearest to the selected public hospital

2.2 Selection of pharmaceuticals to be surveyed

WHO/HAI methodology specifies a core list of 14 global pharmaceuticals and 16 regional pharmaceuticals to be surveyed, representing pharmaceuticals commonly used in the treatment of a range of chronic and acute conditions. The methodology also includes the specific dosage form and strength for each pharmaceutical. This ensures that data on comparable products are collected in all surveys, thereby allowing international comparisons to be made.

An additional 20 supplementary pharmaceuticals were selected at the country level for inclusion in the survey. Supplementary pharmaceuticals were selected based on local importance, EML and disease burden. The full list of survey pharmaceuticals is provided in Annex. 1. Of the 50 pharmaceuticals surveyed, 33 were on the EML.

2.3 Data Collection

Data collectors visited pharmaceutical outlets in pairs and collected information on pharmaceutical availability and price using a standard data collection form specific to the pharmaceuticals being surveyed in Harbin. Area supervisors checked all forms at the end of each day of data collection, and validated the data collection process by collecting data at 20% of the pharmaceutical outlets and comparing their results with those of the data collectors. Upon completion of the survey the survey manager conducted a quality control

check of all data collection forms prior to data entry.

When data collectors did not find at least 50% of the targeted pharmaceuticals in any given pharmaceutical outlet, an additional outlet was surveyed. This increased the total sample to 50 public sector pharmaceutical outlets and 36 private sector pharmaceutical outlets (86 in total).

Public procurement data was collected on the prices that the government pays to procure pharmaceuticals. Data was collected for the same global, regional and supplementary pharmaceuticals as surveyed in pharmaceutical outlets. Procurement data was obtained from a recent procurement order from the centralized pharmaceutical procurement agency. Procurement prices were entered in the workbook on the pharmaceuticals found (originator brands and lowest priced generics) in each public sector outlet sampled.

2.4 Data Entry

Survey data was entered into the pre-programmed MS Excel Workbook provided as part of the WHO/HAI methodology. Data entry was checked using the 'double entry' and 'data checker' functions of the Workbook. Erroneous entries and potential outliers were verified and corrected as necessary.

2.5 Data Analysis

The availability of individual pharmaceuticals is calculated as the percentage (%) of pharmaceutical outlets where the pharmaceutical was found. Mean (average) availability is also reported for the overall 'basket' of pharmaceuticals surveyed. The availability data only refers to the day of data collection at each particular facility and may not reflect average monthly or yearly availability of pharmaceuticals at individual facilities. The availability of individual pharmaceuticals in the public sector was limited to those facilities where the pharmaceutical was expected to be available. For example, if a survey pharmaceutical is only provided through secondary or tertiary hospitals, the calculation of the pharmaceutical's % availability was limited to these facilities.

As an external benchmark, and to facilitate cross-country comparisons, pharmaceutical prices obtained during the survey are expressed as ratios relative to a standard set of international reference prices:

$$\text{Medicine Price Ratio (MPR)} = \frac{\text{median local unit price}}{\text{international reference unit price}}$$

The ratio is thus an expression of how much greater or less the local pharmaceutical price is than the international reference price e.g. an MPR of 2 would mean that the local pharmaceutical price is twice that of the international reference price. Median price ratios were only calculated for pharmaceuticals with price data from at least 4 pharmaceutical outlets. The exchange rate used to calculate MPRs was 1 US\$ = 6.8188 Yuan; this was the commercial "buy" rate on the first day of data collection.

The source of the reference prices was the 2009 Management Sciences for Health (MSH) International Drug Price Indicator Guide. These prices are the medians of recent procurement prices offered by for-profit and not-for-profit suppliers to international not-for-profit agencies for generic products. These agencies typically sell in bulk quantity to governments or large NGOs, and are therefore relatively low and represent efficient bulk procurement without the costs of shipping or insurance.

Price results are presented for individual pharmaceuticals, as well as for the overall

'basket' of pharmaceuticals surveyed. Summary results for the basket of pharmaceuticals have been shown to provide a reasonable representation of pharmaceuticals in the country and price conditions on the market. As averages can be skewed by outlying values, median values have been used in the price analysis as a better representation of the midpoint value. The magnitude of price and availability variations is presented as the interquartile range. A quartile is a percentile rank that divides a distribution into 4 equal parts. The range of values containing the central half of the observations, that is, the range between the 25th and 75th percentiles, is the interquartile range.

Finally, the affordability of treating 22 common conditions was assessed by comparing the total cost of pharmaceuticals prescribed at a standard dose, to the daily wage of the lowest paid unskilled government worker (25.3333 Yuan/day and amount 3.7152 USD/day at the time of the survey from the Department of Human Resources and Social Security of Harbin). Though it is difficult to assess true affordability, treatments costing one days' wage or less (for a full course of treatment for an acute condition, or a 30-day supply of pharmaceutical for chronic diseases) are generally considered affordable.

3. Results

3.1 Availability of pharmaceuticals

Table 2. Mean availability of pharmaceuticals on the day of data collection, public and private sectors

	Public sector (n = 50 outlets)				Private sector (n = 36 outlets)	
	All pharmaceuticals (n = 50 pharmaceuticals)		EML pharmaceuticals only (n = 33 pharmaceuticals)		All pharmaceuticals (n = 50 pharmaceuticals)	
	OBs	LPGs	OBs	LPGs	OBs	LPGs
median availability	9.2%	24.3%	7.3%	32.3%	22.4%	48.6%
(standard deviation)	17.5%	19.6%	15.6%	28.3%	28.3%	36.8%

Average availability of all surveyed originator brand pharmaceuticals in the public sector was low at 9.2%. When analysis is limited to survey pharmaceuticals listed on the national EML, public sector availability decreases at 7.3%.

In the public sector, generics were the predominant product type available but availability was still low, even for pharmaceuticals on the EML (32.3%).

Average availability for originator brands in the private sector was low at 22.4%. Generics were the predominant product type available but their availability was still less than 50%.

In the private sector, pharmaceutical availability was generally higher than in the public sector.

Table 3 and Table 4 contains the availability of individual pharmaceuticals in both the public and private sectors. In the public sector, six pharmaceuticals were not found in any outlets (either as originator brand or generics); acyclovir, atenolol, ciprofloxacin, glibenclamide, ibuprofen, and ofloxacin. A further 6 pharmaceuticals (cefradine, diazepam, fluoxetine, erythromycin, fluconazole, lisinopril), were found in 10% or less of the 50 facilities surveyed. In the private sector, atenolol and diazepam were not found in any of the 36 pharmacies surveyed (either product type) and 4 pharmaceuticals (erythromycin,

glibenclamide, ibuprofen, ofloxacin), were found in 10% or less of the pharmacies.

Table 3: Availability of pharmaceuticals in the public sector

	Originator brand	Lowest price generic
<1%	Aciclovir, , Amitriptyline, Amoxicillin, Atenolol, Captopril, Carbamazepine, Cefradine injection, Cephalexin, Cimetidine, Ciprofloxacin, Co-trimoxazole, Diazepam, Diclofenac, Digoxin, Enalapril, Erythromycin, Fluconazole, Glibenclamide, Hydrochlorothiazide, Ibuprofen, Lisinopril, Lovastatin, Metronidazole, Nifedipine Retard, Ofloxacin, Paracetamol, Phenytoin, Ranitidine, Rifampicin, Sodium Valproate	Aciclovir, Atenolol, Beclometasone inhaler, Ciprofloxacin, Glibenclamide, Ibuprofen, Ketoconazole, Ofloxacin
1%-25%	Azithromycin, Beclometasone inhaler, Ceftriaxone injection, Fluoxetine, Loratadine, Losartan, Metformin, Omeprazole, Simvastatin	Albendazole, Amitriptyline, Amlodipine, Amoxicillin, Atorvastatin, Cefradine injection, Cephalexin, Diazepam, Diclofenac, Erythromycin, Fluconazole, Fluoxetine, Lisinopril, Loratadine, Lovastatin, Metformin, Miconazole Nitrate cream, Paracetamol, Salbutamol inhaler, Simvastatin
26%-50%	Albendazole, Amlodipine, Atorvastatin, Gliclazide, Ketoconazole, Salbutamol inhaler	Carbamazepine, Cimetidine, Gliclazide, Nifedipine Retard, Phenytoin, Ranitidine, Rifampicin, Sodium Valproate
51%-75%	NONE	Azithromycin, Co-trimoxazole, Digoxin, Enalapril, Hydrochlorothiazide
>75%	Miconazole Nitrate cream	Aminophylline, Captopril, Ceftriaxone injection, Metronidazole, Omeprazole

Table 4: Availability of pharmaceuticals in the private sector

	Originator brand	Lowest price generic
<1%	Aciclovir, Amitriptyline, Atenolol, Captopril, Carbamazepine, Cefradine injection, Cephalexin, Cimetidine, Ciprofloxacin, Co-trimoxazole, Diazepam, Diclofenac, Enalapril, Erythromycin,	Atenolol, Beclometasone inhaler, Diazepam, Ketoconazole

	Glibenclamide, Hydrochlorothiazide, Ibuprofen, Lovastatin, Metronidazole, Ofloxacin, Phenytoin, Ranitidine, Rifampicin	
26%-50%	Amoxicillin, Azithromycin, Beclometasone inhaler, Ceftriaxone injection, Digoxin, Fluconazole Fluoxetine, Lisinopril, Nifedipine Retard, Paracetamol, Sodium Valproate	Albendazole, Amitriptyline, Atorvastatin, Cefradine injection, Ciprofloxacin, Erythromycin, Fluconazole, Fluoxetine, Glibenclamide, Ibuprofen, Lisinopril, Losartan, Miconazole Nitrate cream, Ofloxacin, Paracetamol,
51%-75%	Losartan, Metformin, Omeprazole, Salbutamol inhaler, Simvastatin	Aciclovir, Amlodipine, Cephalexin, Diclofenac, Loratadine, Lovastatin Metformin, Phenytoin, Simvastatin
>75%	Amlodipine, Atorvastatin, Gliclazide, Ketoconazole	Aminophylline, Carbamazepine, Ceftriaxone injection, Digoxin, Gliclazide, Nifedipine Retard, Salbutamol inhaler, Sodium Valproate
>75%	Albendazole, Loratadine, Miconazole Nitrate cream	Amoxicillin, Azithromycin, Captopril, Cimetidine, Co-trimoxazole, Enalapril, Hydrochlorothiazide, Metronidazole, Omeprazole, Ranitidine, Rifampicin

3.2 Public sector procurement prices

Table 5. Public sector procurement - ratio of median unit price to MSH international reference price (median price ratio or MPR), median for all pharmaceuticals found

	Median MPR	25th percentile	75th percentile
Originator brand (n = 15)	9.83	4.13	22.36
Lowest price generic (n = 28)	0.85	0.46	4.56

Of the 50 pharmaceuticals included in the survey, procurement prices were analyzed for 15 originator brand and 28 generics (products found in 4 or more public sector facilities)

Overall the public sector is procuring generics at 0.85 times their international reference prices, and originator brands at 9.83 times their international reference prices. Thus, overall the government procurement agency is purchasing efficiently for generics (although some individual generics were high priced), but paying very high prices for originator brands. The interquartile range shows substantial variation in median price ratios across individual pharmaceuticals.

For 8 pharmaceuticals procurement prices were obtained for both product types. Originator brands were found to be about 6 times the price of the lowest priced generics.

Table 6. Some individual pharmaceuticals with high procurement prices (originators and/or lowest priced generics) and/or where the difference between the originator brand and lowest priced generic equivalent is large

Pharmaceutical	MPR originator brand (OB)	MPR lowest priced generic (LPG)	Ratio OB/LPG
Amlodipine	26.38	6.23	6.84
Ceftriaxone	18.32	0.49	42.9
Diclofenac	n/a	22.36	n/a
Enalapril	n/a	6.32	n/a
Fluoxetine	n/a	110.23	n/a
Gliclazide	13.65	5.76	3.4
Loratadine	26.83	6.84	5.3
Metformin	n/a	19.26	n/a
Miconazole nitrate cream	n/a	9.83	n/a
Omeprazole	57.53	1.73	31.4
Salbutamol inhaler	2.76	0.56	7.3
Simvastatin	6.86	4.21	3.6

Table 6 contains public procurement prices for individual pharmaceuticals (when found in a least 1 outlet). All originator brand for which the government is paying several times the international reference price. Generic for which the government is paying more than 5 times the international reference price include Amlodipine (6.23), Diclofenac (22.36), Enalapril (6.32), Erythromycin (12.36), Fluconazole (9.19), Fluoxetine (34.95), Loratadine(6.84), Metformin (6.70) and Paracetamol (5.63).

3.3 Public sector patient prices

Table 7. Public sector patient prices - ratio of median unit price to MSH international reference price (median price ratio or MPR), median for all pharmaceuticals found.

Product type	Median MPR	25th percentile	75th percentile
Originator brand (n = 15 pharmaceuticals)	12.37	3.36	26.13
Lowest price generic (n = 28 pharmaceuticals)	0.89	0.63	3.79

The results above show that in the public sector:

Overall, originator brand pharmaceuticals are sold to patients at 12.37 times than international reference price. Half of the originator brand pharmaceuticals were priced at 3.36 to 26.13 times their international reference price; there is therefore substantial variation in MPRs across individual originator brand pharmaceuticals in the public sector.

Lowest price generic pharmaceuticals are generally sold at 0.89 times their international reference price. Half of the lowest priced generic pharmaceuticals were priced at 0.63 to 3.79 times their international reference price; there is therefore moderate variation in MPRs across individual generic pharmaceuticals in the public sector.

Originator brand pharmaceuticals priced more than 20 times higher than international reference prices (i.e. very high priced) include amlodipine (MPR = 30.56), ceftriaxone injection (MPR = 23.13), fluoxetine (MPR = 121.63), loratadine (MPR = 32.65), metformin

(MPR = 22.32), omeprazole (MPR = 74.83). The 25th and 75th percentiles for individual pharmaceuticals show that, for originator brands, prices vary significantly between public sector pharmaceutical outlets. Lowest price generic pharmaceuticals priced several times higher than international reference prices include amlodipine (MPR = 6.59), diclofenac (MPR = 27.84), enalapril (MPR = 9.56), gliclazide (MPR=7.32), loratadine (MPR=7.49), lovastatin (MPR=4.96). The 25th and 75th percentiles for individual pharmaceuticals show that, for generic pharmaceuticals, prices vary significantly between public sector pharmaceutical outlets.

Table 8. Some individual pharmaceuticals with high patient prices (originators and/or lowest priced generics) and/or where the difference between the originator brand and lowest priced generic equivalent is large

Pharmaceutical	MPR originator brand (OB)	MPR lowest priced generic (LPG)	Ratio OB/LPG
Amlodipine	27.32	5.73	7.09
Ceftriaxone	17.65	0.56	43.27
Diclofenac	n/a	21.56	n/a
Enalapril	n/a	7.41	n/a
Fluoxetine	n/a	109.72	n/a
Gliclazide	14.38	5.41	3.8
Loratadine	25.49	3.16	4.09
Metformin	n/a	17.19	n/a
Miconazole nitrate cream	n/a	9.16	n/a
Omeprazole	53.79	1.39	32.8
Salbutamol inhaler	3.56	0.49	6.7
Simvastatin	7.46	5.48	2.9

3.4 Private sector patient prices

Table 9. Ratio of median unit price to MSH international reference price (median price ratio or MPR), median for all pharmaceuticals found.

Product type	Median MPR	25 %percentile	75 %percentile
Originator brand (n = 15 pharmaceuticals)	7.53	5.23	24.19
Lowest price generic (n = 37 pharmaceuticals)	1.39	0.43	5.47

The results above show that in the private sector:

Originator brand pharmaceuticals are generally sold at 7.53 times their international reference price. Half of the originator brand pharmaceuticals were priced at 5.23 to 24.19 times their international reference price; there is therefore substantial variation in MPRs across individual originator brand pharmaceuticals in the private sector.

Lowest price generic pharmaceuticals are generally sold at 1.39 times their international reference price. Half of the lowest priced generic pharmaceuticals were priced at 0.43 to 5.47 times their international reference price; there is therefore substantial variation in MPRs across individual generic pharmaceuticals in the private sector.

Median price ratios for individual pharmaceuticals found in the private sector. Originator brand pharmaceuticals priced more than 20 times higher than international reference prices include amlodipine (MPR = 25.32), fluoxetine (MPR=115.98), loratadine (MPR=21.68), nifedipine redard (MPR=29.13), omeprazole (MPR=58.16). The 25th and 75th percentiles for individual pharmaceuticals show that, for originator brands, prices vary significantly between private sector pharmaceutical outlets. Lowest price generic pharmaceuticals priced several times higher than international reference prices include amlodipine (MPR = 4.59), diclofenac (MPR=22.48), enalapril (MPR=16.29), fluoxetine (MPR=31.57), loratadine (MPR=13.76), lovastatin (MPR=6.79), miconazole nitrate (MPR=7.49), paracetamol (MPR=7.09). The 25th and 75th percentiles for individual pharmaceuticals show that, for generic pharmaceuticals, prices vary significantly between private sector pharmaceutical outlets.

3.5 Comparison of patient prices in the public and private sectors

Table 10. Median MPRs for pharmaceuticals found in both public and private sectors

Product type	Median MPR Public sector patient prices	Median MPR Private sector patient prices	% difference private to public
Originator brand (n = 14 pharmaceuticals)	10.23	8.39	-13.09%
Lowest price generic (n = 27 pharmaceuticals)	0.85	0.93	10.94%

In the above table, only those pharmaceuticals found in both public and private sector pharmaceutical outlets were included in the analysis to allow for the comparison of prices between the two sectors. Results show that final patient prices in the private sector are -13.09% and 10.94% higher than in the public sector for originator brands and generic equivalents, respectively.

3.6 Affordability of standard treatment regimens

The affordability of treatment for 22 common conditions was estimated as the number of days' wages of the lowest-paid unskilled government worker needed to purchase pharmaceuticals prescribed at a standard dose. For acute conditions, treatment duration was defined as a full course of therapy, while for chronic diseases, the affordability of a 30-days' supply of pharmaceuticals was determined. The daily wage of the lowest-paid unskilled government worker used in the analysis was 25.3333 Yuan.

Table 11. Number of days' wages of the lowest paid government worker needed to purchase standard treatments

Disease condition and 'standard' treatment			Day's wages to pay for treatment			
Condition	Drug name, strength, dosage form	Treatment schedule	public sector		private sector	
			originator brand	lowest priced generic	originator brand	lowest priced generic
Asthma	Salbutamol 100 mcg/dose inhaler	1 inhaler of 200 doses	1.4	0.4	1.1	0.4

Diabetes	Metformin 500mg cap/tab	1 cap/tab x 3 x 30 days = 90	6.1	n/a	5.2	0.4
Hypertension	Amlodipine 5 mg cap/tab	1 cap/tab x 30 days = 30	6.2	1.6	6.2	1.4
Hypertension	Captopril 25 mg cap/tab	1 cap/tab x 2 x 30 days = 60	n/a	0.1	n/a	0.1
Hypercholesterolaemia	Simvastatin 20 mg cap/tab	1 cap/tab x 30 days = 30	4.9	2.9	3.1	2.2
Depression	Amitriptyline 25 mg cap/tab	1 cap/tab x 3 for 30 days = 90	n/a	0.8	n/a	0.6
Adult respiratory infection	Ciprofloxacin 500 mg cap/tab	1 cap/tab x 2 for 7 days = 14	n/a	n/a	n/a	0.1
Adult respiratory infection	Co-trimoxazole 80+400mg cap/tab	1 cap/tab x 2 for 7 days = 14	n/a	<0.1	n/a	<0.1
Adult respiratory infection	Amoxicillin 500mg cap/tab	1 cap/tab x 3 for 7 days = 21	n/a	0.6	n/a	0.4
Adult respiratory infection	Ceftriaxone 1 g/vial injection	1 vial	4.1	0.1	n/a	0.1
Diabetes	Gliclazide 80mg cap/tab	1 cap/tab x 30 days = 30	1.6	0.8	1.4	0.6
Arthritis	Diclofenac 50mg cap/tab	1 cap/tab x 2 x 30 days = 60	n/a	2.4	1.9	n/a
Ulcer	Omeprazole 20mg cap/tab	1 cap/tab x 30 days = 30	15.3	0.8	14.3	0.8
Hypercholesterolaemia	Atorvastatin 20mg cap/tab	1 cap/tab x 30 days = 30	13.1	n/a	12.1	n/a
Epilepsy	Carbamazepine 100mg cap/tab	1 cap/tab x 2 x 30 days = 60	n/a	0.1	n/a	0.1

The affordability of lowest price generics in the public sector was good for most conditions, with standard treatment costing a days' wage or less. Treatments costing over a days' wage of the lowest paid government worker include Hypertension Amlodipine 5 mg cap/tab 1 cap/tab x 30 days (1.6 days' wages), Hypertension Nifedipine Retard 20mg cap/tab 1 cap/tab x 2 x 30 days (1.5 days' wages), Hypercholesterolaemia Simvastatin 20 mg cap/tab 1 cap/tab x 30 days (2.9 days' wages), Arthritis Diclofenac 50mg cap/tab 1 cap/tab x 2 x 30 days (2.4 days' wages) .

In the private sector, the affordability of lowest price generics was good for some conditions, with standard treatment costing a days' wage or less. Treatments costing over a

days' wage of the lowest paid government worker include Hypercholesterolaemia Simvastatin 20 mg cap/tab 1 cap/tab x 30 days (2.2 days' wages), Hypertension Amlodipine 5 mg cap/tab 1 cap/tab x 30 days (1.4 days' wages), Depression Fluoxetine 20mg cap/tab 1 cap/tab x 30 days (2.9 days' wages), Hypertension Lisinopril 10mg cap/tab 1 cap/tab x 2 x 30 days (5.0 days' wages), Hypertension Losartan 1 cap/tab x 30 days (5.3 days' wages), Hypertension Nifedipine Retard 20mg cap/tab 1 cap/tab x 2 x 30 days (1.4 days' wages), Arthritis Diclofenac 50mg cap/tab 1 cap/tab x 2 x 30 days (1.9 days' wages). The most affordable standard treatments were generally those for treating acute conditions like Adult respiratory infection (0.1 – 0.4 days' wages).

When originator brand pharmaceuticals are prescribed and dispensed in the private sector, several treatments cost many days' wage. For example, treating Ulcer with Omeprazole 20mg cap/tab 1 cap/tab x 30 days = 30 costs 14.3 of days' wages, while treating Depression with Fluoxetine 20 mg cap/tab 1 cap/tab x 30 days costs 11.9 of days' wages.

It should be noted that treatment costs refer to pharmaceuticals only and do not include the additional costs of consultation and diagnostic tests. Further, many people in China earn less than the lowest government wage; as such even treatments which appear affordable are too costly for the poorest segments of the population. Finally, even where individual treatments appear affordable, individuals or families who need multiple medications may quickly face unmanageable drug costs. An example is provided below of a family where the father has ulcer and the child has asthma. If the family is earning the equivalent of the lowest-paid government worker's salary, pharmaceutical costs are 0.8 days' wages in the public sector and 1.0 days' wages in the private sector if the lowest price generics are purchased.

If originator brands are purchased, treatment costs are 18.2 days' wages in public sector and 16.8 days in the private sector.

4. Recommendations and conclusion

In Harbin, the availability of the surveyed pharmaceuticals was extremely low in both the public and private sectors. In these sectors, considerable price differences were seen between originator brands and generics. In the public sector, originator brands were about 8 times more expensive than the lowest priced generic. In the private sector the difference was about 6 times. Generic pharmaceuticals were cheaper and originator brand pharmaceuticals were more expensive in the public sector compared to the private sector. Pharmaceuticals are often unaffordable for ordinary citizens. The treatment of a chronic disease such as arthritis, where prices are high, availability low and affordability poor.

The results of this preliminary analysis suggest that a mix of policies need to be implemented to make pharmaceuticals more affordable and available. Although further investigation is required to obtain a more in-depth understanding of the causes and consequences of pharmaceutical pricing and availability, the results of this survey provide broad directions for future research and action. It is therefore recommended that the following steps be taken to improve pharmaceutical prices, availability and affordability:

In order to more fully study the availability of pharmaceuticals, an extended survey should be conducted at provincial, county and village levels and more survey should be conducted in many other provinces. In order to research the availability of essential pharmaceuticals, the list of pharmaceuticals surveyed should include more from the Chinese

Essential Pharmaceuticals List 2012.

An in-depth study of the pharmaceutical distribution process should be initiated to reveal the real picture of add-on costs. Distribution channels and their effect on prices should be researched, and factors influencing the purchasing and selling behavior of wholesalers and retailers should be identified as well as the setting of the manufacturer's selling price and maximum retail price.

The government should further develop its pharmaceutical pricing policy. In the public sector, the government should strengthen the pharmaceutical centralized public bidding mechanism (tenders) in order to lower pharmaceutical prices in the public sector. The pharmaceutical centralized public bidding mechanism should be more efficient, and low priced quality generics should be purchased for off-patent pharmaceuticals rather than high priced originator brands

To improve access to pharmaceuticals, patients should pay procurement prices in the public sector plus a nominal distribution cost. Hospitals should not be financed by pharmaceutical sales but through government finance. Greater acceptance and use of generic pharmaceuticals (especially low priced generics) and essential pharmaceuticals (by health professionals and consumers) must be encouraged.

The impact of policy changes should be measured by establishing a monitoring system to regularly monitor the price, availability and affordability of pharmaceuticals.

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Obesity prevalence in Portuguese school adolescents: The impact of a project of research-action

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Abstract

The prevalence of obesity worldwide has increased exponentially. The World Health Organization (WHO) is highly concerned about a pandemic of the XXI century in relation to an increasing number of children and adolescents obesity. The obesity is the most serious health problem that affects the group of children and adolescents. This study aimed to: i) investigate the relationship between dietary habits, physical activity and sedentary leisure and the Body Mass Index (BMI) percentile; ii) analyze the project's impact on the prevalence of obesity. This is a descriptive-correlational, longitudinal study with a quantitative approach. A hundred and five students from a northern school of Portugal, participated in this study, which took place from 2010/11 to 2012/13. For collecting data we used a questionnaire and the data was processed using SPSS. The majority of participants were female (58.1%) belonged to the age group of 13-14 years (60.0%). Pointed of the total of participants consume, daily, legumes and vegetables, respectively, 8.9% and 35.3%. A group of students (25.7%) practiced physical activity below the WHO recommendations and 2.9% were non-practicing. The prevalence of overweight students in the third year of the project was 14.3% and 6.7% obesity. The BMI percentile differs significantly between 3 years (Friedman: $p = 0.000$), decreasing from the first year to the second year. On the other hand it increased slightly from the second to the third year. This increase may be associated with a reduction in physical activity. Interventions under the health education program were ineffective in increasing the consume frequency of vegetables, as well as in the consolidation of practice of physical activity, in the second to the third year. The study suggests that the obesity prevention should emphasize interventions involving school community and particularly parents and the interventions should be more systematic.

Keywords: Food; Physical activity; BMI percentile; Obesity.

1. Introduction

At the beginning of this article, matter reflect on the concept of obesity, which is considered by the World Health Organization (WHO, 2000), as a chronic disease in which the proportion of accumulated body fat reached a level that could affect the health. The increase in prevalence is exponential, reaching developed and developing countries, so this organization declared the pandemic of the XXI century (Brito, Viveiro & Moleiro, 2014). This epidemic affects all age groups, socioeconomic levels, races and continents (Antunes & Moreira, 2011), constituting an important condition for public and individual health. It is also one of the most serious diseases, that affects children and adolescents worldwide (Sousa, Loureiro & Carmo, 2008).

Globally, according to the International Obesity Task Force (IOTF, 2004), one in ten children are classified as pre-obese and approximately 30 to 45 million are obese. In a study of WHO (2007), attended by 32 countries, on average, the prevalence of overweight and obesity joint, at 13 years old was 14.4% in males and 9.3% among females and at 15 years was 8.2% and 6.0%, respectively (Brito, Viveiro & Moleiro, 2014).

In the level of Europe (2012), it was estimated that 14 million children were overweight and 3 million were obese (Ferreira, Mota & Duarte, 2012). On this continent the prevalence of overweight in children is lower in Central Europe and higher in the Southern countries of the Mediterranean basin, which have prevalence rates of around 20-40% (Carvalho, Carmo, Breda & Rito, 2011).

Portugal is the European country with the highest prevalence of obesity in these age groups (Costa, Ferreira & Amaral, 2010). In a study at national level (Ferreira, 2010), with a sample of 5708 adolescents aged between 10 and 18 years, the prevalence of pre-obesity was 22.6% and 7.8% were obese, respectively.

Obesity is the result of an imbalance of energy, where energy intake exceeds the energy expenditure, resulting in a positive energy balance for a considerable period (OMS, 2004). The energy intake results of calories obtained by the body through the degradation of nutrients, while energy costs concern the basal metabolic rate, the thermic effect of food and physical activity (Teixeira e Silva, 2009).

This nutritional disease is multifactorial. Many complex and diverse factors can give rise to a positive energy balance, but rather the influence of any single factor, the greatest influence results from the interaction between these factors. The main factors contributing to the increase in the average weight of the population are the increasing proportion of fat and high dietary energy density, along with reductions in the level of physical activity (PA) and the rise of sedentary behavior (OMS, 2004).

In the words of Enes and Slater (2010), the obesity epidemic installation can be explained by recent changes in eating patterns, such as increased consumption of meals outside the home, increasing consumption of beverages containing added sugar, the consumption of ever larger food portions such as the frequency of the meals and the reduced consumption of vegetables and fruits.

Beyond the factor feeding, reduced PA levels and the time devoted to low-intensity activities such as watching television and playing video games, also appear to play a key role in this process.

It's in this issue, this study focuses, with the following objectives: i) to investigate the relationship between eating habits, PA and sedentary leisure and the percentile mass index (BMI); ii) analyze the project's impact on the prevalence of obesity.

2. Methodology

This section describes the methodology used, which endured throughout the research process, from the type of study, the population and the sample, the instrument and the data collection procedure, and the analysis thereof.

To meet the objectives outlined we opted for a study of action-research, descriptive, correlational, longitudinal and of quantitative approach (Fortin, Côté & Fillion, 2009).

2.1 – Participants

The study came as part of a project called "With style and health" (CESPECA) in the prevention of obesity in two secondary schools, in the city of Vila Real, Portugal, which took place during the school years 2010/11, 2011/12 and 2012/13. The project started with the students of 7th grade, who accompanied him to the 9th grade. This article refers only to the results of one of the schools involved.

The population consisted of all students attending the involved level of education, which in the last year of the project included 149 students. The sample in the same school year, included students attending the 9th grade, whose parents gave informed consent for their participation, which were present at the time of data collection and it was possible pair, having participated in the project during the 3-year period, a total of 105 students, comprising 70.5% of the population. It is, therefore, a sample of convenience.

2.2 – Material

In data collection used a self-report questionnaire developed and validated for this purpose, divided into five parts: socio-demographic characterization of the participants, eating habits, practice of physical activity (PA), sedentary leisure, and space for the registration of weight parameters by researchers. The practice of AF was evaluated through a set of questions about the frequency and duration of the practices of the students inside and outside of school, having been categorized based on the recommendations of WHO (2011), for this age group. The mass index (BMI) was categorized according to the percentile curves recommended by the Directorate General for Health (DGS, 2013), of Portugal.

2.3 – Procedures

On the scheduled day for data collection researchers traveled to the school and applied the questionnaire in the classroom, having measured the weight parameters by following the procedures described in the Evaluation Guide Nutritional Status (Rito & Carmo, 2013).

For the processing of data built up a database in the Statistical Package for Social Sciences (SPSS, version 20.0), which were inserted, with recourse to descriptive statistics and inferential statistics, using the Mann-Whitney test (MW), Kruskal-Wallis test (KW) and Friedman test for paired samples from the three year project. It was considered the significance level of 5% (Maroco, 2010).

3 - Presentation and discussion of results

In the academic year 2012/13, the total sample students in the study ($n = 105$), most were female (58.1%) belonged to the age group of 13-14 years (60.0%) and resided predominantly in city (49.5%) (Table 1). The average age was 14.46 ± 0.621 years, and the minimum age 13 years and maximum 17 years.

Table 1 - Characterization of the students participating in the study, in the academic year 2012/13

Variables	Af	Rf (%)
Sex		
Female	61	58,1
Male	44	41,9
Age group		
13-14 years	63	60,0
≥ 15 years	42	40,0
Provenance		
Village	37	35,3
Town	16	15,2
City	52	49,5
Total	105	100

Af – Absolute frequency; Rf – Relative frequency.

Eating habits - In the 3rd year of the study, most students had 4/5 meals a day (66.9%). However, there were 8.7% of students, who were three or fewer meals.

As for the frequency of consumption of foods we tried to analyze the evolution over the three years of the project, three health food and as many high caloric density foods. By observing Figure 1, it was found that both the frequency of daily consumption of health food or of high energy density food decreased from the first to the third year the project, except consumption of chips, which increased the second to the third year. However, always increased the not daily consumption. The decrease in consumption was more pronounced in the high caloric density foods (Figure 1).

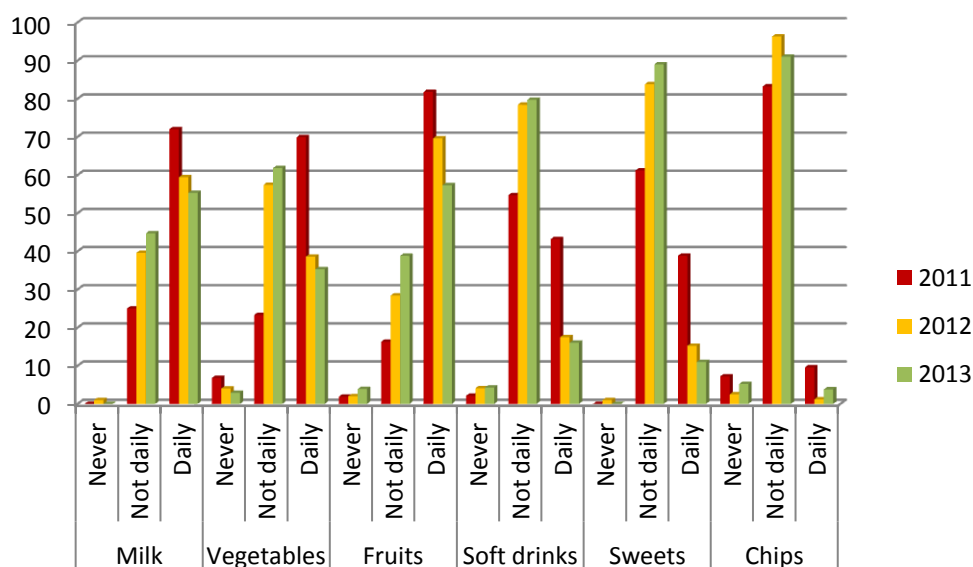


Figure 1 - Frequency of food intake per year of the study (%)

We analyzed the evolution of the weekly frequency of use of the six food study over the three academic years. The weekly frequency of dairy consumption differs significantly between the three academic years (Friedman: $p \leq 0.031$) and decreased from the first to the second year and this for the third year of the study, as can be seen by the respective mean rank (1st year - 2.15; 2nd year - 1.94; 3rd year - 1.92). These mean rank reflect the scores awarded to the categories Never (zero points), Not daily (1 point) and Daily (2 points), in which higher mean rank, means higher frequency.

The same happened also with the weekly frequency of consumption of vegetables and fruits (respectively Friedman: $p \leq 0.000$ and $p \leq 0.000$), which decreased consecutively between the three school years, demonstrated by the respective mean rank (Vegetables: 2.32; 1.85 and 1.83. Fruits: 2.20; 2.00 and 1.81).

In high caloric density foods also observed this significant difference in the weekly frequency of consumption of soft drinks and sweets (Respectively, Friedman: $p \leq 0.000$ and $p \leq 0.000$), which fell consecutively from the first to the third year of study, expressed in the respective mean rank (Soft drinks: 2.27; 1.88 and 1.85. Sweets: 2.26; 1.88 and 1.85).

In the particular case of chips, the weekly frequency of consumption did not differ significantly between the three years under review (Friedman: $p \geq 0.078$), knowing is the mean rank consumption decreased from the first to the second year and increased slightly from second to the third year, although without significant differences.

According to the OMS (2004), the reduction of food intake, reduces the calorie intake, and particularly the reduction of food intake with high energy density, induce weight loss.

There were no statistically significant differences between the BMI percentile and frequency of food consumption (KW: $p \geq 0.05$), except in the consumption of soft drinks (KW: $p \leq 0.023$) and sweets (KW: $p \leq 0.025$) in the third year of study in which students with higher percentile did not consume soft drinks and had a non-daily consumption of sweets, this is, restricting the consumption of these foods.

Physical Activity - With regard to PA finds itself, in the third year of the study, almost all of the students (97.1%) practices PA. However there is a group of students (25.7%) that does not meet the WHO recommendations for this age group (at least 300 minutes per week) and 2.9% are sedentary (Figure 2). The average time spent in PA practice per week during the 3rd year of the study was 548.57 ± 475.95 minutes.

In terms of evolution of PA practice classification, the first to the third year of study there was a sharp decline in the proportion of not according practitioners for the third year, a

regular decline in the proportion of students who do not reach the recommendation of WHO and a sharp rise in the proportion of students who fall within the WHO recommendation (Figure 2).

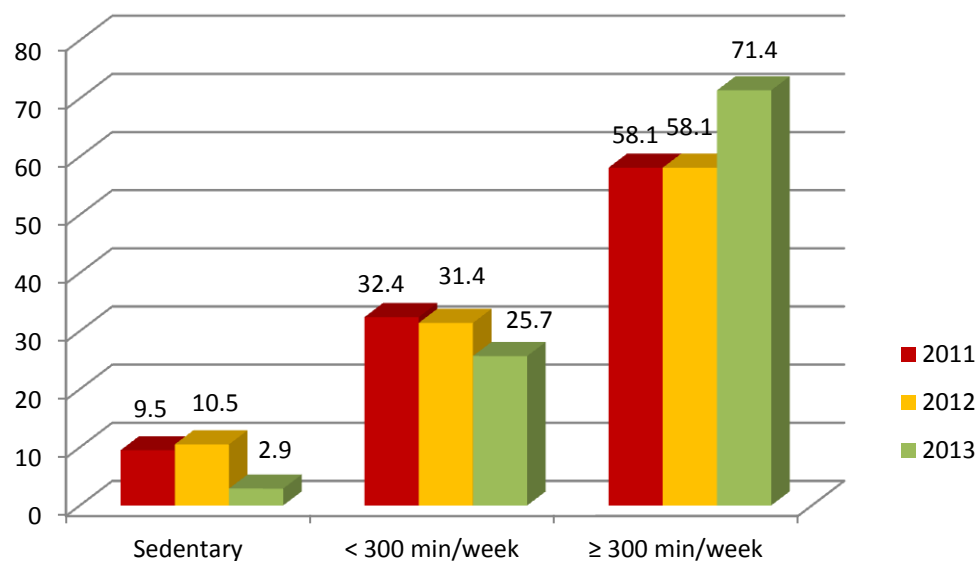


Figure 2 - Practice classification of physical activity per year of study (%)

The classification of PA practice differs significantly between the three years under review (Friedman: $p \leq 0.009$), and increased the level of practice from the first to the second year and this for the third year, as seen through the respective mean rank (1.90; 1.92; 2.18). But does not exhibit statistical differences between the BMI percentile and PA practice, in the first and third year of the study ($p \geq 0.05$).

According Teixeira and Silva (2009), an increase in body weight throughout life, are more related to the reduction of PA habits and the increase of caloric intake that with the decrease in basal metabolism. In this study there was a decrease in food intake and an increase in the practice of PA. This increase in PA practice level from the first to the third year, does not meet the results of the study by Lopes, Vasques, Ferreira and Maia (2006), with a sample of 103 Portuguese adolescents, aged, the 6 and 18, in which the authors concluded that there is a marked decrease over the age of PA levels, which did not happen in this study.

Sedentary leisure - Characterization of sedentary leisure involved the frequency and time spent watching TV, computer games and PlayStation. It is observed by the analysis of Figure 3, the highest proportion of students in the third year of the project falls under the category of greater than or equal to 2 hours/day. The proportion of students who spend more than 2H/day in sedentary leisure time increased from the first to the second year and this for the third year, more markedly, the second to the third year of the study (Figure 3).

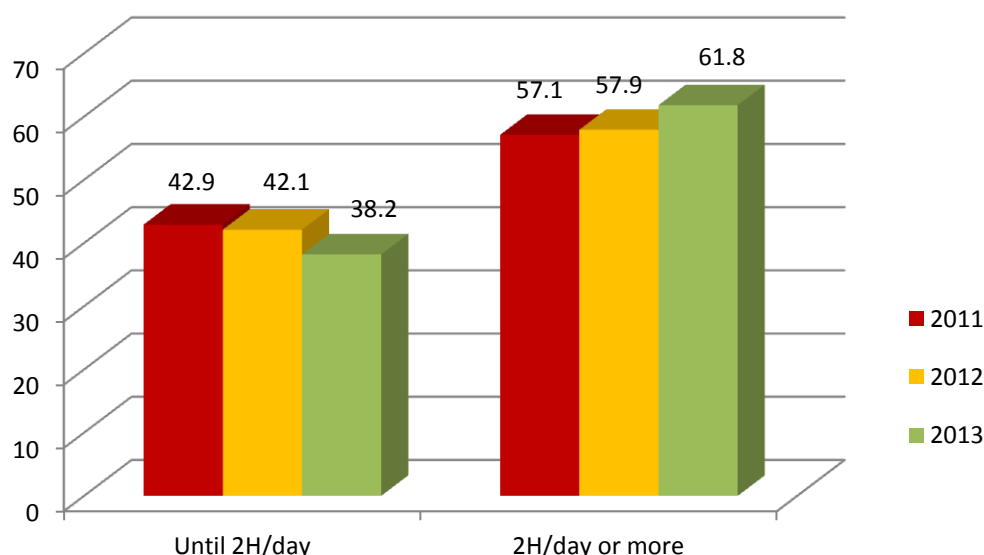


Figure 3 - Time spent in sedentary leisure per year of study (%)

The sedentary leisure categories do not differ significantly between the three years under study (Friedman: $p \geq 0.857$). Also there were no statistically significant differences between BMI percentile as the categories of sedentary leisure (Mann-Whitney: $p \geq 0.05$) in both the first and third year of the project.

In a study by Mourao-Carvalho and Silva (2003), in the same region of Portugal, the authors found a relationship between sedentary leisure over 2 hours/day and childhood obesity, which did not happen in this study.

BMI percentile ranking - Looking at Figure 4 it appears that the highest proportion of students at a normal weight (78.1%). This category increased from the first to the second year and then for the third year, although less sharply. In the pre-obesity category there is a decrease between consecutive year, more sharp from the first to the second year, while in obesity category there was a marked decrease from the first to the second year, but a slight increase from the second to the third year (Figure 4).

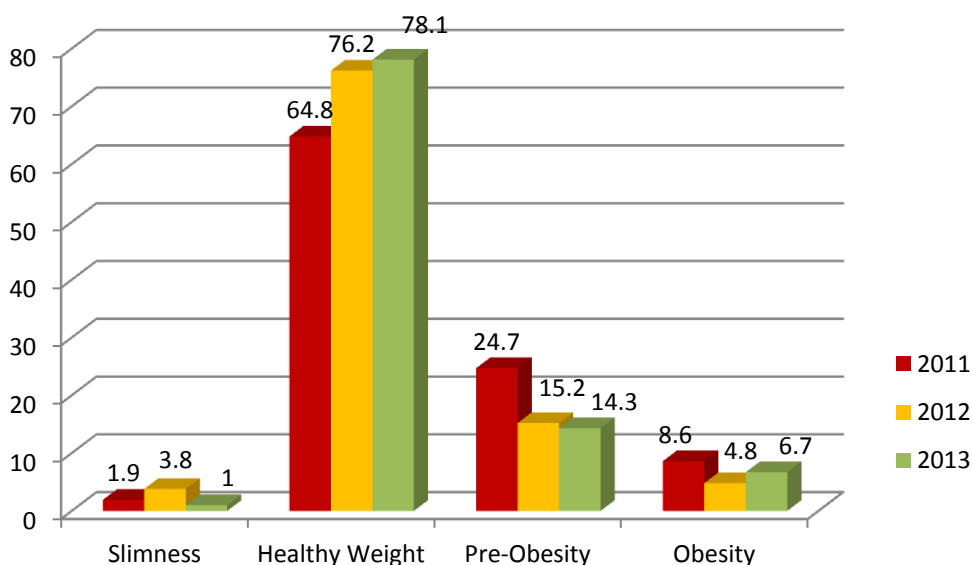


Figure 4 - BMI percentile classification per year of study (%)

The BMI percentile differs significantly between the three years under study (Friedman: $p \leq 0.000$), and reduced the percentile of the first for the 2nd year and increased slightly this for the third year, as can be seen from the respective mean rank (2.16, 1.88 and 1.96).

The prevalence of overweight and obesity obtained in this study in the third year, are lower than those of the study by Ferreira (2010), who obtained a prevalence of 22.6% and 7.8%, respectively.

4 - Conclusion

The analysis of the results and their discussion allows us to formulate some conclusions set out below, taking into account the objectives outlined.

The prevalence of overweight and obesity in the sample are still high, although lower than for the comparison study. Not found there relationships between the frequency of weekly food consumption and BMI percentile, except in the consumption of soft drinks and sweets, in which students with higher percentile not eat these foods or have a non-daily consumption. Also they are found there relationships between the PA practice and the categories of time spent in sedentary leisure with BMI percentile.

However, the evolution of BMI percentile was positive from the first to the second year, but slightly worsened from the second to the third year.

The project had interventions of health education, food related, PA and sedentary leisure, which seem to have had some impact on the prevalence of obesity. A Club Fair of city was made to captivate young people to practice extracurricular sport.

There was a decrease in consumption of foods with high caloric density, but also the most healthy foods and activity level increased every year.

Against this background the challenge remains, as it failed to maintain the prevalence of obesity consecutively falling. You have to be able to reduce the consumption of Junk Food, maintain a high level of PA and decrease sedentary leisure to less than 2 hours/day. These goals can only be achieved with the involvement of the whole school community, especially teachers and parents.

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Patients' organisation in Poland's health care: Legal and institutional legitimacy

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Abstract

The role of patient organizations and, more broadly, the third sector in the implementation of decision-making in health care is a rapidly expanding area of research in public health. The aim of the project is to analyze the legal and institutional foundations for the participation of patients' organizations in decision-making processes taking place within the Polish health system. The specific objectives of the study will include an analysis of the constitutional provisions referring to the civil society entities, as well as the provisions included in laws on this matter. In the last part of the paper, the general picture of civic organisations active in Poland's health care has been presented. The basic conclusion of the paper is that there have been significant changes in legal regulations relating to the issues in questions in recent several years in Poland, where the new laws issued increasingly empowered the bodies operating in this sphere. We should however pay attention to the fact that often the changes that has been made are only apparent while in real life the empowerment of the civil society in Poland, including the health care, is progressing slowly and with no the good will of the State.

1. Introduction

The question of the role of patient organizations and – more broadly – the third sector in the implementation of decision-making in health care is a rapidly expanding area of research in public health, as evidenced by the available international literature relating to this matter, as well as by studies and analyses conducted relating to this subject (i.e. Kaplan and Babad 2011, Elberse 2012, Hailey, Nordwall 2006, Baggott, Forster 2007). However, in Poland the situation regarding the participation of patient organizations in decision making in health care differs from that, which characterizes other countries, in particular, if such a comparison is made in relation to other EU Member States. This statement is evidenced by the Europe-wide study on the impact of patients and patients' organizations in decision-making processes in national health systems, carried out by Health Consumer Powerhouse (2009). The study involved a total of 30 European countries, among which Poland took 25th place.

In terms of purely formal conditions, participation of patients and patients' organisations in Poland in decision-making is ensured with at least three different instruments. The first of them is the opportunity to participate in public consultations regarding the legislative proposals on health. The second are the Parliamentary (Sejm and Senate) Committees of Health. In addition, there is also a third official channel of communication between the central administration responsible for the management of the health system and patients' organizations. It is the existing since 2012, "Dialog for Health" which is a forum for exchange of views between organizations and the Ministry of Health, and the National Health Fund. In practice, however, none of these formulas ensure a real influence for patients. Public consultation is in fact an apparent instrument, being used only pro forma. In the process of drafting the legislative projects, the remarks made by patients' organisations are usually overlooked or rejected. Meetings at the parliamentary forum of the Health Committees, in turn, boil down merely to present opinions that in no way are binding for bodies implementing the legislative process and do not translate into real influence on the process of decision-making. Likewise, of artificial nature are the meetings within the "Dialogue on Health," while their effects are not even made public (Borek, Chwińska 2014).

One of the reasons of the situation in Poland is the fact of the general weakness of the civil society (Nowak 2004). Although in the initial period of transformation after the collapse of the communist system representatives of the public authorities used to commonly declare the need to strengthen the role of the third sector in the implementation of public tasks, but in practice too strong civil society was considered a potential threat to the processes of reforms and, as such, had been treated in an inferior way. Only in the past few years there began to appear new legislative solutions, whose principal purpose is actually to strengthen civil society organizations and provide them with features of the real participation in the current execution of public duties. These solutions also provide a foundation for the existence and functioning of patients' organizations, thus determining a formal framework for their activities. The aim of this study is thus, based on a review of published literature and existing legislation, to draw the picture of the formal legitimacy of NGO's in the health care in Poland.

2. Legal foundations of the civil society in Poland – Constitutional framework

The description of the institutional and legal conditions for the functioning of civil society in Poland, should start with the first focus on the provisions of the Constitution of the Republic of Poland of 2 April 1997 (Dz.U. 1997 No 78, pos. 483). The constitutional empowerment of civil communities is already located in the preamble, where it is stated that the State's law derived from the Constitution should be based on the *"respect for freedom and justice, cooperation between authorities, social dialogue and the principle of subsidiarity strengthening the powers of citizens and their communities"*. The provisions located in the first chapter of the Constitution also refer to the sphere of civil society, particularly the Article 12., which forms as follows: *"The Republic of Poland shall ensure freedom for the creation and functioning of trade unions, socio-professional organizations of farmers, societies, citizens' movements, other voluntary associations and foundations."* Finally, Article 16. of the Constitution confirms the theoretical structure described above concerning the role of the local communities by stating: *"1. The inhabitants of the units of basic territorial division are by the law the self-governing community. 2. Local self-governments participate in the exercise of public authority. An important part of the public tasks, as stated in the law, is carried out by the local self-government on its own behalf and at its own responsibility"*.

The legal framework laying out the area of activity for civil organizations that can be found in the Article 12. was subsequently confirmed in the chapter, which deals with freedoms and civil rights, specifically in the section on political rights and freedoms. Article 58. provides for freedom of association, where the only limitation of this freedom refers to the participation in associations and organizations whose aims or activities are contrary to the Constitution or the law. What should be noted, is the special role the Constitution assigns to the associations acting in the economic and professional spheres, namely the trade unions. This category has been referred in a separate, broader than the previous one, Article 59. This article also refers to the associations and organizations of employers, as well as socio-professional organizations of farmers. Still however a particular stress is putted on a specific part of the content of this article, including the right to organize strikes, and negotiate and sign collective agreements. This leaves no doubt, which of the categories referred by this provision is regarded as the prime.

This special appreciation of the trade unions, that has been done on the Constitutional ground can be explained by several reasons. First, it can be considered as a part of the legacy of the communist system, which was assigning a particular public role to the "people of labor". It can be assumed that the more that forty-years-long period of communist supremacy was not without an influence on the social consciousness, which are now expressed in this type of legal formulas (Zuba 2003). The strong position of trade unions on the social scene, having a basis at the level of supreme legal provisions establishing the shape of the political system, in this context would be aimed at creation of a strong foundation for the protection of workers' interests in the new economic reality, where the partner for interaction is no longer

the State, but rather a private employer.

Another possible explanation is by a reference to the corporatist or even syndicalist doctrinal concepts. Although the legal formula contained in the Constitution can be considered only as a distant echo of these concepts, still the way of constructing the political and socio-economic system in Poland after the breakthrough of 1989 was not devoid of references to the ideas of that kind. Finally, the third explanation, perhaps the most realistic, is simply the fact of the significant role the trade unions played in process of creation of a modern Polish history. Although the Solidarity before 1989 was more a spontaneous social movement gathering all those, who were dissatisfied with the functioning of political regime (Szawiel 2001; we should keep in mind that the Independent Trade Union „Solidarity” at the beginning of the 1980's – shortly before the communist authorities has announced the martial law in 1981 – have had about 10 millions of members, which means more than a half of the total working population of Poland), still it remained formally a trade union and labor issues were the basic premise of its creation. After the collapse of the communist system, the character of the activity of the Solidarity became more typical for the labor movements, however the organization did not resign of a purely political ambitions (Sroka 2002; Godlewski 2003). As a result, the unionist interests in a very large extent influenced the shape of the labor law created in the 90's, giving a very comprehensive list of benefits – both in terms of organizational aspects (activity of trade unions) and in relation to the employees rights (Knyzewski 1998). That constitutional provision would be therefore a kind a logical culmination of a series of regulations relating to this issue, although it should be stressed that Solidarity itself did not support the project of the Constitution that finally was adopted in 1997, but offered its own project, so-called „Civic Project of the Constitution” (Słomka 2003).

In the context of the issues of civil society, the provision discussed above is not irrelevant, as the trade union organizations are being included in the area of civil organizations, and they also use to be regarded as a field of social capital formation. Union membership is indeed one of the most common phenomena in the Nordic countries, which are characterized by very high levels of social capital. However, the specifics of the social role of trade unions, as well as the specifics of the reasons of engaging in their activities, cause, that including them into the civil society is fairly clear a broadening of the meaning of this term. In this context, the constitutional arrangements for the area in question can be summarized as follows: it recognizes the civic community as an important component of the structure of society, by reference to the principle of subsidiarity, or even considering their priority in the filling of the individual needs. The prior role of civil society structures can also be inferred from the fact that the relevant provisions are included in the first chapter of the Constitution, which contains the supreme principles of State's political system. On the other hand, the briefness of the provisions relating to the discussed questions, particularly if to take into account that Polish Constitution with a total number of 243 articles, is probably one of the most extensive and detailed in its regulations in the industrialized world, we may suspect that the discussed issue is contained in the Constitution more of an obligation than of a real belief of the Legislator in the primacy of the civil society and its structures over the public authority, or at least a belief in a real possibility of implementing this principle in the Polish conditions.

3. Other laws on the civic organizations

The other regulations on the issues discussed here appears broadly in the ordinary laws. In relation to the non-governmental organizations, a key role shall be assigned to the following acts:

- the Law of 24 April 2003 on public benefit activity and on the volunteer work (Dz.U. 2003 No 96, pos. 873),
- the Law of 7 April 1989 Law on Associations (Dz.U. 1989, No. 20, pos. 104)
- the Law of 6 April 1984 on Foundations (Dz.U. 1984, No. 21, pos. 97).

The two latter acts define the formal issues related to the functioning of social organizations. The preamble to the Law on Associations explicitly states that the purpose of its provisions is *"to create conditions for full implementation of the freedom of association that is guaranteed by the Constitution, (...), to give citizens equal right to actively participate in public life, regardless of their beliefs and views, and to guarantee the freedom of expression of diverse views and the freedom realization of the individual interests (...)"*. This preamble becomes particularly relevant in context of the content of Article 1, which states, among other things, that the associations *"have the right to speak on public matters"*.

This act also specifies certain formal rules, which the associations must meet to be considered as acting with the dignity of the law, as well as to be able to be classified into the category of social actors. And so in the Article 2. it has been emphasized that the association is a voluntary organization, self-governing and permanent, as well as that the associations are not acting for profit. The Paragraph No. 3. of this article also stresses that the associations provide their activity based on the voluntary work of their members. Article 5. states that it is prohibited to create associations operating on the basis of a principle of absolute obedience of members to the authorities of the association. Nor it is allowed to oppress any person because of being a member of an association, or remaining outside of it. The content of the Article 7. suggests finally, that the organizations created under the Law do not exhaust the catalog of possible actors of the civil society, as the provisions of the law are not applicable to churches and religious organizations, election committees and political parties, as well as civic organizations operating under separate laws or international agreements and conventions, to which Poland has accessed. Which is entirely understandable, the Law also ignores the whole sphere of the informal organizations, which also enrich the sphere of civil society.

Similar role in relation to the foundations plays the Law on Foundations. In case of this category of organizations, the primary difference when compared with associations is strictly defined purposefulness of the activity of the foundation. Article 1. of the Law states that those purposes may be a socially profitable goals, consistent with the fundamental interests of the Republic of Poland, in particular those relating to issues of health, social welfare, environmental protection and the protection of historic monuments. Article 15. additionally states that at the moment the purpose specified in the statute of the foundation is realized, or when its funds are exhausted, the foundation is automatically being dissolved. If the statute does not provide such a provision, the dissolution of the foundation is requested by a competent Minister of the Government, or the Foreman of the county where the foundation is registered. The dissolution is therefore executed by the court responsible for keeping the register of foundations.

We can assume therefore, that differently than in case of the associations, foundations' goals and activities must be useful from the general public point of view, while in case of the first category of organizations, the activity may also – or exclusively – focus on the self-interest of their members (Ceglarski 2005). P. Suski (2006) claims that the difference between the two organizational forms is in fact a derivative of the distinction between two different categories of legal bodies, namely, corporations (which include the associations) and establishments (which include foundations). The consequence of this distinction are different ways of recognizing the aims of a given organization as well different ways the aims are defined, as in the case of corporations it is determined by its members, and in the case of establishments – by the founder. The essence of the body in the first case are people, while in the another – the capital or the assets. This author also turns attention to the fact that under the jurisprudence that is common among Polish courts, the interpretation of the term "social organization" is that it is a *„permanent association of individuals and legal bodies, i.e. a group of entities that are linked with a common goal and a permanent organizational bond, not being a part of the state apparatus and not being a private companies neither"*. According to this interpretation, foundations are not being included to the catalog of social organizations,

which is sometimes criticized by theorists. In result in recent years the issue has changed on the basis of the jurisprudence of the Supreme Administrative Court (Suski 2006). Still there is no doubt regarding the inclusion of foundations to the category of non-governmental organizations, which came into general use relatively recently in Poland, namely together with the adoption of the Law on Occupational and Social Rehabilitation and on the Employment of Disabled People (Dz.U. 1997 No 123, pos. 776). This term is semantically broader than the term "social organizations" and finally this term became the basis for determining the categories of the organizations of public benefit (Suski 2006).

Still the most important recent legislation relevant in context of determining the legal environment for activities of civic organizations, is the Law on Public Benefit Activity and on the Volunteering (Dz.U. 2003, No 96, pos. 873). The Range of regulations of this Act allows to treat it as a kind of attempt to determine the space for civil society institutions, where this space coincides with the responsibilities of the State's institutions, or is so socially important, that could be considered as a subject of the responsibility of the State.

The Article 3. of the Law defines the "public benefit activity", as a *"socially useful activities carried out by the non-governmental organizations in the spheres of public action specified in the law"*. Article 4. in turn contains a list of tasks that can be regarded as public benefit activities. This catalog is closed, however, include - as noted by A. Ceglarski (2005) – basically all the important areas of social life. Namely, these are issues concerning (the catalog has been a subject for amendments and is presented in its current form):

- social assistance, including assistance to families and individuals in difficult situations, and elimination of inequalities for those families and individuals;
- activities for the professional and social integration and reintegration of the individuals at risk of the social exclusion;
- charitable activities;
- cultivating the national traditions, as well as national, civic and cultural consciousness;
- activities for ethnic minorities;
- health protection and promotion;
- activities for people with disabilities;
- promotion of employment and professional activation of the unemployed people and those who are threatened with dismissal;
- activities for the equal rights of women and men;
- activities for the retired people;
- the activity favorable for the economic development, including the development of entrepreneurship;
- activities supporting the development of communities and local communities;
- science, education and upbringing;
- children and youths leisure;
- culture, arts, protection of culture and tradition;
- promotion of the physical culture and sport;
- ecology and animal protection and conservation of the natural heritage;
- tourism and sightseeing;
- public order and safety and the prevention of social pathologies;
- activities for the national safety and Polish Army;
- promotion and protection of the liberty, human and civil rights, as well as activities supporting the development of democracy;
- civil protection and safety;
- assistance to victims of disasters, natural disasters, armed conflicts and wars in Poland and abroad;
- promotion and protection of consumer rights;
- activities for the European integration and for the development of contacts and

- cooperation between societies;
- promotion and organization of the volunteering activities;
- assistance for the Polish citizens and people of Polish origin living abroad;
- activities for the veterans and victims of the repressions;
- promotion of Poland abroad;
- activities for the family, motherhood, parenthood, protection and promotion of children's rights;
- prevention of social pathologies and addictions;
- technical, informational or financial support or training services for the non-governmental organizations and entities referred to in the article defining the catalog of organizations that may obtain the status of public benefit organizations.

Article 3. of the Law, in addition to the definition of public benefit activity, defines the list of entities that may acquire the status of public benefit organizations as well. These are non-governmental organizations defined as *"non-public finance sector within the meaning of provisions on public finances, and non-for-profit legal bodies or unincorporated bodies formed under the provisions of laws, including foundations and associations."* This catalog includes also the entities operating under the laws on State's relationship with the Catholic Church, the relationship with other churches and religious associations, and the guarantees of freedom of conscience and religion, as well as associations of local self-government units. After the amendment to the Law of 22 January 2010, some more bodies has been allowed to apply for the status of public benefit organization, namely the social cooperatives, as well as stock companies and limited liability companies and sport clubs, which do not act for profit. The catalog do not include political parties, trade unions and employers' organizations, professional associations, as well as foundations, whose founder is the political party.

So defined list of entities entitled to obtain the status of public benefit organization can lead us to a quite interesting observation. If we assume that the status of such organizations generally may be associated to the sector of civil society, it will be treated under the present law in a rather peculiar way. First, we should pay attention to the fact that the associations of local self-government units has been assumed as a potential public benefit organization. Such a provision can be treated as a legal sanction for treating the local self-governments as a part of civil society. On the other hand, such an interpretation would be inconsistent with the Law on Associations, which clearly treated this kind of organizations as separate and, therefore, remaining out of its regulations. We can, however, also assume that the exclusion is due to the fact that there is a whole catalog of legal acts relating solely to the local self-government, which is fully justified by the significance of their role for the functioning of the State. Assuming that none of the democratic State's regulation can strictly define the boundaries and scope of civil society, such a legal distinction of the matter relating to the local self-government does not mean a lack of theoretical possibilities to qualify those institutions to the sphere of civil society. The specificity of the area covered by the Law on Public Benefit Activities and on the Volunteering fully justify the fact that in its content the two categories of institutions, being subject to regulations of different legal acts, were covered in common.

While in relation to the local self-government the law makes an extension of the groups of bodies that are classified to the area of civil society, so much in relation to other categories of bodies it will result in reverse. Specifically, it do exempts from its jurisdiction the trade unions and employers' organizations, which in normal circumstances fully deserve to pass them to the area of civil society (Winczorek 2005). This exemption may be caused by two kinds of factors. The first would be quite close relation of this kind of organizations to the political sphere, which particularly in case of trade unions is undeniable. The same premise would be the reason for exclusion of the political parties, which might be treated as civic organizations falling into the area of civil society. In this context, the political nature of those organizations would be a cause of exclusion, not only because they provide activities that are

not a result of a bottom-up activity of citizens for the realization of the public good, as it is rather focused on the State and its institutions, but also because of the potential conflict of interest. Assuming that the public benefit activities are somehow licensed by the state and financed by the State, it might mean that the beneficiaries of the funds allocated to public benefit activities are the same organizations that decide on their distribution, when enforcing legal regulations of a particular type.

Trade unions' attempts to influence the politics is a practice with long traditions characterizing the political life of countries with stable political systems, and it should not be recognized as a pathology. But undoubtedly the specificity of Polish political system is that trade union are involved in political activities directly and under their own brand rather, than through the political parties embedded within the Unions (Knyżewski 1998). Inclusion of the union organizations to the category of actors of civil society cannot be therefore absolutely unconditional, and with no reservations. The second factor that may be considered as a justification for separation of the trade unions and employers' associations from the catalog of entities that may acquire the status of public benefit organization is the specificity of activity they undertake. In this case however it is not so much about their political implications, but about their particularism. The activities of these two categories of organizations undoubtedly are socially important, but first of all they concentrate on protection of the specific interests of specific groups, and therefore do not meet the criteria to define them as useful from the point of view of the public good. We should also put a stress on the latest amendments to the Law, which extended the catalog of bodies enabled to acquire the status of a public benefit organization, particularly in terms of the companies and sport clubs acting non-for-profit. This should be treated as an effort to support the sphere of the third sector, which includes not only "typical" civic organizations, but also the bodies of the commercial law and active on the open market, however still of non-commercial character.

As for the other bodies that were excluded from the catalog of entities enabled to acquire the status of public benefit organization, this exclusion does not raise major doubts. Foundations, whose founder is the political party, the obvious obstacle is the potential ambiguity of the role of the foundation and the danger of using it for the purpose of political fight, not the general interest. Professional self-government associations in turn, although similarly to the case of local self-governments they can be viewed in the context of State's decentralization, do not meet the criterion of community, having some features typical for exclusive corporate associations.

In the context of the content of Article 4. which define the scope of tasks considered as public benefit activities, the discussed Law becomes a kind of confirmation for the above mentioned statement relating to the tendency to broaden the scope of States' competence and to regulate with State's laws the spheres primarily being outside of its interest, and thus considered as proper and natural space for the activity of civil society. Adoption of the regulations similar to those that are discussed in this paper can be regarded as an effort to regulate the spheres, which civil institutions are enabled to occupy, though this interpretation may bear some signs of exaggeration. It is obvious that these laws do not define exhaustively the initiatives civil organizations have the right to take, while leaving outside the scope of their application numerous issues that the State do not touch at all, finding them as belonging entirely to the sphere of private lives of citizens, or communities. A. Ceglarski (2005) as a basic feature of the public benefit activity points the fact, that this kind of activity must cause some positive result from the point of view of the entire society. This condition will be met when those results will just go beyond the narrow interest of the organization itself, its members, or founders. All the other activities provided by the civic organizations are not so much contradictory to the public interest, but just indifferent from this point of view. Both formalized (in accordance with the legal requirements) and informal civic organizations may act in such areas completely freely and without restrictions (except of those referring to general laws).

On the other hand, the tasks specified by the Law as "public benefit activity" can be regarded as those being under the responsibility of the State. Allowing this activity to be fulfilled by the civil organizations can be seen as at least a partial delegation of the State's responsibilities to the civil society, or as an effort taken by the State to cooperate with the civil society in an effective way. This interpretation is confirmed by the wording of Article 5. of the discussed Law, which stated that *"public administration bodies operate in the field of public tasks in cooperation with (...) non-governmental organizations and entities mentioned in Article 3., paragraph 3. of the Law, providing respectively to the territorial scope of operation of public administration bodies, public benefit activities corresponding with the tasks of these bodies."* Thus according to this interpretation there would be no justification for the above statement on licensing the activity of civil organizations by the state, it would be tantamount to a confirmation of another thesis, which refer to the disappearance of one of the elements defining the civil society, namely its autonomy in relation with the State, and location in opposition to the State. The Law on the Public Benefit Activity and on the Volunteering creates the area, in which the activities of the State and civil organizations merge with each other and are intentionally complement. This in turn proves that both those institutions are getting closer and quite clearly fuse with each other. The Law is therefore a reflection of a commitment to establish the partner relationship between the State and civil society organizations, where, however, still it is the State who dictate the terms of this partnership. Except of the already quoted provisions, such a suggestion can be found also in the Article 11. of the Law, where it has been stated that public authorities support the implementation of public tasks by the non-governmental organizations and other civil society actors and entrust them to execute such tasks. A regulation formulated in such a way suggest to treat active citizenship and self-organization of citizens as fully desirable and appropriate. At the same time, under the same provision, this support and the delegation of public tasks shall be done by the open tender, in which, in addition to public benefit organizations, the social cooperatives and organizational units subordinate to the public administration can also participate. Article 12. additionally provides a possibility that a public benefit organization by its own initiative referring to a specific task apply for State's support, which then is a subject of consideration by the competent public authorities. We can therefore assume that the real basic premise for passing the Law on Public Benefit Activity was not so much the desire to restore the proper role of the civic organizations in social relations, but rather a concern about the most effective implementation of public tasks. In result it is not civil society, but rather the State who remains the primary subject to which the provisions of this Law are addressed. The non-governmental organizations appear in the Law, because the Legislator seems to accept the assumption that they are probably more effective implementers of the tasks included in the catalog of socially useful activities, thus entrusting them to carry out these tasks will result with the more effective realization of this aim (Biernat 1994). At the same time the non-governmental organizations are reduced to the role of 'subcontractors' of the tasks commissioned by the State. The whole relationship becomes somewhat paradoxical: if to assume that those actors by a definition do not act for profit, and that they are a result of a bottom-up initiative aimed at filling the social needs, and finally that their existence is based on spontaneity and the free initiative of citizens – in the context of the formation grown on the ground of provisions of the Law on Public Benefit Activity and on Volunteering they become similar rather to bodies operating in the market economy, under the conditions of free competition, where survival of the organization becomes dependent on the quality of the service this organization provide, and its ability to create an attractive offer for the tender announced by the public authorities (Ceglarski 2005).

At this point it should be underlined once again that the interpretation presented above is somewhat exaggerated. It is obvious that the work commissioned by the state is not the only one which can be done by the public benefit organizations. Moreover, if a given organization did not receive orders from the public authorities, it does not exclude the possibility to

conduct the activity based on other financial basis – including the most natural for the non-governmental organization, which are funds raised from the voluntary contributions and donations. Finally, the Article 27. of the Law on Public Benefit Activity gives citizens the opportunity to support the activities conducted by public benefit organizations by indicating an organization of own choice as a beneficiary of the 1% of tax on individuals. This provision undoubtedly gives a huge advantage for the non-governmental organizations, as it has no particular relation to any of the tasks commissioned to them by the State. The transfer of the 1% of tax on individuals – completely voluntary and for the organization of individual choice – can be regarded as a specific form of donation, although once again made through the State and somehow by the State's will. Still therefore this fits the theoretical framework of State's domination in the relation with civic organizations (Nowak 2004).

4. The non-profit organizations in Polish health care – general picture

The number of organizations declaring health care as the main activity area in Poland is slightly below 4000. This equals to approx. 8% of the total non-governmental sector. Another 16% of the organizations are those, for which health care is one of the most important, though not a priority area of action. The number of organisations of patients is about 700, which means 17-18% of all the organisations active primarily in the field of health care (Romaniuk 2012). The basic type of activity for those organisations is health promotion, prevention and health education. Most of the organisations, namely about 75% are formed as associations, the rest represent foundations, while 1% suggest another (unknown) form of activity (Herbst 2005).

Among the organizations holding the status of Public Benefit Organisation (OPP), the widely defined social sphere used to be declared as the main focus of their activity, with social welfare, education and health care on the first place. This type of organisations represent 8% of the entire set of OPP (Gumkowska, Herbst, Niecikowska, Wygnański 2004). Among these organizations, foundations were overrepresented (32%; Holecki, Romaniuk 2013).

Organizations for which health is the most important area of activity act primarily in large cities. Only 5.5% of them work in rural areas or in cities with less than 10000 inhabitants. Interestingly, among all organizations, this percentage is 27%. About a half of those organisations have the main head office in one of the 16 cities being capitals of the regions. Most organizations dealing with health was in Mazowieckie voivodeship (18%), while the least in the Opolskie, Lubuskie and Podlaskie voivodeships (2% each). The density of these organizations was the highest also in the Mazowieckie voivodship (0,9 organizations per 10000 inhabitants), and the smallest in Opolskie voivodeship (0,4 organisations per 10000 inhabitants; Holecki, Romaniuk 2013).

The most common partner for organizations active in health are the local communities (73%). In this respect, they differ from the overall picture of social organisations in Poland. Second place in terms of frequency of contact is the local administration (54% of organizations). Constant interaction with public institutions is declared by 37% of the organisations. A frequent partner are also local media (53% of responses), other non-governmental organizations in Poland (47%) and business environment (40%). The most rarely declared regular partners were political parties, foreign NGOs, especially those located in countries outside the European Union, and the institutions responsible for the distribution of European Funds (Herbst 2005).

Organisations active in the field of health care used to have on average 277 of members, but the distribution of membership was unevenly distributed, while half of the organizations have not more than 31 members. The percentage of members who engage in social work within these organizations was 7%. Getting revenues from non-public sources was declared by 4/5 of the organizations, and revenues from public sources are being sourced by almost every second organisation. Only about 1/4 of organisations declared that the funding comes from a business, or payable statutory. The average amount of revenue organizations involved

in health care amounted to 480 thousand. zł, but revenues were not evenly distributed in the group, while 50% of these organizations have revenues not exceeding 30 thousand in total (Holecki, Romaniuk 2013).

5. Conclusions

Starting from the beginning of the period of systemic transformation in Poland, or even the end of the period of communism, there have been significant changes in legal regulations relating to the issues of civic organisations. The sphere of civil society organizations regularly raise the increasing attention of the Legislator, and the new laws issued increasingly empowered the bodies operating in this sphere. As a culmination of the recent changes, the Law on Public Benefit Activity and on Volunteering can be considered, particularly, the possibility to get support from individual taxpayers via the tax offices, which was established under the provisions of this Law.

We should however pay attention to quite a large time extent of the changes that has been made, and also to frequent appearance of the solutions being proposed on the legal basis, where in real life the empowerment of the civil society in Poland, including the health care is progressing slowly and in permanent conflict, or at least reluctance for the coopeation on the side of public administration and legislative bodies. It is also quite controversial that the role of the State in its relations with civic actors is clearly dominant.

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PHYSICAL ACTIVITY, DIETARY INTAKE AND NUTRITIONAL STATUS OF CABEIHM FACULTY MEMBERS IN BATSTATEU MAIN CAMPUS I

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ABSTRACT

A study was conducted to determine the association among physical activity, dietary intake and nutritional status of faculty members of College of Accountancy Business Economics and International Hospitality Management (CABEIHM) of Batangas State University Main Campus I. The weight and height of the respondents, who were all adults ($\geq$ years old) had been measured in order to determine their BMI. Body Mass Index was used to assess the nutritional status using the WHO classification. The level of physical activity was determined using the IPAQ (International Physical Activity Questionnaire) and for the determination of the energy and nutrient adequacy of the dietary intake, repeated 24 hour food recall was used. The data were gathered through interview. The respondents were chosen using simple random sampling; frequency, percentage, Pearson chi square and cross-tabulation was the statistical tools applied to treat the gathered data. Based on the results, majority or 77% of the respondents are female 30-39 years old. Half of them or 50% are minimally or moderately active and with normal nutritional status (52 %). In terms of energy and nutrient adequacy, findings revealed that 75% of the respondents have inadequate intake for energy, 95% have inadequate carbohydrate intake and 87% have inadequate intake for both protein and fat intake. Thus, there is no significant association among the physical activity, dietary intake and nutritional status of CABEIHM faculty members in Batangas State University Main Campus I. The significant association was only observed between nutritional status and energy and nutrient adequacy of the dietary intake, thus, reject the null hypothesis.

Keywords: physical activity, dietary intake, nutritional status, body mass index, moderately active, nutrient adequacy

Introduction:

Malnutrition problems particularly overweight and obesity has increased alarmingly among adults or people 20 years old and above worldwide. In the United States a survey conducted in 2011-2012 showed that 34.9% of adults aged 20 years or older were obese. (Ogden, et.al., 2014) while in the Philippines, results of the 8th National Nutrition Survey revealed that among adults, overweight/obesity prevalence is 31.10 % or 3 out of 10. Other than food consumption, lack of physical activity is believed to be the major contributors to the current rise of obesity among adults. Over the years, there is a dramatic change in the physical activity pattern of adults due to the continuous development in technology. Physical activity is considered to be important for optimal health of all people throughout the life stages. Regular physical activity performed in a variety of circumstances is proving to be a health-related behavior with favorable consequences on commonly recognized outcomes (Bouchard C and Despres JP, 1995 as cited by Yuchingtat at.al., 2004) like prevention of lifestyle diseases, improved strength and endurance, and many more.

Physical activity, dietary intake and nutritional status are recognized as key determinants of health. Several studies have shown that nutrition is link to physical activity and at the same time, there is an association between nutrition and CVD, certain cancers, type 2 diabetes and other age-related diseases. It has been demonstrated that to prevent obesity, changes must occur in eating and physical activity habits at the earliest age possible. However, due to a lot of advancement in technology and lifestyle changes, the level of physical activity is affected. All of these are contributory factors to physical inactivity. To date, the extent of the problem of physical inactivity and unhealthy dietary habits among adults is largely unknown. Although in the Philippines adults are part of the nutrition surveys, it is only limited to the following components: anthropometry, biochemical, clinical, dietary intake of households and individuals, demographic and socio-economic profiles of participants, food security, government program participation, selected health risk factors pertinent to nutrition, infant and young child feeding, maternal and child health, and the salt survey. In addition, results of previous studies showed that the prevalence of obesity among this age group is as comparable to other countries like USA and there is also a probability that these obese adults will continue to become overweight or obese as they reach elderly stage. Thus, it is important to evaluate the physical activity of adults to have baseline information in planning intervention programs. In addition, limited studies on physical activity level of the adults were conducted since most of it focus either on children or adolescents.

Background of the Study

Physical activity (PA) dietary intake and nutritional status might have a strong influence on health. These are considered as fundamental risk factors for several chronic diseases, such as type 2 diabetes, cardiovascular diseases, obesity, etc. Also, the increasing prevalence of obesity in adulthood is considered a result of an imbalance between energy intake and energy expenditure. Furthermore, obesity in adulthood is accompanied by a high risk to persist into elderly. Therefore, the prevention of obesity and the promotion of healthy lifestyle habits in adulthood are high priorities.

CABEIHM (College of Accountancy Business Economics and International Hospitality Management) is the largest college in Batangas State University Main Campus I and thus, with the most number of faculty members. As of second semester of school year 2014-2015, the college has a total of 83 faculty members composed of 74 full time and 9 part timers. Based from the interview with the Health Service Department Director Dr. Allen E. Santos, overweight and obesity is prevalent in the university among faculty members. However, the department does not have anthropometric record of faculty members since mostly; they cater

for the physical and medical examination of students. In addition, they do not also have program for faculty members and employees. This was further confirmed by Mrs. Kristia Lei A. Reyes, RND and a faculty member in the College of Nursing and Allied Health Sciences. According to her, during their annual nutrition screening as one their activities during Nutrition Month celebration, most of the faculty members that they have screened for the past 2 years are overweight and there were even some that were obese.

Objectives of the Study

Knowing that the physical activity is important in the maintenance of health, thus, this paper sought to determine the association among physical activity, dietary intake and nutritional status of CABIHM faculty members in BatStateU Main Campus I.

Specifically, it aimed to answer the following objectives:

1. Determine the level of physical activity of faculty members using IPAQ.
2. Assess the nutritional status of the faculty members using anthropometry.
3. Determine the energy and nutrient adequacy of the dietary intake of faculty members using repeated 24-hour food recall.
4. Determine the association among physical activity, dietary intake and nutritional status of faculty members.

Conceptual Framework:

Figure 1 shows the diagram illustrating the association among physical activity, energy and nutrient adequacy and nutritional status of CABIHM faculty members in Batangas State University Main Campus I. It is a common sense view that physical activity generates an increase in hunger and a drive to eat. At the same time, nutrients that can be obtained from the food intake will be used as a fuel of the body in order to perform physical activity. Thus, physical activity is oftentimes affected by how adequate or inadequate the dietary intake of the individual. In order to assess the nutritional status of the adults, it is necessary to look into their food consumption or dietary intake which has a great effect in the maintenance of their health. The amount and the type of foods that the adults are consuming will determine how adequate are the nutrients they are getting and thus will have an implication in their nutritional status.

Assessment of physical activity is of great importance to examine the relationships between inactivity and development of malnutrition particularly overweight and obesity. It is well known that physical activity plays a leading role in preventing overweight and obesity today, and thus, physical inactivity is responsible for a large worldwide burden of the disease and health care costs.

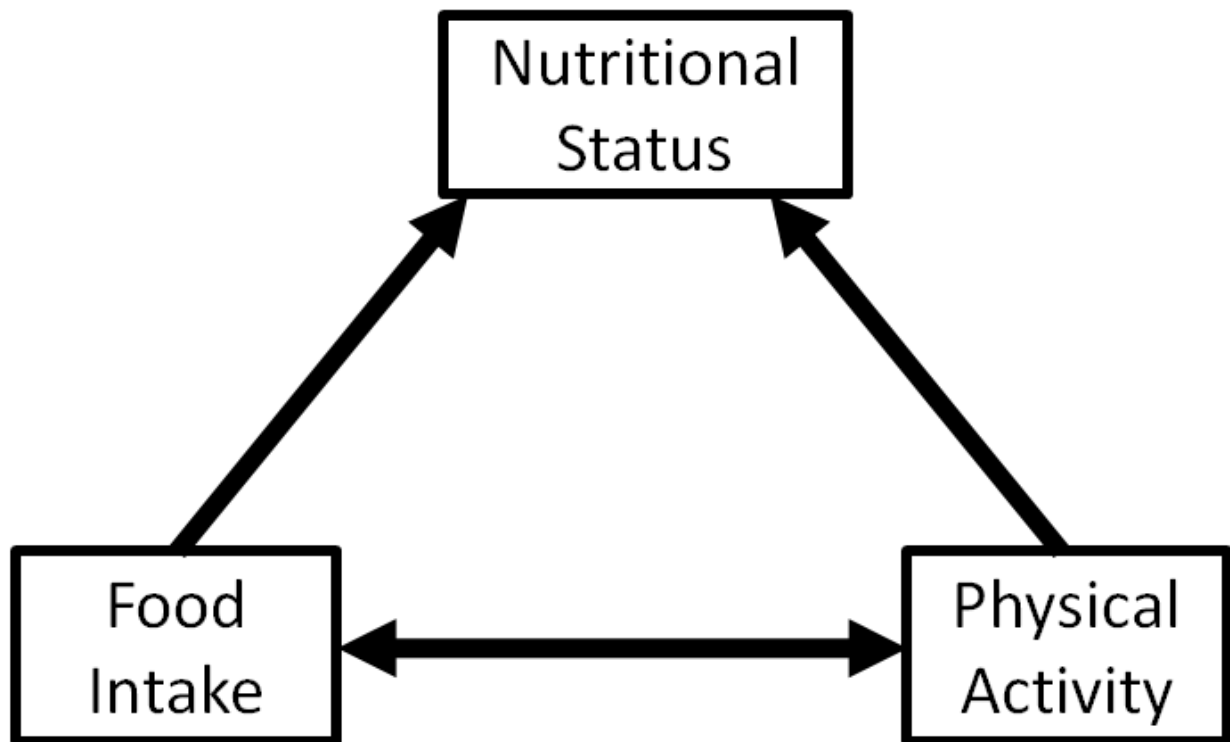


Figure 1. Conceptual Framework

Hypothesis:

Based on the framework, the study tested this null hypothesis:

There is no significant association among the physical activity, energy and nutrient adequacy of the dietary intake and nutritional status of CABIHM faculty members in Batangas State University Main Campus I.

Scope of the Study:

This study covered only full-time faculty members of CABIHM (College of Accountancy Business Economics and International Hospitality Management) in Batangas State University Main Campus I during the month of April 2015, who are 20-59 years old, non-pregnant and no known disease/s or condition/s that might limit the physical activity. This study identified the level of physical activity through the use of IPAQ – Short Form (International Physical Activity Questionnaire). In addition, the assessment of the nutritional status was done using anthropometry. For the determination of the dietary intake, a repeated 24-hour food recall was conducted.

Limitation of the Study:

No clinical nor will biochemical assessment were used to assess the nutritional status. In addition, due to limitation of time, only 2 day 24-hour food recall was conducted. Likewise, although demographic characteristics of the respondents like age and gender, was also determined, the data that were gathered were only be used to characterize the respondents.

Review of Related Literature:

This chapter includes the related literature that will help the researcher to have in depth knowledge about the physical activity of adults and their nutritional status.

Physical Activity

In adults aged 18–64, physical activity includes leisure time physical activity (for example: walking, dancing, gardening, hiking, swimming), transportation (e.g. walking or cycling), occupational (i.e. work), household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities (http://www.who.int/dietphysicalactivity/factsheet_adults/en/). Several social and environmental factors have systematically emerged as determinants of physical activity in adults. Social support from family, peers, communities and healthcare providers are among those that influence the physical activity of adults. (Seefeldt, V. et.al, 2002). Inactive adults or adults with disease limitations will have added health benefits if moving from the category of “no activity” to “some levels” of activity. Adults who currently do not meet the recommendations for physical activity should aim to increase duration, frequency and finally intensity as a target to achieving them.

In the year 2000, 76% of all deaths in the American continent were caused by non communicable diseases, this percentage being similar to that found among developed areas in Europe (86%) and the Western Pacific (75%). In that year alone there were 119,000 deaths associated to sedentary lifestyles. (CDC, 1996; Peña et al. 2000 as cited by Lopez et.al., 2012). In Mexico, the National Survey of Health and Nutrition (ENSANUT, 2006 as cited by Lopez et.al., 2012) reported the prevalence of overweight in men and women over 20 years old to be 42.5% and 37.4% meanwhile obesity was rated at 34.5% and 24.2% respectively. Statistics from that same study showed that in the state of Baja California 6 out of every 10 adults above the age of 20 already have overweight or obesity, likewise 78% of the population have abdominal obesity. Another population survey on Mexican adults determined the prevalence of physical activity classifying it according to its intensity, frequency and duration it showed 65.5% of the population as having insufficient activity, 16.8% with inactivity and only 17.7% with recommended levels of physical activity. (Acosta-Cázar et al. 2006 as cited by Lopez et.al., 2012). The role of sedentarism as an independent cardiovascular risk factor has been widely studied in the last four decades (Kannel et al. 1979; Wingard et al. 1982; Paffenbarger et al. 1993; Rennie, et al. 2003 as cited by Lopez et.al., 2012). The results of these studies show a decrease in the prevalence of chronic non communicable diseases such as diabetes, obesity, cardiovascular disease, osteoporosis, metabolic syndrome and even some neoplasias, among physically active subjects. In Mexico according to the National Program of Physical Fitness And Sport 2001-2006, the habits of Mexicans in performing physical fitness or sporting activities is reduced to less than one hour a week, once a week and less than 7% of the population above 15 years of age do any kind of physical activity or sport significant enough to maintain their health. The results of the National Survey of Health and Nutrition (ENSANUT, 2006), referring to nutritional status and abdominal obesity plus the determining of the prevalence of physical activity in the adult Mexican population (Acosta-Cázar et al. 2006 as cited by Lopez et.al., 2012), discriminate populations based solely on their gender and geography without specifying ethnic, socioeconomic characteristics or specific age groups. There is some evidence that physical activity can minimize weight gain, and it appears that needs to be moderate to vigorous in intensity to significantly affect body weight. Moreover, it appears that improvements in fitness are associated with reductions in risk of weight gain. Physical

activity also is associated with improved maintenance of weight loss (The Journal of Nutrition, 2015). In other words, physical activity, too, was related to obesity. People who were sedentary in their leisure time were more likely than those who were physically active to be obese (Health Reports, Vol. 17, No.3, 2006). The results of Gómez et al. (2005) showed that adults in Bogota, Colombia had a prevalence of high and moderate level of physical activity of 63.6%, less than the one reported in this investigation, likewise, Matsudo et al. (2000) reported that adults in Sao Paulo, Brasil, had a prevalence of high and moderate level of physical activity of 46.5%.

Dietary Intake

Diet is undoubtedly one of the most important determinants of body weight. In a study conducted among French adults, results showed that when compared to current recommendations, intake of carbohydrates (.50% energy intake without alcohol: 26.4 %), SFA (.35% total lipids: 18.5 %) and total fibre (.25 g/d: 13.7 %) was frequently unsatisfactory. While overall consumption of 'meat, seafood and eggs' was satisfactory, that of fruits and vegetables (\$400 g/d: 43.8 %) and seafood (two or more servings per week: 29.9 %) was frequently too low (Castetbon et.al., 2009). Likewise, in a study done in Canada, it revealed that men and women who ate fruit and vegetables less than three times a day were more likely to be obese than were those who consumed such foods five or more times (Health Reports, Vol. 17, No.3, 2006). In another study conducted among adults population in China by Paeratakul et.al., 1998, 53% of the study population reported an increase in fat intake and 47% reported a decrease in fat intake in 1991 compared to 1989. The mean change in BMI of those who increased their fat intake was 0.24 kg=m², compared to 0.11 kg=m² of those who decreased their fat intake. The difference was statistically significant (P<0.05). In other words, change in fat intake was positively associated with change in BMI in men (b.0.00036, P.0.0001), and change in physical activity level was inversely associated with change in BMI in women (b.70.12, P.0.02).

Nutritional Status

Nutritional status is the term used to indicate the net outcome of individual food usage (ingestion, absorption and utilisation), disease status and work demand. It is the outcome of previous nutrition, and indicates the presence or absence of deficiency signs, the failure of growth or some other aspect of functional capacity. It is a rather broad, multi-faceted concept which is difficult to measure directly (<http://www.fao.org/docrep/004/x3936e/x3936e04.htm>). Nutritional status is affected by lots of factors like individual and lifestyle factors, social and community factors, as well as socio-economic and environmental factors (Ministry of Health. 2013. *Food and Nutrition Guidelines for Healthy Older People: A background paper*. Wellington: Ministry of Health).

In 2008, 35% of adults aged 20+ were overweight (BMI $\geq$ 25 kg/m²) (34% men and 35% of women). The worldwide prevalence of obesity has nearly doubled between 1980 and 2008. In 2008, 10% of men and 14% of women in the world were obese (BMI $\geq$ 30 kg/m²), compared with 5% for men and 8% for women in 1980. An estimated 205 million men and 297 million women over the age of 20 were obese – a total of more than half a billion adults worldwide. The prevalence of overweight and obesity were highest in the WHO Regions of the Americas (62% for overweight in both sexes, and 26% for obesity) and lowest in the WHO Region for South East Asia (14% overweight in both sexes and 3% for obesity). In the WHO Region for Europe and the WHO Region for the Eastern Mediterranean and the WHO Region for the Americas over 50% of women were overweight. For all three of these regions, roughly half of overweight women are obese (23% in Europe, 24% in the Eastern

Mediterranean, 29% in the Americas). In all WHO regions women were more likely to be obese than men. In the WHO regions for Africa, Eastern Mediterranean and South East Asia, women had roughly double the obesity prevalence of men. In the Philippines, result of the most recent National Nutrition Survey revealed that 31.1% or 3 out of 10 Filipino adults are overweight/obese.

In a study done in Canada, statistics showed that from 1978/79 to 2004, the prevalence of obesity rose in every age group except 65 to 74. The most striking increases were among people younger than 35 and those 75 or older. For instance, the percentage of 25- to 34-year-olds who were obese more than doubled from 8.5% to 20.5%. The median BMI of adults rose from 24.4 in 1978/79 to 26.1 in 2004, and the BMI distribution of the adult population shifted toward the overweight and obese ranges (Health Reports, Vol. 17, No.3, 2006). In another study done among Physical Education professors in Brazil, results showed that none of the evaluated subjects were found to be classified as underweight, which is an indicator of malnutrition, on the other hand overweight and obesity were found in greater proportion among men than women (Lopez et.al., 2012).

Materials and Methods:

This part presents the research design, population and respondents of the study, data gathering instrument, data gathering procedure and statistical treatment used in the study

Study Population, Sample Size and Sampling Procedure

There are a total of 83 CABEIHM faculty members composed of 74 full time and 9 part timers whose age ranges from 20 to 59 years old. Out of 74 faculty members, 2 are pregnant. In selecting respondents, simple random sampling was used at 0.05 level of confidence, thus, arriving at 61 as the total respondents.

Data Collection Instruments and Procedures

Permission to conduct the study was sought from the Office of the Dean of the College of Accountancy Business Economics and International Hospitality Management (CABEIHM). Upon approval, the respondents was informed about the purpose of the study and assumed confidentiality in their responses. They were asked to sign the informed consent form. This study used interview as the major instrument.

Repeated 24 h Food Recalls

Dietary intake was assessed by two 24 h recalls, one of which was on the weekend and the other on week day. Trained dietitians asked subjects to describe all foods and beverages consumed the day before the interview. Data were entered on software (FNRI FCT software) in order to determine the nutrient content of the foods consumed. The classification of the energy and nutrient adequacy of the food intake was based on the method used by FNRI. Energy is considered adequate if it is meeting 100% of recommended intake for energy, and inadequate if less than 100% of the recommendation. For nutrients (carbohydrate, protein and fat) they are adequate if meeting the EAR (estimated average requirement) which is assumed to be 80% of RENI (recommended energy and nutrient intake) and inadequate if below 80%.

Physical Activity

The short-form of the International Physical Activity Questionnaire (IPAQ) was used. In brief, the numbers of days over the past week in which the subject spent more than 10 min walking and carrying out physical activity of moderate or vigorous intensity were collected.

The respective duration on one of these days were collected. Scoring systems adapted Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire (IPAQ) – Short Form was used to determine the level of physical activity. The classification of physical activity level will be as follows: inactive, minimally active and hepa active.

Anthropometry

Height measurements of the respondents were obtained using a microtoise. Microtoise consists an L-shaped device (head bar) attached to a spring-loaded coil tape measure (Africa *et al.*, 2010). Respondents were asked to stand straight against the wall with their head, shoulders, and heels touching the wall. For their weight, respondents were asked to stand on the middle of the plate of Detecto beam balance, stay still and avoid unnecessary movements. Shoes and sandals were also removed as well as wallets, cellphones etc., which may alter the measurements. From these measurements, their Body Mass Index (BMI) was computed. The WHO recommendation for BMI for adults was used in this study.

Table 1. BMI Classification for Adults

Classification	BMI Range
Underweight	<18.50
Average weight (Normal)	18.50 - 24.99
Overweight	25.00 - 29.99
Obese	≥30.00

Data Analysis

All data were tested for statistical significance using the Statistical Program for Social Sciences (SPSS) 17.0. Frequencies and percentages were obtained through this program. Pearson chi-square was used to determine the association among physical activity, dietary intake and nutritional status.

Results and Discussion:

Characteristics of the Respondents

As can be seen from table 2, majority of the respondents has an age range of 30-39 years old both for male and female while the least are those who are 50-59 years old. In terms of gender, almost three fourths of the respondents or 77 percent are female.

Table 2. Demographic Profile of the Respondents

Age	Sex	N	Total N (%)
20-29	M	3	8 (13)
	F	5	
30-39	M	6	32 (52)
	F	26	
40-49	M	5	18 (30)
	F	13	
50-59	M	0	3 (5)
	F	3	
Total	M	14	(23)
N (%)	F	47	(77)

Physical Activity

Table 3 showed that 50 percent of the respondents are minimally active or with moderate level of physical activity while the remaining 50 percent are equally distributed as to having inactive (low) and hepa active (high) level of physical activity. This shows that moderate level of physical activity or minimally active is common among faculty members. This can be due to strong social support in the environment as well as availability of physical activity equipment in the university. Despite the busy schedule of the respondents, having support and a companion for physical activity were found to be convincingly associated with different types of physical activity [(neighbourhood) walking, bicycling, vigorous physical activity/sports, active commuting, leisure-time physical activity in general, sedentary lifestyle, moderately intense physical activity and a combination of moderately intense and vigorous activity]. Other possible, but less consistent correlates of physical activity were availability, accessibility and convenience of recreational facilities.(Wendel-Vos, W.et.al., 2007)

In a study made among adolescents in Mexico using the IPAQ questionnaire, results showed a lower level of physical activity as compared to this study. According to this investigation, 35.2% showed a high level of physical activity, 24.4% moderate and 40.4% with low level of physical activity. These results were in contrast with the results found in population studies in Latin-American cities using the same methodology of the IPAQ questionnaire. As mentioned by Gomez et al. (2005) adults in Bogota, Colombia had a prevalence of high and moderate level of physical activity of 63.6%, which is more than the one reported in this study. More so, Matsudo et al. (2000) reported that adults in Sao Paulo, Brazil, had a prevalence of high and moderate level of physical activity of 46.5%. In another study of the prevalence of physical activity in Mexican adults that utilized a different methodology, classifying it according to its intensity, frequency and duration, results revealed that the prevalence of recommended physical activity is low and that of physical inactivity is high. (Acosta-Cázarez et al. 2006). Similarly, in the study made by Cruceiro, et.al. 2007, sedentarism was noted among professors from the Instituto de Enseñanza Media de la Universidad de Salta, Argentina.

Table 3. Physical Activity Level of Respondents

Physical Activity Level	Frequency N=61	Percentage
Inactive	15	25
Minimally Active	31	50
Hepa Active	15	25

Nutritional Status

Using the WHO BMI classification for adults, results showed that most of the respondents have a normal nutritional status. However, as noted in table 4, the remaining 38 percent are overweight and obese composed of 25 percent overweight and 13 percent obese which are considerably higher than the national average (31.1%) in Filipino adults according to the results shown by the most recent national nutrition survey conducted by FNRI. The rest of the respondents (10 percent) are underweight which is the same with the result of the 8th national nutrition survey. The results connote that generally, respondents are in the proper state of health. A possible reason for this is the education of the respondents which play a great role in attaining a positive and optimum nutritional status. The difference by educational level was assumed to be due to greater awareness and concern about nutrition and health (Windham, et.al., 1983).

Comparing the results of this study with the one made by Bossan, F.M. et. al.(2007), results revealed that nearly 50% of the women and men in the city are in the

pre-obesity stage and that the obesity prevalence per se was high (15.4% in women and 14% in men). The prevalence of pre-obesity is higher by 25% as compared with the result from this study. In another study made by Kurshed, AAM et.al., (2010) it was observed that 19% of the adolescent girls were under nourished, 74% were having normal BMI which revealed that they were well nourished and only 7% were obese. This is in contrast to the results obtained from this study.

Table 4. Nutritional Status of the Respondents

Nutritional Status	Frequency N=61	Percentage
Underweight	6	10
Normal	32	52
Overweight	15	25
Obese	8	13

Energy and Nutrient Adequacy of the Dietary Intake

As can be seen in the table below, most of the respondents have inadequate intake of energy and macronutrients with carbohydrate having the highest percentage of 95% while energy obtained the least with a percentage of 75%. This result is similar to the study conducted by Castetbon et.al. in 2009 among French adults. Results showed that when compared to current recommendations, intake of carbohydrates (50% energy intake without alcohol: 26.4 %), SFA (35% total lipids: 18.5 %) and total fibre (.25 g/d: 13.7 %) was frequently unsatisfactory. In another study done among US adults, results showed that diets of most adults do not conform to current dietary guidelines (Murphy S.P. et.al., 1992).

These results showed that the qualities of the diet of the respondents are generally low in the required amount of energy and macro nutrients. This can be due to the busy schedule of the faculty members that oftentimes lead to meal skipping like eating breakfast and lunch together.

Table 5. Energy and Nutrient Adequacy of the Dietary Intake of the Respondents

Nutrient	Inadequate		Adequate	
	Frequency	%	Frequency	%
Energy	46	75	15	25
CHO	58	95	3	5
PRO	53	87	8	13
FAT	53	87	8	13

Physical Activity and Energy and Nutrient Adequacy

Based on the findings shown in the table below, majority of the respondents' energy and nutrient intake are inadequate irrespective of the level of their physical activity. Thus, the respondents' physical activity is not significantly associated with their energy and nutrient adequacy. This could be explained by the fact that energy expenditure from physical activity is only a part of the total energy expenditure. In addition, sedentary lifestyles have recently been linked to a higher food intake and should therefore be kept in mind when estimating the energy requirements. As sedentarism cannot be seen as the opposite of physical activity, it is possible that a highly physically active person, also shows more sedentary behaviors by means of compensation (Jackson DM et.al., 2009). Furthermore, the physical activity induced energy expenditure is a variable factor in the energy balance equation. The level of physical activity can vary from day to day within a person. Adaptations in the level of physical

activity do not always result in immediate changes in energy intake, in other words energy intake and energy expenditure do not balance on a daily basis (Westerterp KR, 2010). In a study with African-American girls, the total caloric intake was also not significantly associated with PA (Jago R., et.al., 2004).

Table 6. Association between the Respondents' Physical Activity and Energy and Nutrient Adequacy

Physical Activity	Energy		Total	p-value	Computed value
	Inadequate	Adequate			
Hepa Active	14	1	15	0.16	3.616*
Minimally	21	10	31		
Active	11	4	15		
Total	46	15	61		
	CHO			p-value	Computed value
	Inadequate	Adequate			
Hepa Active	15	0	15	0.22	3.053*
Minimally	28	3	31		
Active	15	0	15		
Total	58	3	61		
	PRO			p-value	Computed value
	Inadequate	Adequate			
Hepa Active	13	2	15	0.19	3.324*
Minimally	25	6	31		
Active	15	0	15		
Total	53	8	61		
	FAT			p-value	Computed value
	Inadequate	Adequate			
Hepa Active	14	1	15	0.556	1.17*
Minimally	27	4	31		
Active	12	3	15		
Total	53	8	61		

*not significant

Table 7. Association between the Respondents Physical Activity and Nutritional Status

Physical Activity	Nutritional Status				Total	p-value	Comput ed value
	UW	Normal	OW	Obese			
Hepa Active	1	12	2	0	15	.28	7.512*
Minimally Active	4	14	8	5	31		
Inactive	1	6	5	3	15		
Total	6	32	15	8	61		

UW-underweight

OW-overweight

* -not significant

Physical Activity and Nutritional Status

Table 7 revealed that most of the overweight and obese respondents are either minimally active or inactive although there are 2 overweight respondents who were reported to be hepatic active. In addition, majority of the underweight and normal respondents are minimally active. However, applying statistical test, results showed that there is no significant association between the respondents' physical activity and nutritional status. One reason for poor nutritional status in active persons may be long-term marginal dietary intakes associated either with poor dietary choices or reduced energy intake (Manore, M.M., 2000). This is in congruent to the results of the study done among youths in Africa (Nhantumbo L., et.al., 2013) where in results showed that nutritional status was not associated with physical activity levels. However, this is in contrast to the result of the study made by Radmila J. et.al., in 2010. According to this study, physically inactive children were statistically significantly more often overweight and obese compared to malnourished and adequately nourished children. Similarly, in a study made by Coelho LG et.al., 2012 among school children, results showed that they had a high frequency of overweight, which, alone, was not associated with the high physical inactivity and the low quality diet observed.

Nutritional Status and Energy and Nutrient Adequacy

In terms of energy adequacy, results showed that adequacy of nutrient intake is commonly observed among the majority of the obese respondents and some portion of the overweight respondents while all of the respondents who are either underweight or has normal weight has inadequate energy intake. For carbohydrate, protein and fat, same results were observed. Thus, nutritional status is significantly associated to energy and nutrient (carbohydrate, protein and fat) adequacy. Food or dietary intake is the immediate cause of malnutrition, thus, inadequate food intake with inadequate energy and nutrients will result to undernutrition and vice versa. Insufficient food intake is one of the main reasons for malnutrition especially in older adults (<http://www.shs.brookes.ac.uk/research/effect-of-food-colour-on-food-intake>). Humans require a wide range of essential micronutrients and macronutrients for normal growth and development and to support healthy aging throughout the life cycle. Essential nutrients, including most vitamins, minerals, amino acids and fatty acids, water and fiber, must be obtained through foods and beverages because they cannot for the most part be endogenously synthesized, or are not endogenously synthesized in adequate amounts to need recommended intakes. If the food intake is inadequate, definitely, the adequacy of the diet is affected and so is the nutritional status. Similar to this, the study model demonstrated an association between dietary intake and nutritional status. Dietary intake was a predictive factor of statural growth in patients with cystic fibrosis (Simon, MIS et.al., 2009). However, this result is in contrast with the result of the study made by Barbara, H.L., et.al. (2009)

where in findings revealed that there was no significant association between habitual dietary energy intake and nutritional status.

Table 7. Association between the Respondents' Nutritional Status and Energy and Nutrient Adequacy

Nutritional Status	Energy		Total	p-values	Computed values
	Inadequate	Adequate			
Underweight	6	0	6	0.02	15.168**
Normal	32	0	32		
Overweight	14	1	15		
Obese	5	3	8		
Total	57	4	61		
	CHO		Total	p-values	Computed values
	Inadequate	Adequate			
Underweight	6	0	6	0.000	20.903**
Normal	32	0	32		
Overweight	15	0	15		
Obese	5	3	8		
Total	58	3	61		
	PRO		Total	p-values	Computed values
	Inadequate	Adequate			
Underweight	6	0	6	0.005	12.796**
Normal	32	0	32		
Overweight	12	3	15		
Obese	5	3	8		
Total	55	6	61		
	FAT		Total	p-values	Computed values
	Inadequate	Adequate			
Underweight	6	0	6	0.002	15.168**
Normal	32	0	32		
Overweight	14	1	15		
Obese	5	3	8		
Total	57	4	61		

**significant

Summary, Conclusion and Recommendation:

The study was conducted for the purpose of determining the association among physical activity, dietary intake and nutritional status of 61 faculty members of College of Accountancy Business Economics and International Hospitality Management (CABEIHM) of Batangas State University Main Campus I. The investigation was conducted in the same university during the month of April 2015, the data were gathered through interview. The respondents were chosen using simple random sampling; frequency, percentage, Pearson chi square and cross-tabulation was the statistical tools applied to treat the gathered data. Based

on the results, majority of the respondents are female 30-39 years old, minimally or moderately active and with normal nutritional status. In terms of energy and nutrient adequacy, findings revealed that most of the respondents have inadequate intake both for energy and the macronutrients (carbohydrate, protein and fat). Thus, there is no significant association among the physical activity, dietary intake and nutritional status of CABIHM faculty members in Batangas State University Main Campus I. The significant association was only observed between nutritional status and energy and nutrient adequacy of the dietary intake, thus, reject the null hypothesis.

Gradual shifting of the sedentary society in the academic institution like Batangas State University into an active one will require effective dissemination and acceptance of the message that moderate physical activity coupled with proper nutritional status and adequate dietary intake presents health benefits. The Batangas State University administration particularly the Health Service Department should promote physical activity and will continue to be crucial in this effort. Facilities that are already available can be used to a much greater extent. In addition, it should also be restructured to encourage faculty members and employees to be active by making time and facilities available. Intervention programs emphasizing lifelong physical activity should be promoted. This can be done through incorporating regular health and nutrition assessment as part of the annual medical examination of faculty members and giving the appropriate nutrition/diet counseling whenever necessary. Nutritionist-Dietitians, physicians and other health professionals in the university should routinely counsel patients to adopt and maintain regular physical activity, proper diet and optimum nutritional status. Moreover, the nutrition clinic of the university should be operational not just during Nutrition Month but all year round to accommodate more faculty members, employees, staffs and even students.

To improve the results of the study, it is recommended that 3-day 24-hour food recall be made to make a more substantial inquiry on the dietary intake of the subjects and the inclusion of their socio-demographic data may also be considered for analysis. Furthermore, similar researches should be conducted in other places to make inquiries into the status of the physical activity level, dietary intake and nutritional status so that if similar problems and deficiencies are found, concerted efforts may be exerted to improve the condition.

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Social determinants of vaccination coverage in Australian paediatric population: differentials between general and indigenous populations

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Introduction

Across the globe, indigenous populations have experienced European colonization, loss of traditional lands; devastation from introduced infections; cultural marginalization and reduced access to health services (McFarlane, Sleight, & McMichael, 2013). There has consistently been a much higher disease burden in indigenous communities when compared to the general population in Australia. The magnitude of some of these health issues may in fact be comparable to those seen in developing countries beginning from neonatal period up to later pediatric age. Indigenous children suffer from a plethora of diseases which are rarely encountered in the non-indigenous population. Though improvements in economic and living conditions led to a reduction in the burden of infectious diseases in local population but it has not yet translated fully to indigenous health (Carville et al., 2007). Social determinants of health, such as low education, difficult life circumstances, insecurity are often linked to worsening health outcomes particularly infectious disease risk (Brynley Hull, 2011).

The Immunise Australia Program aimed to reduce illness and death associated with 16 vaccine-preventable diseases (VPD) by funding a series of age-specific vaccinations as outlined in the National Immunisation Program Schedule (Immunisation, 2013). Vaccination has successfully contributed to betterment of Aboriginal and Torres Strait Islander health and child survival in last decade, with national immunisation coverage rates for indigenous children improving since 2008. However, indigenous children continue to have higher morbidity and mortality from many infectious diseases compared with their non-indigenous counterparts (Brynley Hull, 2011; Welfare, 2015).

Methods

The objective of this planned study is exploration of determinants of vaccination coverage in Australian paediatric population between general & indigenous populations through the systematic search of present literature on electronic data base. Online search from various databases such as Informit, Scopus, PubMed, Web of science and Infonet was conducted with electronic retrieval of relevant journal articles and online reports using 4 main concepts:

1. Vaccination, Immunization
2. Children, paediatrics, Infants, toddlers, preschool
3. Social determinants, poverty, race, income, lifestyle, health knowledge, housing
4. Australia, Indigenous, Aboriginals

The search was designed using these 4 concepts by using OR for synonyms AND for combining the concepts to provide the data reflective of current practise and help in identifying areas of unmet need and practise gaps which would have to be addressed in subsequent recommendations. The electronic searches were supplemented by various internet engines for web pages that might provide additional references.

The titles and the abstracts of the result of this search were reviewed and relevant studies selected for the review. Duplicates were excluded and limiting criteria as mentioned below in

box were used to narrow down the search. The full text of the articles were obtained and assessed per inclusion criteria for the review. Their potential relevance was examined, and 140 citations were excluded as irrelevant. The full papers of the remaining 50 citations were assessed to select those primary studies that directly related to paediatric Indigenous vaccination and were published in English language between 2005 and 2015. Of these studies, 38 were found to be relevant to the research question. Any gaps apparent formed the basis of future searches and the research objectives. All relevant reviewed literature was considered as a means of determining the scope of research and identifying the gaps.

Results

The achievement of 'fully vaccinated' coverage at 12 months of age continues to be lower among indigenous children than non-Indigenous children across different parts of Australia. Overall, indigenous coverage at 24 months of age exceeded that at 12 months of age nationally and for all jurisdictions, but as receipt of varicella vaccine at 18 months is excluded from calculations, this represents delayed immunisation, with some contribution from immunisation incentives(Health, 2012). The 'fully vaccinated' coverage estimates for vaccinations due by 60 months of age for Indigenous children exceeded 90% at 91% in 2012 with more consistent coverage across states unlike in 2011(Welfare, 2015).

Vaccines recommended for Indigenous children such as hepatitis A and pneumococcal vaccine continued to have suboptimal coverage at 60.1% and 73.1%, respectively, although there was a considerable improvement in coverage from 2011(57.7% and 68.2%) respectively. On-time receipt (before 49 months of age) of vaccines by Indigenous children at the 60-month milestone age improved substantially between 2011 (19%) and 2012 (38%) but the disparity in on-time vaccination between Indigenous and non-Indigenous children worsened at the 60-month age milestone from 2011 (from 1.8 to 5.4 percentage points) and remained the same for the 12 and 24-month age milestones(Welfare, 2015).

Hepatitis A vaccination for Aboriginal and Torres Strait Islander children was introduced in 2005 in the Northern Territory, Queensland, South Australia and Western Australia. In 2002–2005, there were 20 hospitalisations for hepatitis A in Aboriginal and Torres Strait Islander children aged <5 years—over, 100 times more common than in other children(L. Naidu et al., 2012; Welfare, 2015).

There has been a reduction of 87% in notifications of invasive pneumococcal disease (IPD) caused by serotypes contained in 7-valent pneumococcal conjugate vaccine (7vPCV) since the introduction of the childhood 7vPCV program among Aboriginal and Torres Strait Islander children in 2001(Giele et al., 2007). However, due to serotype replacement to non-7vPCV serotypes, the decline in total IPD notifications has been less marked in Aboriginal and Torres Strait Islander children than in other children(Johnson, D'Onise, Holland, Raupach, & Koehler, 2012).

Meningococcal C vaccination for infants and the high-school catch-up program were implemented in 2003 which resulted in a significant decrease in cases caused by serogroup C. However, the predominant serogroup responsible for infection in Aboriginal and Torres Strait Islander children remains serogroup B (R. I. Menzies & Singleton, 2009).

The decline in severe rotavirus disease after vaccine introduction in 2007 was less marked in Aboriginal and Torres Strait Islander children than in other children. Aboriginal and Torres Strait Islander children continue to experience higher hospitalisation due to rotavirus infection in the Northern Territory.

Although *Haemophilus influenzae* type b (HiB) disease rates have decreased significantly since the introduction of vaccines in 1993, the plateauing of rates in Aboriginal and Torres Strait Islander children, and increasing disparity with other children, are concerning.

Pandemic and seasonal influenza and pneumonia are other diseases with comparatively higher rates in Aboriginal and Torres Strait Islander people (O'Grady, Torzillo, & Chang, 2010).

A prolonged mumps outbreak occurred in 2007/2008 predominantly affecting Aboriginal and Torres Strait Islander adolescents and young adults in north-western Australia. A potential contributor to this mumps outbreak was greater waning of immunity after receipt of the first dose of mumps-containing vaccine at 9, rather than 12, months of age in the Northern Territory in the 1980s and 1990s. However, outbreaks in Australia and overseas have subsided without additional boosters being routinely implemented.

Discussion

Over 700,000 Indigenous people in Australia, accounting for 3% of the Australian population, continue to suffer from a continuing gap in all determinants of health and welfare. Lower education and participation in productive workforce and other factors contribute to substantial difference in almost all measures of health and welfare between indigenous and non-indigenous Australians.

The current research focussed on analysis of various determinants that contribute to the continuing gap in immunisation in indigenous children in Australia (O'Grady, Krause, & Andrews, 2009). Vaccination programs for indigenous people seem to continually be characterised by high coverage for standard vaccines, poor timeliness of vaccination and lower coverage for 'Indigenous only' vaccines. This is a very pertinent health issue, given that over one-third (36%) of Indigenous people are aged under 15 compared with 18% of non-Indigenous people. Review of literature reveals that possible determinants of the continual inequity in vaccination could be examined under five key themes: delivery of vaccination services; effect of geographical location (remoteness); racial differences in infectious disease spectrum; cultural issues; policy gaps.

Delivery of Vaccination Services

Data from Australian Childhood Immunisation Register (ACIR) reports that the national coverage for full immunisation for indigenous children increased from 2008-2012. In most states/territories (except SA and ACT), indigenous children's vaccination rates were similar to those for non-Indigenous children. Vaccination coverage estimates were significantly lower for SA than for other jurisdictions: for the 1 year age-group, coverage for indigenous

children was 80% compared with 90% for other children, for the 2 year old cohort, coverage for indigenous children was 87% compared with 93% for other children, for the 5 year old age group, coverage for Indigenous children was 83% compared with 91% for other children.

Poor timeliness is an important issue to address as it can significantly impair the potential benefits of vaccination, most importantly for pneumococcal, HiB and rotavirus vaccines in infants (Hull & McIntyre, 2006).

For vaccines recommended for both indigenous and non-indigenous persons, coverage is as high in indigenous persons as in non-Indigenous persons, but vaccination is more frequently delayed (Stephens, Nettleton, Porter, Willis, & Clark, 2005). For example, one study from Northern Territory reported that at 7 months of age only 45.2% of Indigenous infants in the had completed the recommended schedule for that age point (DTPa-hepB-IPV-Hib/PCV/rotavirus), but by 18 months of age this figure had risen to 81.2%. In terms of specific vaccines, in 2011, the greatest difference in coverage was for HiB which was 8.7% lower among indigenous children than among non-Indigenous children (Olsen, Wallace, & Maher, 2014).

Coverage for vaccines recommended only for Indigenous persons has been generally lower than for vaccines that are funded for all persons in a particular age group, highlighting the need for improved recording of Aboriginal and Torres Strait Islander status in order to improve vaccination coverage and timelines (Lucy Attwood, 2015).

The success of current immunisation programs has been blunted to a great extent due to failure in identification of key issues that distinguish the disease load for indigenous children. Despite the overall decline in infection cases, notification rates remain higher in Aboriginal and Torres Strait Islander people than in other people for both serogroups (Latika Naidu, Chiu, Habig, Lowbridge, & Jayasinghe, 2013). A vaccine against Meningococcus type B has only recently been licensed in Australia. Similarly, high number of hospitalisations due to rotavirus infection continues, since introduction of two dose schedule which is clearly not protective.

Pandemic and seasonal influenza and pneumonia are other diseases with comparatively higher rates in Aboriginal and Torres Strait Islander people. Achieving high coverage in those aged ≥ 15 years should now be looked upon as a priority.

Vaccination services to indigenous persons are currently offered through general practitioners, Aboriginal Health Services and community health services. This introduces multiple supply networks that are required to communicate effectively with use of standardised pathways for delivery and standards for success that are applied consistently across the various states in the country. These services need to engage more actively with the indigenous patients to promote increased awareness of the time criticality of vaccination in their children. Engaging expectant mothers and their family during antenatal visits and infancy is critical to drive this. Program delivery monitoring should create mechanisms that allow patients and service providers to data around quality and reach of services at these time points in addition to hitherto recognised performance indicators.

Effect of remoteness on effective vaccination

The geographical spread of indigenous Australians has been undergoing a change in the last decade. Indigenous Australians are now more likely to live in urban and regional areas than remote areas with about four-fifths (79%) living in major cities or regional areas and about one-fifth (21%) lived in remote or very remote areas. This geographic distribution of the Indigenous population differs from that of the non-Indigenous population (98% lived in non-remote areas, with 2% living in remote areas). This distribution, however, was not consistently seen across the different states -the majority of the Indigenous population resided in either Major cities or Inner regional areas in 5 jurisdictions—the Australian Capital Territory (100%), Victoria (85%), New South Wales (78%), South Australia (59%) and Queensland (51%), whereas just over half (55%) of the Indigenous population in Western Australia and most of the Indigenous population in Tasmania (97%) and the Northern Territory (80%) lived in lived in remote areas.

This introduces additional complexity in design and execution of vaccination services. Those states with predominant share of the target population residing in remote locations have to create appropriate supply chain infrastructure to ensure the maintenance of cold chain. Previous studies from the Northern Territory have pointed this as possible factor in increased prevalence of vaccine failure and suboptimal response. There are a significant proportion of Aboriginal adolescents vaccinated in 1989 and 1990 who have chronic HBV infection, and another substantial subset who are non-immune, despite having received complete HBV vaccination courses as infants possibly attributed to frequent breach of cold chain during vaccine transport (Dent, 2010; Harrod et al., 2014).

Considering that the greatest growth in indigenous population over the last decade and in the near future is likely to be in NSW and ACT in non-remote urban areas, factors such accurate identification of indigenous status in customers utilising these services, culturally appropriate yet resource efficient design of services become critical to ensure coverage of this population which is substantial in absolute numbers, even though may represent a small percentage of the overall target population in these states. In 2012–13, rates of pneumococcal vaccination among indigenous people aged 15 and over increased with remoteness (from 8% in Major cities to 24% in Very remote areas). These findings suggest that while targeted programs in remote locations have now achieved a high level of success, focus in intervention design needs to incorporate the emerging needs arising from indigenous families in urban settings.

Racial differences in infectious disease spectrum

For some VPDs, greater burden of illness still occurs in Indigenous persons than in non-Indigenous persons, largely due to the greater prevalence in Indigenous persons of serotypes for which vaccines do not protect and high exposure levels associated with the social determinants of health, such as low educational outcomes, lack of control over life circumstances and lack of cultural safety, high-density living resulting in sustained lower

standards of living and poorer access to water, housing and health care. The Australian Immunisation schedule(2014) recommends the use of vaccines-Bacille Calmette-Guérin (BCG), HiB, hepatitis A, influenza and pneumococcal vaccines, especially for indigenous persons in Northern Territory, Queensland, South Australia and Western Australia.

There is evidence that acute lower respiratory tract infections(ALRI) is an increasing health burden in north-west Queensland, especially among Indigenous children, whose overall hospital admission rate for ALRIs was more than five times the rate for non-Indigenous children. Bronchiectasis was shown to be relatively common but only present in Indigenous children. Possible factors contributing to this include prematurity and intrauterine growth restriction, under-nutrition; exposure to cigarette smoke, aspiration of infected nasopharyngeal secretions and social factors of overcrowded living conditions, poor hygiene and lack of access to medical care(Chang, Grimwood, Mulholland, & Torzillo, 2002). In 2012–13, about 57% Indigenous children aged 0–14 were living in a household with a daily smoker, compared with 26% of non-Indigenous children.

The potentially preventable hospitalisation rate for Indigenous people was 3.4 times the rate for non-Indigenous people with higher average per person expenditure on these hospitalisations in Indigenous people with the ratio of Indigenous to non-Indigenous expenditure being 4.47 for influenza and pneumonia.

BCG

The National Notifiable Diseases Surveillance System received 1,353 tuberculosis (TB) notifications in 2010, representing a rate of 6.1 cases per 100,000 population. The incidence in the Australian-born Indigenous population was 7.5 per 100,000 population, which is 11 times the incidence reported in the Australian-born non-Indigenous population of 0.7 per 100,000 population(Richard Lumb, 2011).

Haemophilus influenzae type B

The incidence of invasive HiB disease was very high and occurred at a younger age in Indigenous children, particularly in more remote areas. The incidence declined substantially since introduction of vaccine in 1993 and has remained stable since conversion to PRP-T in 2009(Jacups, Morris, & Leach, 2011). However, it has remained several orders of magnitude higher than the general population, possibly explained by factors such as persistent nasopharyngeal colonization due to environmental factors such as crowding and lack of running water, poorer immunologic responses and delayed vaccination.

Rotavirus

Following the introduction of rotavirus vaccines to the NIP in 2007, substantial reductions (>70%) have been reported in rotavirus-specific hospital presentations (Dey, Wang, Menzies, & Macartney, 2012). However, indigenous infants and children are hospitalised with rotavirus gastroenteritis about 3 to 5 times more commonly than their non-indigenous peers, are younger at hospitalisation, and have a longer duration of stay. Rotavirus vaccine may provide suboptimal protection in Indigenous populations because of the multiplicity of strains

involved, the technical problems and costs of developing effective stable polyvalent vaccines, and the logistical difficulties in their distribution, especially in remote locations (Snelling et al., 2009).

Hepatitis A

Hepatitis A infection in most children is acquired the first 5 years of life, which is a typical finding in populations with disadvantaged living conditions. Although the symptoms of infection in early childhood are usually mild or absent, cases complicated by liver failure and death have been reported among indigenous children and recorded hospitalisation rates are more than 50 times higher in indigenous children than in non-Indigenous children (R. Menzies, Turnour, Chiu, & McIntyre, 2008). Since the introduction of vaccination program for indigenous children in north Queensland in 1999 a 92% reduction in the number of patients (MacIntyre et al., 2007). In 2005, the hepatitis A vaccination program was enhanced to cover all Indigenous children aged below two years resident in the states of Australia.

Pneumococcal disease

Prior to the availability of conjugate pneumococcal vaccines, Central Australian Indigenous children had rates of IPD that were among the highest ever reported in the world. The 13-valent pneumococcal conjugate vaccine (13vPCV) is recommended for all children in a 3-dose infant vaccination schedule (Hull, Deeks, McIntyre, & Menzies, 2008). Along with primary course of 3 doses of 13vPCV, at 2, 4 and 6 months of age, a booster dose of 13vPCV are also recommended at 12–18 months of age for Indigenous children in areas of high incidence. A wide range of serotypes of *Streptococcus pneumoniae* are responsible for disease in indigenous children, and therefore a smaller proportion of cases are vaccine preventable. While an initial reduction in IPD was observed, IPD incidence still remains higher in indigenous children than in non-indigenous children.

Policy gaps

The quality of health information on indigenous peoples has improved markedly over the last decade (Hull, Deeks, & McIntyre, 2009; Rank & Menzies, 2007). This improvement is largely due to a more co-ordinated approach to information on Indigenous peoples in the health, community services and housing sectors, as well as regular reporting on the health and welfare of Indigenous peoples (Provision, 2014). Despite these achievements, varying standards in indigenous identification between data collections, within data collections over time, and between regions, make it harder to assess changes over time and between regions (Royle J, 2015). This is also affected by the statistical and practical challenges of surveying a population comprising just 2.5% of the total Australian population, especially when nearly one-quarter lives in remote or very remote areas (Welfare, 2013). This significantly undermines the data quality and undermines informed decision making on required policy and program interventions.

Additionally, misguided expectations that medical strategies alone can overcome indigenous health problems; government preoccupation with sickness services rather than wellness strategies and bureaucratic mishandling of culturally sensitive matters beyond rigid protocols preclude a rigorous root-cause analysis of rate-limiting determinants and consequent identification of most pertinent targeted interventions and measures of success. For instance, a central Australian study estimated the rate of bronchiectasis in children aged below 15 years as 40-fold greater than that for Cystic Fibrosis in non-Indigenous populations (35 per 100 000). However, there is no recognition of the magnitude of health issue amongst health policy makers. Consequently, no programs or resources have been earmarked to manage these patients (Singleton et al., 2014).

Social exclusion is still seen among indigenous peoples. This undermines their material, psychosocial, and political empowerment, which in turn is significantly detrimental to their determinants of health (Marmot, Friel, Bell, Houweling, & Taylor, 2008).

Cultural determinants

In 2012–13, 7% of Indigenous adults (an estimated 26,500 people) reported avoiding seeking health care because they had been treated unfairly by doctors, nurses or other staff at hospitals or doctor surgeries (Kelaher, 2014).

In 2012–13, about 3 in 5 (57%) Indigenous children aged 0–14 were living in a household with a daily smoker, compared with 26% of non-Indigenous children. The proportion of Indigenous children living in households with a daily smoker declined from 68% in 2004–05 to 57% in 2012–13 (Pink, 2008) (Pink, 2008).

The determinants including income, education, employment, stress, social support and behavioural aspects along with cultural factors, such as traditions, attitudes, beliefs, and customs have a major influence on dynamics of health services utilisation.

A study of Aboriginal children in an urban setting found that the majority had only one Aboriginal parent and that unless information on the Aboriginal status of both parents was sought, Aboriginality was underestimated (Tania Marin, Eleonora Dal Grande, & Graeme Tucker, 2015).

The poor understanding of Aboriginal culture and the relationship between cultural integrity and health among health-care professionals have been shown to adversely influence the quality of Aboriginal health service in institutions. Indeed, health planners need to recognise that the level of disadvantage and need for specialised support services among urban Aboriginal and Torres Strait Islander populations is likely to be higher than their non-Aboriginal neighbours in the same postcode. Aboriginal Community Controlled Health Services (ACCHS) cannot operate as specific and specialist service agencies like their mainstream counterparts due to poorly informed funding structure and lack of long range planning (Baeza & Lewis, 2010). This is despite indigenous self-management and self-determination, as policy directions, being articulated by successive governments since the 1970s (Khouri, 2015) (Khouri, 2015).

The use of indigenous health workers is critical, as respect for, and understanding of, cultural differences aids effective delivery of health care. 2011 Census data reports a smaller proportion of the Indigenous population (1.6%) employed in health-related occupations than the non-Indigenous population (3.4%). The occupations with the largest gap between rates of Indigenous and non-Indigenous employed persons were nurses and midwives, medical practitioners and allied health professionals. It is also important to enable Indigenous people to take responsibility for programmes and services that affect their health and for them to work closely with existing health-care systems (Weightman, 2013).

Conclusions

The mortality rates for indigenous children have been steadily declining in the past two decades, due in large part to, successful implementation of vaccination interventions. However, there has been a non-significant change in the mortality gap between non-indigenous and indigenous paediatric population so far. It is extremely critical to examine the factors sustaining this gap within the broad context of various social determinants of health.

Reorganisation of service delivery networks based on changing demographic distribution; new pathological insights; culturally appropriate communication strategies, as well as use of indigenous-specific Medicare items and health service providers is the need of the hour. These interventions can potentially go a long way in improving access to health services for Indigenous Australians and address current unacceptable health inequities between Indigenous and non-Indigenous populations in Australia.

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SUBSTANCE USE AMONG HIGH SCHOOL LEARNERS IN THE BUFFALO FLATS OF EAST LONDON, SOUTH AFRICA

Mr. Emmanuel Manu, Prof Thelmah Maluleke & Dr Mbuyiselo Douglas

ABSTRACT

South Africa is battling with substance use by learners outside and inside the school premises. There is evidence that drug availability and use in schools has increased in the past ten years. This paper is based on a study that was conducted in the Buffalo Flats of East London. A total of 283 both males and females learners from Grade 10 to 12 were sampled through stratified random sampling. A self-administered questionnaire was used as the data collections instrument to illicit the information from the participants. Alcohol, tobacco and marijuana were found to be the three most preferred substances by learners. Although *Nyaope* was one of the substances responsible for the increase in patients younger than 20 years in the second half of 2009 in the Eastern Cape, this substance was never mentioned during the study conducted in schools in 2011. The study has shown that substance use exist among high school learners in the Buffalo Flats and is an emerging threat to the learners and teachers in these schools. It is therefore paramount that all stakeholders in education work together to make school environments safer and conducive for teaching and learning.

INTRODUCTION

Worldwide, the use of alcohol and illicit substances contributes 9.8% to the global burden of disease for people aged between 15 and 29 years. In developing countries such as South Africa, alcohol and illegal drugs are responsible for 4.1% of deaths and 4.4% of disability-adjusted life years (DALYs) among the mean age group of 15 years, who are mainly high school learners (Hamdulay & Mash, 2011). South Africa has a high rate of substance use among youth both in and out of school because these addictive substances are readily available and cheap to buy. Substances like tobacco, alcohol, cannabis and cocaine are a common problem amongst school-going adolescents. Substance abuse has become a social problem that is severely affecting the health status of the South African youth and is competing with other health needs for scarce resources (Malema, 2005). For instance, money that could be used by government to speed up service delivery in deprived communities at times has to be channeled to the health sector for substance use campaigns or to set up and run drug addiction rehabilitation programmes. In an attempt to curb the circulation of abused substances in the country and rehabilitate addicts, the South African government spends R7 billion annually. Besides the economic cost, alcoholism and multiple drug use have been associated with the alarming crime rate and violence in the country (Daly, 2006; Russell, 2010).

The number of school going children, mostly high school learners using substances in the country is alarmingly increasing. It is estimated that as many as one in three young people between the ages of 13 and 18 years are using drugs. In 2004 a new cheaper drug called *Nyaope* or *Kataza* was introduced in the market targeting schools including primary schools. *Nyaope* is a combination of dagga and heroine and to increase its potency rat poison, Anti-retroviral drugs and any substance is often added to the mixture. This drug has increased drug abuse in poor communities (South African National Council on Alcoholism and Drug Dependency, 2011).

McEntire (2009) posits that the availability of drugs at schools has increased over the last ten years besides the availability of information on prevention of drug abuse. Although young people are taught that drugs are harmful by their parents, teachers and the media they seem to choose using these harmful drugs and ignore the educational messages received about the dangers of drug abuse. A study conducted by Peltzer, Ramlagan, Mohlala and Matseke (2007) among high school learners revealed that the majority (72%) of the learners were aware that drugs are harmful, 18 percent were not sure that drugs can cause any harm at all and only 10 percent felt that the drugs will cause no harm at all. Most high school learners therefore abuse substances aware of the dangers associated with the practice.

According to the Eastern Cape Department of Social Development (2010), the province has one of the highest rates of substance use prevalence in country, more especially among the youth, both in and out of school. The challenge is substance use by learners particularly in school premises creates an environment that is unsafe to learning. Evidence shows that teachers who are trusted with the duty of educating the youth of the nation are scared to face the learners they are supposed to teach. Some learners in the high schools within the Buffalo Flats even go to the extent of physically abusing teachers in the classroom under the influence of substance use (Benjamin, 2011). Substance use reduces academic achievements of the learners and therefore encouraged drop outs. It was against this background that a study with a purpose to determine the prevalence of substance use among learners of Buffalo Flats of East London, South Africa was undertaken. This paper shares some of the findings of this study.

STUDY DESIGN

This was a cross-sectional descriptive study conducted among Grade 10, 11 and 12 learners attending school in government high schools in the Buffalo Flats of East London in 2011. The study population included all enrolled learners both males and females from Grade 10 to 12 in the selected Buffalo Flats high schools and were attending school at the time of the study. The total number of grade 10 to 12 learners enrolled in the two schools for the 2011 academic year was 941. The sample size for the study was 283 learners, about 30% of the grade 10 to 12 learners in the two schools with both female and male learners included. Stratified random sampling was used to ensure proportional representation of both sexes. During data collection self-administered questionnaires were distributed according to the home language and language preferences of the participants. Out of the 283 questionnaires issued out and collected, 37 of them were unfilled, and four were incomplete. The findings of the study are based on the 242 completed and 4 incomplete questionnaires (246) which is about 87% response rate.

ETHICAL CONSIDERATIONS

The research proposal was presented to Health Sciences Higher Degrees Committee of Walter Sisulu University for scientific and ethical review and inputs from the committee incorporated in the study. The proposal was then submitted to the University Ethics Committee for ethical clearance and ethics clearance certificate was granted. Permission to conduct the study was also obtained from the Department of Education, East London District. Parental consent and assent from the participants were obtained before participation.

RESULTS AND DISCUSSION

Demographic profile of participants

The demographic profile of participants included the following: gender, age, race, grade level, religious affiliation, place of residence, person the participants living with, and educational level of guardian and income level. These are represented on Table 1 below.

Table 1: Demographic profile of respondents (n=246)

Gender (n=246)	Grades							
	Participants n=246		G10 n=104 (42.28%)		G11 n=75 (30.49%)		G12 n=67 (27.23%)	
	Frequency	%	F	%	F	%	F	%
Male	96	39.02	50	48.08	26	34.67	20	29.85
Female	150	60.98	54	51.92	49	65.33	47	70.15
Total	246	100	104	100	75	100	67	100.00
Age distribution (n= 246)								
11 - 12 years	1	0.41	1	0.96	0	0	0	0.00
13 - 14 years	2	0.81	1	0.96	1	1.33	0	0.00
15 - 16 years	84	34.15	68	65.38	15	20.00	1	1.49
17 - 18 years	110	44.72	28	26.92	53	70.67	29	43.28
>18 years	49	19.91	6	5.77	6	8.00	37	55.22
Total	246	100.00	104	100.00	75	100.00	67	100.00
Distribution of participants according to race (n = 246)								
African	124	50.41	63	60.58	43	57.33	18	26.87
Coloured	121	49.19	41	39.42	31	41.33	49	73.13
Indian	1	0.41	0	0.00	1	1.33	0	0.00
White	0	0.00	0	0.00	0	0.00	0	0.00
Total	246		104	100.00	75	100.00	67	100.00
Place of residence (n= 242)								
City	166	68.60	89	87.25	38	52.05	39	58.21
Town	49	20.25	8	7.84	25	34.25	16	23.88
Rural area	26	10.74	5	4.90	9	12.33	12	17.91
Farm	1	0.41	0	0.00	1	1.37	0	0.00
Total	242	100.00	102	100.00	73	100.00	67	100.00
Religious affiliation (n=246)								
African religion	28	11.38	13	12.50	10	13.33	5	7.46
Christian	204	82.93	84	80.77	60	80.00	60	89.55
Muslim	2	0.81	0	0.00	1	1.33	1	1.49
Other	12	4.88	7	6.73	4	5.33	1	1.49
Total	246	100.00	104	100.00	75	100.00	67	100.00
Person living with participant (n=245)								

Single Parent	101	41.22	64	62.14	25	33.33	12	17.91
Both Parents	104	42.45	30	29.13	45	60.00	29	43.28
Foster Parent	13	5.31	6	5.83	1	1.33	6	8.96
A relative	24	9.80	3	2.91	1	1.33	20	29.85
Staying alone	3	1.22	0	0.00	3	4.00	0	0.00
	245	100.00	103	100.00	75	100.00	67	100.00
Employment status of person living with the learner (n=246)								
Employed	152	61.79	49	47.12	51	68.00	52	77.61
unemployed	48	19.51	32	30.77	12	16.00	4	5.97
Self employed	22	8.94	10	9.62	8	10.67	4	5.97
Pensioner	24	9.76	13	12.50	4	5.33	7	10.45
Total	246	100.00	104	100.00	75	100.00	67	100.00
Educational level of the person living with the participants (n=246)								
No formal education	21	8.54	3	2.88	11	14.67	7	10.45
Primary level	7	2.85	2	1.92	2	2.67	3	4.48
Junior secondary level	18	52.03	9	8.65	5	6.67	4	5.97
Senior secondary	128	7.32	68	65.38	34	45.33	26	38.81
Diploma	26	10.57	10	9.62	13	17.33	3	4.48
University degree	35	14.22	12	11.54	9	12.00	14	20.90
Postgraduate qualification	11	4.47	0	0.00	1	1.33	10	14.93
Total	246	100.00	104	100.00	75	100.00	67	100.00
Parents/guardian income per month (n=246)								
None								
R1 – 999	30	12.20	16	15.38	8	10.67	6	8.96
R1000 - R2999	13	5.28	8	7.69	4	5.33	1	1.49
R3000 - R6999	23	9.35	8	7.69	10	13.33	5	7.46
Above R7000	24	9.76	12	11.54	5	6.67	7	10.45
I do not know	22	8.94	10	9.62	3	4.00	9	13.43
Total	134	54.47	50	48.08	45	60.00	39	58.21
	246	100	104	100.00	75	100.00	67	100.00

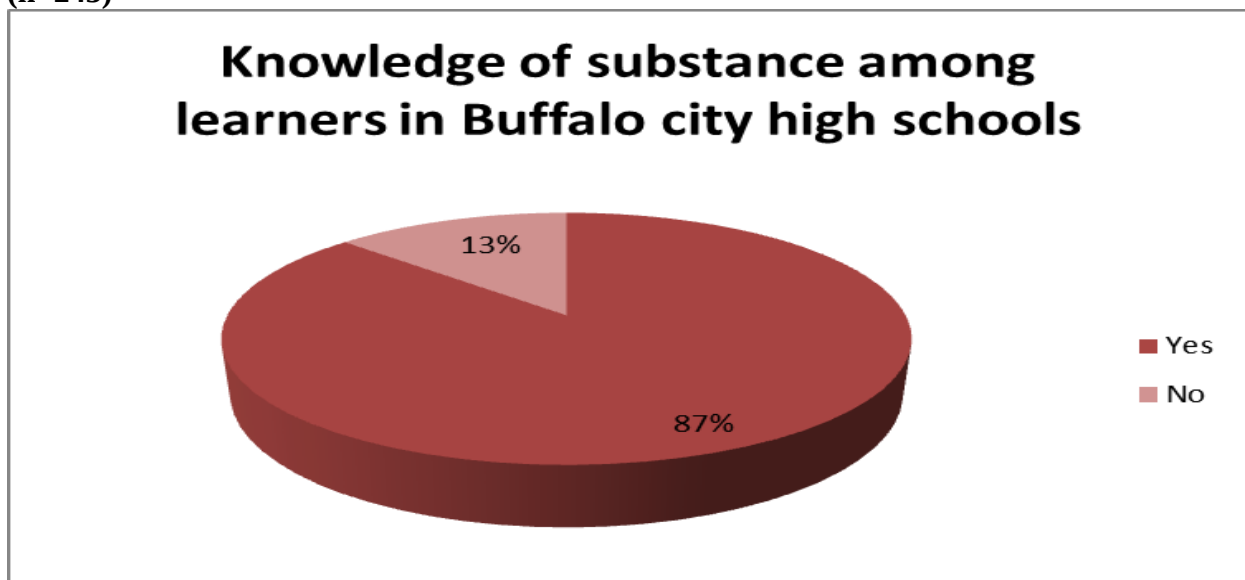
There were more females (60.98%) than males 39.02% that participated in the study consistent with female-male representation in South African high schools. The percentage of female representation was also high in the high the two high schools that participated in the study. This is also consistent with the Census and Mid-year South African Population estimates of 2011 that indicate that the female population in South Africa to be more than their male counterparts at 51.3% females and 48.7% males (Lehohla, 2011, Statistics South Africa, 2012). Consistent with the expectations of high schools population in South Africa, participants aged 15 years and above were in the majority (98.78%) with those aged between 11 and 14 years constituting less than 2% of the participants. As both participating schools were urban based, the majority (88.85%) of the participants were living in the urban area with

11.15% living in rural areas and farms. A little more than 80% indicated their religious affiliation to be Christian followed by 11.38% who indicated African religion. The majority (83.67%) of the participants were living with one or both parents with the rest living with foster parents, relatives or alone. Amongst the people living with the participants only 19.51% were unemployed and 9.76% were pensioners. The majority (88.61%) of the people living with the participants had more than primary level education. However, it was a challenge to determine the mean income as more than 50% of the participants had no knowledge of the monthly income of the person they were living with.

Knowledge of substance use among learners in Buffalo flats high schools

When participants were asked if they had any knowledge of substance use in Buffalo Flats high schools, 86.83% of them were aware and only 13.17% of the participants had no knowledge of substance use in high schools of Buffalo Flats (Figure 1). Participants were then asked if they had ever used substances. A total of 115 (46.75%) indicated that they have used and 131 (53.25%) had never used substances in their lives.

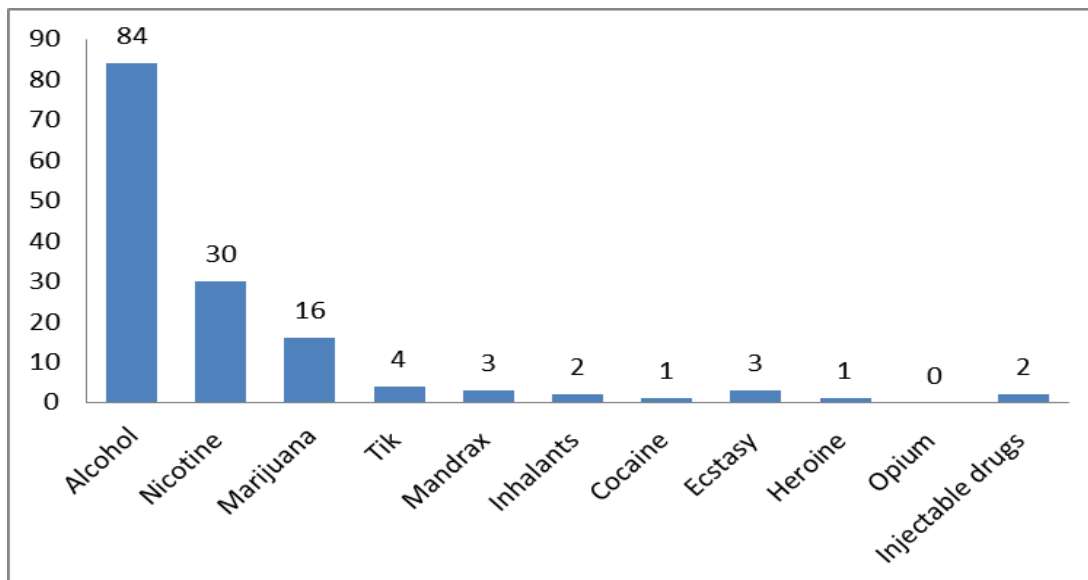
Figure 1: Knowledge of substance use among learners in Buffalo flats high schools (n=243)



Substances used by participants who had used substances

Figure 2: shows substances used by participants who had used substances. Among those that have used substances, alcohol (84) was the most preferred substance followed by Nicotine (30) and Marijuana (16) with all other drugs used by less than five of the participants. Societal norms that portray alcohol use could be responsible for the high preference of alcohol among Buffalo flats high school learners. Alcohol advertisements often target young people encouraging them to indulge in such behaviours. In a community where learners are exposed to public drunkenness, learner drunkenness is more likely to prevail (Morojele et al., 2009). Cocaine, heroin, inhalants and injectable substances were least preferred by users. Some participants had indicated more than one of the substances used. Thirty-one (31) of those that used alcohol indicated consumption of other substances. Half (15) of those that used Nicotine indicated that they also used marijuana. According to Harker et al (2000), some learners use more than one substance at a time. Alcohol users often use it with other substances and nicotine users are likely to use marijuana or vice versa.

Figure 2: Substances used by participants who had used substances (n=115)



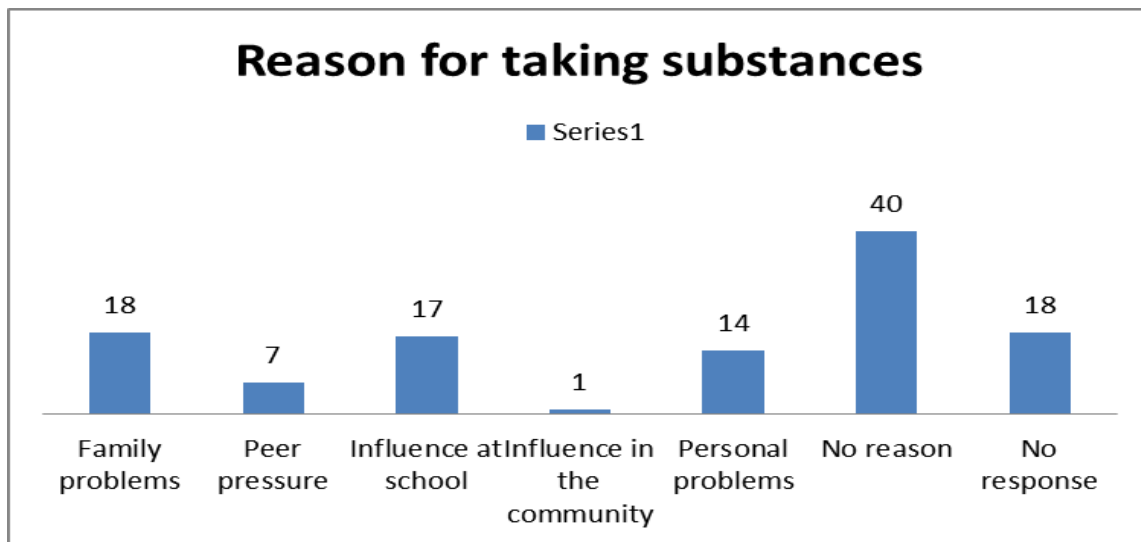
Reasons for using substances among substance users

Newcomb & Bentler, (1989) identified family problems, school related challenges, peer pressure, attitudes, beliefs, and personality traits as contributory factors to substance use among youth. Family risk factors (e.g. parental absence, parental conflicts and divorce) to be contributory to substance use among adolescents and young people. On the other hand parental substance use is correlated with initiation of substances among young people because the substances are readily available at home. School related problems (e.g. truancy, lack of progress and bullying) have been viewed as common antecedents to initiation, use, and abuse of drugs (Jessor & Jessor, 1978). Family disruption due to divorce, separation or death, ineffective parental supervision as well as drug use in the family have been identified in literature as contributory factors to drug use among teenagers. Furthermore, if the family including the school, does not take care of the youth emotionally or physically, or does not provide appropriate support and guidance, there is the tendency of such learner engaging in substance use (Kask, Markina & Podana, 2013).

Reasons for using substances among participants

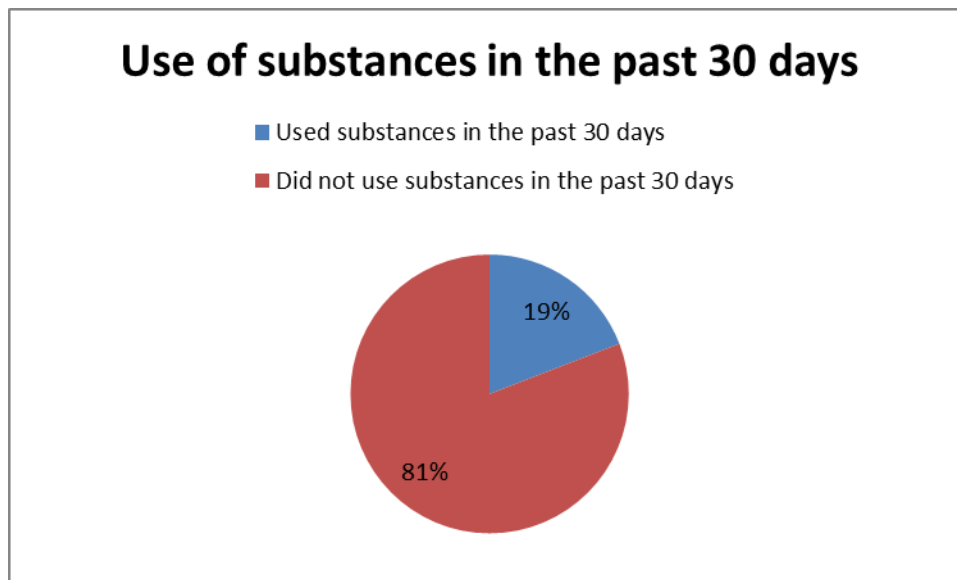
Among the 115 participants who had used substances, 40 of them indicated that they had no reason for using substances, 18 indicated family problems, 17 indicated that they were influenced at school and 14 indicated that they had personal problems. Interestingly only 7 indicated peer pressure and 18 had no response to the question. The influence of the community (1) was the lowest Figure 3

Figure 3: Reasons for using substances among participants



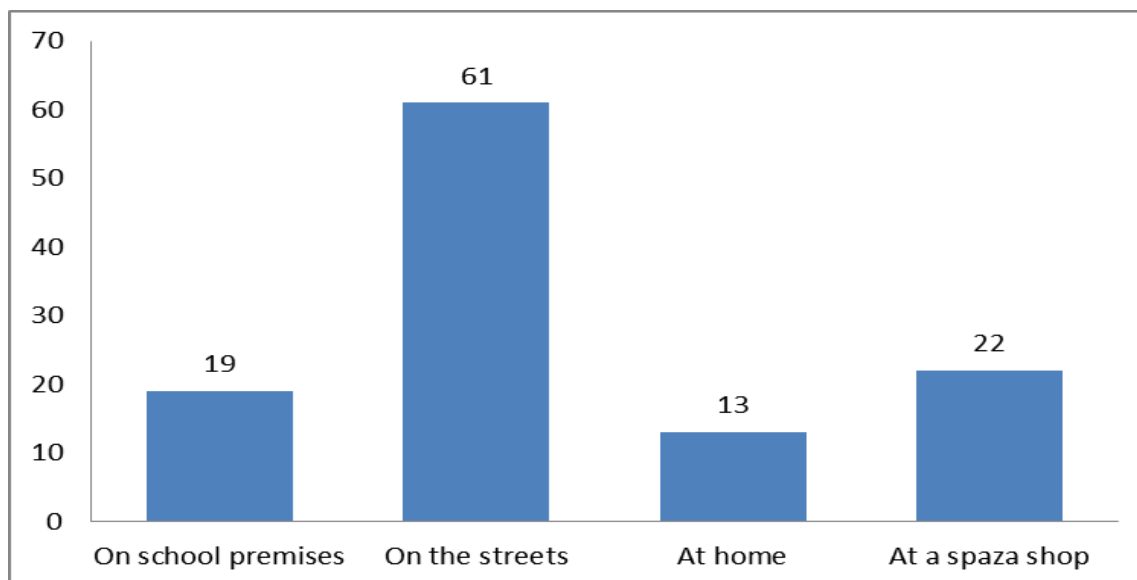
Substance use in the past 30 days

Among those that have used substances 22 of them had used substances in the past 30 days



Places where participants were initiation into substance use

Figure shows the places where participants were initiated into substance use.



The participants were mainly initiated to substances outside the home environment. The streets were the most common place where participants were initiated to substances followed by spaza shops then school premises with the home being the least place for initiation.

Places or sources where participants obtain substances

The sources of substances where participants obtained the substances that they were indicated as follows: Peers & fellow learners (31); drug peddlers (17); Spaza shop (14); friends (12); Snack sellers at school gate (11); school tuck shop (11); own drugs 10 and chemical shops (9). Participants were further asked where they felt learners obtain their substances from. It was established that most learners obtained the substances they use at school from fellow learners (69.92% agreed/strongly agreed). The places or sources mentioned give the indication that learners actually acquire and use substances at school. The school is among the most common place where learners trade in substances. Some of the substances manufactured or obtained by learners on the streets are eventually consumed at school with peers as a sign of solidarity (Lite, 2010).

Drug peddlers also target school learners as potential market targets. A total of 17 participants indicated that they obtain their substances from drug peddlers in town and over the school fence. Drug peddlers see learners as trade target. The Naked Truth (2012) on substance use among the school learners indicates that 82% of Gauteng learners who used substances obtained their drugs from drug peddlers. The problem is however not peculiar to South Africa. In China, high school and vocational schools learners have become the target of criminal gangs who sell drugs to them on campus (China Times, 2012).

Spaza shops in the community and at school were also identified as suppliers of substances to Maithya (2009) reported that shops within slums and low economic areas around schools are major sources of substances for learners, highlighting a strong association between socio-economic status of the community in which a learner resides and the chances of substance acquisition and usage.

Substance use within school premises

The participants who had used substances were further asked if they have ever used substances within school premises 42 of them had used substances within school premises.

According to Prinsloo (2005), substance use within school premises are common in South African schools throwing some schools into state of anarchy, where lawlessness prevails. Among the 42 participants who had used substances in the past 30 days at school, 15 of them had used substances in the past 30 days. Nine of the participants who used substances at school had used mixtures. Sparks (2010) argues that substance mixtures are very addictive and learners who engage in them become “hooked” and cannot stop its usage. One of such drugs in South Africa is *Nyaope or whoonga*, a mixture of various substances including anti-retrovirals (ARVs), rat poison, detergent and some dust from plasma TV sets. The World Drug Report (2011) indicated that multiple substance users are more likely to use mixtures of substance, as a single substance might no longer give them the satisfaction they require and once “hooked” to mixture use, finds it difficult to quit.

CONCLUSION

Although the findings of this study do not indicate a high prevalence of substance use in high school of Buffalo Flats, signs of this emerging threat to learner in these schools are visible. It is evident that substance use amongst learners make school environment unsafe and not conducive for teaching and learning. Learners who use substances in these schools were found to start experimenting with alcohol, after which they progress on to use marijuana and tobacco. Alcohol, tobacco and marijuana were found to be the three most preferred substances by learners. The substances are obtained from their peers and fellow learner, drug peddlers, spaza shops in their communities and easily take them to school. Learners mostly used substances due to peer pressure, family problems or the desire to feel powerful and bully perceived weak learners. There is a need for programmes that will prevent substance use among learners and mechanisms of ensuring that substances do not get into school premises.

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The attitude of medical professionals towards the implementation of disability evaluation based on the ICF

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Abstract

Since 2012, ICF has been introduced into disability identification and registration system in Taiwan. The healthcare specialists' degree of satisfaction reaches 65.62%. The system's usability, the degree of supporting the policy, actively participation, and work loading were important factors associated with the degree of satisfaction ($R^2=0.570$, $P< 0.001$). Particularly the system's usability influence is biggest.

Taiwan introduces ICF into disability identification and registration system was a success experience, has the high degree of satisfaction. The ICF's usability was the important factor push the policy success. Further study to evaluate the clients' degree of satisfaction, in order to understand the clients' opinions about the use of ICF in the disability identification and registration system, is needed.

Key word: Disability; Classification of Functioning, Disability, and Health (ICF); Disability Assessment

The attitude of medical professionals towards the implementation of disability evaluation based on the ICF

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Background and Purpose: The rights of people with disabilities are protected by law in Taiwan. People with long-term impairments in body functions and structures can apply for evaluation and receive social welfare services if they are eligible for a disability. The prior Taiwan disability identification and registration system (DIRS) was based on the medical model from 1980 to 2012. According to the impairments in body functions and structures, a physician evaluated and reported the applicant's disability. Beginning in July 2012, the system changed. The reformed DIRS is based on the bio-psycho-social model and the International Classification of Functioning, Disability and Health (ICF) framework. The changes are big. In addition to assessing the impairments in body functions and structures by a physician, the reformed system assesses each applicant's activities and participation by the other healthcare specialists, such as physical therapist, occupational therapist, speech therapist, and psychologist.

Because the content and processes of the reformed DIRS change greatly, the impact on the social security system and healthcare system might be large. The quality and efficiency of the reformed DIRS and the satisfaction of the healthcare specialists are also be an important national issue. We conduct the study to clarify those questions.

Method: Using a structure questionnaire, we conducted a survey study to evaluate the healthcare specialists' satisfaction with the reformed DIRS and to identify the associated factors. The questionnaire contained 4 domains, including the degree of satisfaction, the system's usability (perceived usefulness), the degree of actively participation, and the degree of work loading. We asked each participant to rate his or her agreement in perceiving each questionnaire item using a 5-point Likert scale. On this scale, 5 indicates being totally agree with the description; 4, most agree; 3, moderately agree; 2, some agree; and 1, not agree.

Results: A total of 2218 participants responded to the questionnaire, including 480 physicians and 1738 clinical professional (include physical therapist, Occupational Therapist, Speech Language Pathologist, social worker, nurse). The average age of physicians was of 45.6 years, the average age of clinical professional was of 35.7 years. The degree of satisfaction reaches 65.62%. Using T-test, we found that the difference in the degree of satisfaction between physicians and clinical professional was not significant. Using multiple regression analyses, we found that the system's usability, the degree of actively participation, and the degree of work loading were important factors associated with the degree of satisfaction ($R^2=0.570$, $P<0.001$). Of them, the system's usability was the most important factor. In addition, those inexperienced participants had higher degree of satisfaction.

Conclusion: The medical officers were satisfied with the reformed DIRS in Taiwan. Taiwan introduces ICF into disability identification and registration system was a success experience, has the high degree of satisfaction. The ICF's usability was the important factor push the policy success. Further study to evaluate the clients' degree of satisfaction, in order to understand the clients' opinions about the use of ICF in the disability identification and registration system, is needed.

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**The development of a proposed conceptual framework for conducting
cross-national comparative policy analysis of oral health policy
development and implementation**

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ABSTRACT

Introduction: Health policy analysis aims to explain the interaction between institutions, interests and ideas in the policy process in order to ensure the best possible health outcomes. Cross-national policy analysis of oral health policies can be undertaken using a conceptual framework that allows for lessons to be learnt so as to improve policy processes and result in improved population oral health outcomes.

Aim: This study sought to develop and present a proposed conceptual framework that could be applied to cross-national policy analysis. This developed conceptual framework would need to allow policy analysts to undertake a comprehensive policy analysis that could lead to an understanding and contextualisation of the complex policy environments found in developed and developing countries such as Australia and South Africa.

Methods: A cross-national oral health policy framework was developed and is being proposed for use as a basis to undertake oral health policy analysis of developed and developing countries. Additionally, the use of a computer forecasting simulation tool was proposed in order to determine the applicability of such a tool in policy analysis, resource planning and policy processes.

Results: The results of the study revealed that the proposed policy analysis conceptual framework could be modified and used in the analysis of policy processes, intentions and policy implementation as the policy intentions and the policy implementation processes differ across countries.

Discussion: The proposed conceptual framework could be applied to and across developed and developing countries with suitable context-specific modifications. Oral health policies are subjected to multi-factorial influences and each of these influences has the potential to affect the policy environment. The proposed conceptual framework is broad-based and allows for an in-depth analysis of oral health policies.

Conclusion: Undertaking cross-national policy analysis using the developed conceptual framework and modelling tool could result in an improved understanding of the complex policy processes and environments across developed and developing countries.

Keywords: conceptual framework, comparative analysis, policy development, policy implementation, oral health policy, oral health policy analysis, Australia, South Africa

Introduction

Health policy analysis is central to health policy development and reforms¹ and aims to explain the interaction between institutions, interests and ideas in the policy process.¹⁻³ It is useful, both retrospectively and prospectively, to understand past policy failures and successes, and to plan for future policy implementation.² By comparing their own oral healthcare systems with those of other countries, practises that need to be changed or retained can be identified³ and appropriate goals and programmes can be established so that future oral health needs can be satisfied.³ Thus oral health policy analysis can then be projected to a wider range of applications that aim to improve and enhance health delivery in other sectors of the national healthcare system's policy milieu.¹⁻³

The field of scholarship of comparative policy analysis is "somewhat under-theorized," and whilst there are many empirical observations and frequent claims regarding lessons learnt from cross-national policy analysis, there are few studies on how to – or how not to – undertake cross-national policy analysis.⁴ Policy analysis can improve cross-national understanding in both obvious and less-obvious ways.⁴ One less-obvious way is to more clearly define what is on the policy agenda by referring to similar or different policies elsewhere, wherein the "*more similar the problems or policy responses the more likely one can portray the nuanced formulations of any particular country*".⁴

Cross-national comparative policy studies can provide a basis for identifying the variety of policy options that exist within oral health policy, as comparison holds the possibility of learning from other countries and their oral health policy successes, failures, strengths, weaknesses, opportunities and threats.^{3,4} Cross-national comparative studies also provide policymakers (actors) with the opportunity to identify which oral health policy 'works best,' that is, using evidence-based policy-making and policy-innovation material in a structured manner that leads to successful policy implementation and outcomes.⁵

Lupton,⁶ and Poland *et al*,⁷ concur that policy-making is a social process and that "*the analysis and promotion of certain policy options require the facilitation of conversations and dialogue between the different participants in the policy process*". An understanding of the rules, regulations and policy guidelines may be viewed as being the "end-points" of policy development, these factors are actually the starting points.^{1,4,5} This argument is based on the premise that policy is "brought alive" by the manner in which the various stakeholders (*actors*), such as interest and advocacy groups, the public, and the civil service, translate and implement these policies.

In both developed and developing countries, the state plays a central role in healthcare policy development and healthcare provision.¹ Oral health policy development differs significantly from country to country, and is the result of a complex range of factors such as historical, political, economic and social factors.⁸ However health decision-making is much more complex and requires that other structural (oral health policy-makers); cultural factors (specific oral health and hygiene cultural beliefs and practices are brought into play) are among other factors that need to be considered.³

Policymakers do not embark on entirely new courses of action when faced with challenges to policy development or implementation, but rather tend to borrow from an apparently finite, existing set of solutions.⁸ This is termed 'policy borrowing'. Amongst the strengths of policy borrowing is that the successes of tried and tested policies may be harnessed, whilst a weakness in policy borrowing is that the success of the policy may not be repeatable or even appropriate in changed circumstances.⁹ This is especially relevant for countries such as South Africa, where the country has undergone great change since 1994 and where the landscape of

healthcare delivery has changed considerably, and for Australia where there have been are continuous changes of government following state parliamentary elections.¹⁰

There is a tendency for policymakers when faced with a particular problem to look for a similar or comparative situation in another system or country and to try to emulate the solutions used by others as a solution to the challenges that they face.⁴ Benefits of comparative policy analysis include improved academic knowledge about, and insight into, oral health policy development and implementation (scientific, descriptive, explanatory and predictive objectives).⁸ Comparative studies can lead to improvements in oral health policy processes, contents and outcomes; and can influence or control policy processes and content in order to ensure the desired outcomes.⁸

Purpose of the study

This study sought to understand policy-making, implementation and reform processes by developing a policy analysis conceptual framework that could be applied cross-nationally to both developed and developing countries, as no research has been conducted to date in this area, and because there is no existing conceptual framework specifically developed for cross-national comparative oral health policy analysis. This understanding could through the use of the proposed conceptual framework and by undertaking a comparative cross-national policy analysis ascertain what lessons and general theories could be learnt and developed from cross-national oral health policy analysis for, and from, a developed and a developing country, so that these lessons could possibly be applied cross-nationally in order to improve health outcomes.

The critical question in this study is, can the proposed conceptual framework be used in oral health policy analysis between a developed and a developing country to offer lessons and theories that could be learnt and applied cross-nationally to oral healthcare policy processes?

Assumptions made in this study

A number of assumptions have been made in this study, including that:

- 1) Oral health policy development and implementation are not limited to the select few ("policy elites"), and multiple and varied stakeholders play, and are allowed to play, a role and provide input into policy development.
- 2) Oral health policies do not remain policy statements but become implementable programmes that are feasible, equitable, effective and have little or no negative unintended effects.
- 3) Effective and efficient evaluation of oral health policy development and implementation (service delivery) analysis occurs at both a macro (national) and a micro (policy-in-practice) level through the use of the proposed conceptual framework, and that there is sufficient epidemiological and statistical data available to conduct such an analysis by using the proposed conceptual framework.

Literature Review

Theoretical basis of conceptual framework

Walt notes the absence of explicit conceptual frameworks in healthcare policy analysis.¹ Whilst a number of different frameworks have been developed to bring structure to the highly complex phenomenon that is health policy analysis, these frameworks address healthcare reform more generally, or focus on evaluating specific health policies.¹¹ Broadly speaking, health policy analysis may be descriptive or analytical, and can incorporate or link different dimensions or policy concepts.¹¹ Sabatier¹² identifies a number of policy conceptual frameworks, and these are presented in the table that follows. These policy frameworks have

been criticised by Sabatier¹² because the primary focus of these conceptual frameworks was the collection of evidence and the translation of evidence into meaningful and useful data.

Table 1: Policy analysis conceptual frameworks

Conceptual framework	Description
Stages Heuristic Framework	Policy process divided into a series of “stages”. Describes and studies each stage of the policy process.
Institutional Analysis Development Framework	Focus is on how the institutional “rules” influence policy. The impact of agency rules on individual behaviour is outlined in this model.
Multiple Streams Framework	How policies are made when there are many ways of thinking about the same processes. Seeks to explain major policy changes.
Punctuated Equilibrium Framework	Policy-making where there are long periods of incremental change, then brief periods of major policy changes.
Advocacy Coalition Framework	Addresses the highly challenging problems in which there are substantial “goal conflicts and multiple levels of government”. Describes the influences that policy advocates exert on the policy-making process, and that shared beliefs (rather than self-interests) become the basis for advocacy coalition.

Source: Sabatier¹²; Ostrom¹⁵

Sabatier¹² also found that these frameworks viewed policies and policy analysis as a “black box” and provided minimal insight and understanding of how and why certain policies are developed or not developed. An alternate framework was developed by Walt and Gilson¹ and was based on a health-specific policy analysis triangle framework that focused largely on the content of policy but included policy actors, as well as the context and processes of policy development.¹ This researcher concurs with Sabatier¹² and postulates that the complexities and dynamics of cross-sectional multi-level policy development and reform could have implications for policy analysis and understanding.

Strengths of using conceptual frameworks in health policy analysis

Conceptual frameworks can serve to guide policy analysis through identifying the elements and relationships that need to be considered in order to formulate theories regarding policy processes generation.¹³ One of the strengths of using conceptual frameworks in health policy analysis is that they can enable the researcher to gain a more focussed and contextualised understanding of the processes of health policy analysis.¹⁴

Weaknesses of using conceptual frameworks in health policy analysis

Conceptual frameworks do not, on their own, explain or predict policy responses, behaviours and outcomes.¹⁶ A critique of current frameworks is that they do not use the evidence gathered, or the lessons learnt from using the conceptual framework, to provide forecasts that could inform policy processes, implementation and reform. This researcher provides a further critique of these policy frameworks in that the use of forecasting software technology, such as the systems dynamic modelling methodology, which could provide simulations of policy intentions and outcomes, are not considered in the policy analysis conceptual frameworks.

Methods

This study utilised a combination of elements from the five policy analysis conceptual frameworks (Stages Heuristic Framework, Institutional Analysis Development Framework, Multiple Streams Framework, Punctuated Equilibrium Framework and the Advocacy

Coalition Framework) as well as the framework of Walt and Gilson¹ and Cloete and de Coning¹⁷ to develop the proposed conceptual framework. Elements that were supported by the literature and deemed as being essential in the construction of a conceptual framework were identified following a review of the literature. Five conceptual frameworks were analysed by the researcher using key-word thematic content analysis methods in order to ascertain current and emergent oral healthcare policy constructs and themes. Five constructs were identified: context, content, process, implementation and forecasting. These five constructs were further sub-divided into further thematic divisions that could provide the data and information required to comparatively analyse oral health policies. The five constructs of the conceptual framework will be discussed further in the study.

This study proposes the use of a multilevel conceptual framework for data collection and the analysis of a combination of quantitative data and qualitative information that would be collected via various methods. The proposed conceptual framework suggests the use of an empirical design using hybrid data wherein both an inductive and deductive approach are utilised.¹⁸ The proposed conceptual framework takes a policy-to-practice approach, that requires the examination of oral health policy from development through to service delivery implementation in order to compare the perspectives and practices of stakeholders (policymakers, researchers and other experts) in the field. The proposed conceptual framework further proposes that a second literature review be conducted to obtain further information and provide a theoretical basis for the practices and gaps identified in the data collection and data analysis phases.

The research in the study towards the development of the proposed conceptual framework was carried out in four phases, as illustrated diagrammatically below:

Figure 1: Phases of research in this study

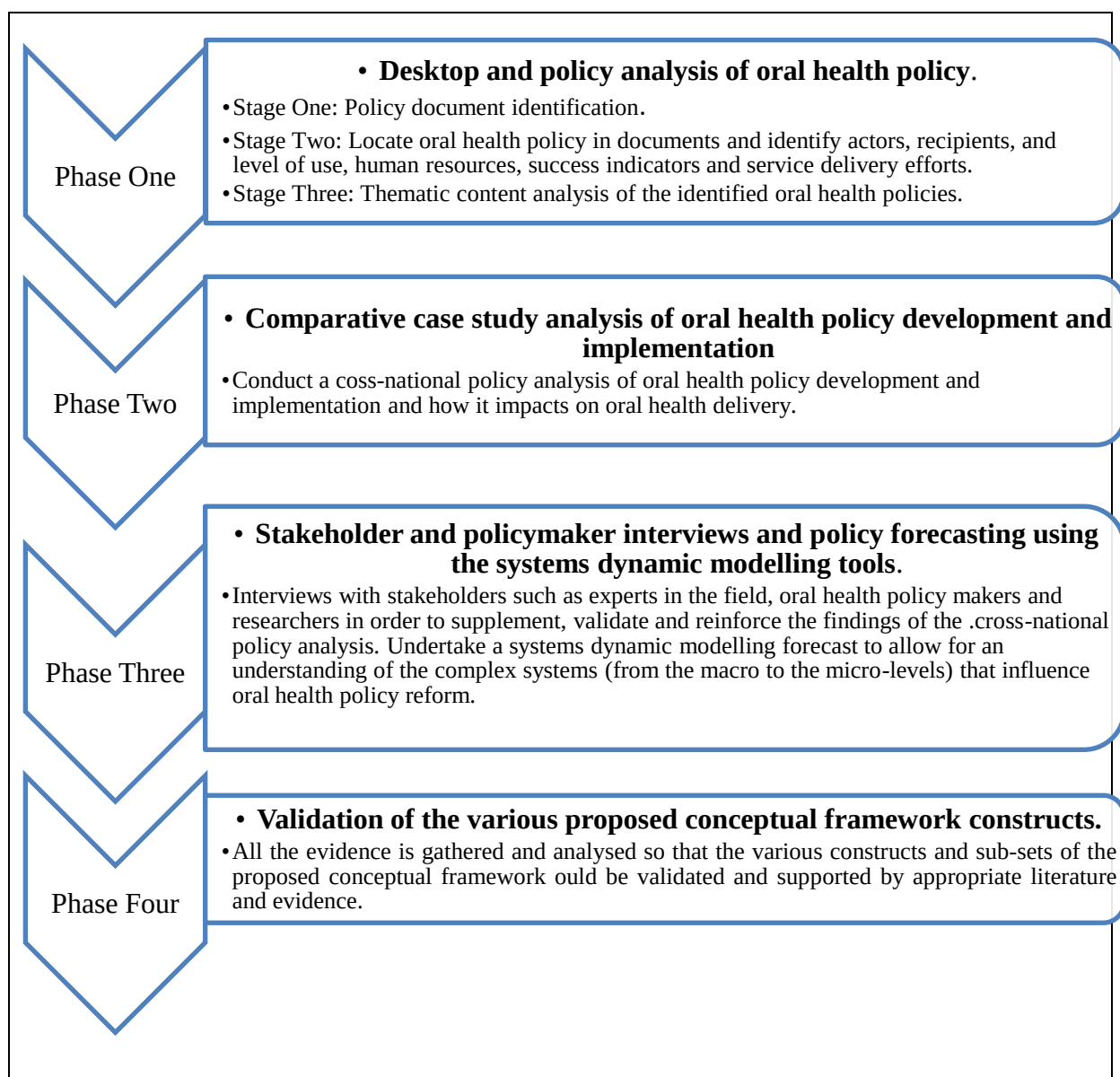


Table 2: Overview of data management.

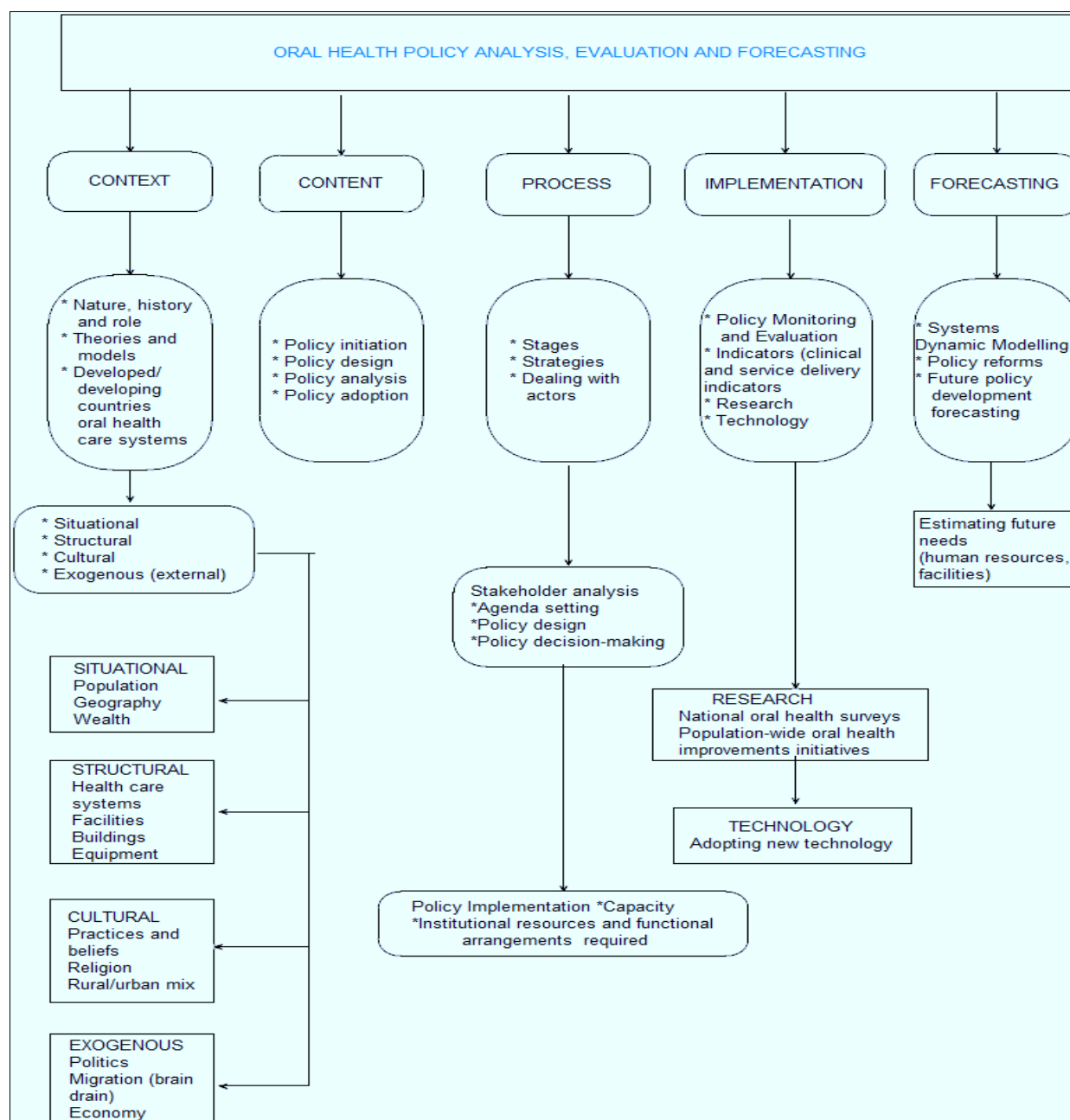
An overview of the various methods of data management is presented in the table below.

Task	Phase One	Phase Two	Phase Three
Type of Data	Secondary data (data that has been generated by other researchers, was used in this study). Examples include research report, policies and position papers.	Secondary data.	Primary data (data that has been created as a result of research conducted in this study). Examples would be the data gathered from the stakeholder interviews.
Data Collection Method	Oral health policy documents were gathered using a desktop literature and policy search.	Thematic content analysis , using the nVivo 10 (QRS International) software programme was undertaken of data collected from documentary and other policy sources, and case studies.	Structured non-disguised, standardised in-depth questionnaires were used as the basis for conducting face-to-face and telephonic interviews.
Validity and Reliability	Reliability was measured using face value , which is the extent to which, on the surface, an instrument looks like it measures a certain characteristic; validity was ensured by using the concepts of triangulation , and internal consistency , wherein all the policy documents were reviewed twice in order to yield similar results. Reliability was ensured by the use of peer examination of data and accuracy checks.	Reliability and validity was ensured by using the concept of triangulation . (the use of multiple research methods, data sources and theoretical concepts to answer a critical research question) (Baum ¹⁹ ; Singh. ²⁰ The identified policies were analysed twice, and the data identified was verified and cross-checked with data extracted from other secondary sources.	Validity was done using construct validity . All participants must be asked the same questions in the interviews. Reliability can be further ensured by utilising internal consistency , thus ensuring that the same clear, relevant and unambiguous questions will be administered to the research participants in a similar manner, with the intention of yielding similar results.
Data Sources	Primary data sources: academic books and journals; evaluations; think-tanks; government and intergovernmental Agencies (e.g. World Health Organisation) reports and documents; unpublished reports: minutes of meetings; White and Green papers: and the media. Secondary data: written and other sources of information that is relevant to the policy analysis framework.	Statistical records, oral health annual reports and policy documents. Inclusion Criteria All policy documents that have direct or indirect relevance to oral health. Exclusion Criteria Documents that do not have relevance to oral health.	Questionnaires to, and telephonic and face-to-face interviews with, stakeholders.
Data Analysis Method	Simple descriptive statistics and coalitions were used to analyse the data. Quantitative data will be assembled in a suitable form (graphs, tables, charts), so that results could be presented. The data collected was of both an inferential and descriptive nature, and an in-depth analysis is to undertaken. Thematic content analysis methods. This is a data analysis process where the data was classified into themes, and then used to identify various constructs of the conceptual framework.	Thematic content analysis methods This is a data analysis process wherein the data is to be classified into themes and then analysed used to develop the conceptual framework. In the development of this proposed conceptual framework various policies were examined, grouped together according to key themes (the identified constructs and sub-sets, as outlined in the conceptual framework).	Interpretive analytical strategies , based on the results of the thematic content analysis of the interviews, are to be used in the case of the qualitative (textual) data.

Results

The results of this paper is the presentation of a developed conceptual framework (see Figure 2) that could be used (with appropriate modification) to conduct cross-national comparative oral healthcare policy analysis. The proposed conceptual framework that is being presented is an integration of the various constructs and sub-sets that were identified as being necessary for effective and reliable cross-national comparative oral healthcare policy analysis studies to occur.

Figure 2: Proposed Conceptual Framework



Source: Adapted and modified from: Walt¹; Blank and Barau⁴; Lee, Buse and Fustukian⁸; Cloete and de Coning¹⁷; Singh²⁰; Singh, Myburgh and Lalloo²²; Hobdell²³

Conceptual framework development

The development of the conceptual framework was based on an analysis of oral health policies and the identification and evaluation of four major retrospective constructs (context, content, process and implementation), as well as a fifth prospective construct (systems dynamic modelling), which aims to provide oral health policy development and implementation forecasting. The four major constructs are divided into a number of sub-sets, which are instrumental in policy development and implementation evaluation. Data relating to each of the constructs needs to be gathered and analysed, and then used to undertake cross-national comparative oral healthcare policy analysis studies. These major constructs and minor sub-sets are outline in the table below.

Table 3: Description of the major constructs and minor sub-sets identified in the proposed policy analysis conceptual framework

CATEGORY	DESCRIPTION
CONTEXT	The nature and history of policies should be reviewed in terms of the context (political, geographic and economic), theories and models that contributed to the development of these policies. Further analysis consists of a review of the oral health policies used in both developing and developed countries in order to contextualise financing, service delivery and workforce issues. The areas of analysis include situational (population, geography, wealth), cultural (religious, cultural beliefs and practices), structural (healthcare systems, equipment, buildings) and exogenous factors such as the economy, the effects of immigration and people movement.
CONTENT	The policy content of the two countries should be analysed by reviewing oral health policies in the documents and assessing how these policies were initiated, designed, analysed and finally adopted. These policy setting and agenda influences should be used to identify good practices and gaps cross-nationally.
PROCESSES	A cross-national comparative analysis of the processes through which ideas, knowledge, power, interests, and institutions influence oral health policies should be undertaken. A stakeholder analysis of the actors, the manner in which the problems are defined, how the agenda is set, and how policies are designed and implemented must also be undertaken.
IMPLEMENTATION	A time-period review of the implementation of oral health service delivery at a bureaucratic level should occur, and from this analysis, current issues need to be identified. This analysis must be conducted using primary and secondary data that would have been obtained from numerous sources, including national oral health surveys and research into population oral health improvement initiatives, and from key stakeholder interviews. Further analysis of the resources, institutional capacity and policy implementation strategies should be undertaken to identify current issues.

Discussion

This study proposes an oral healthcare policy analysis conceptual framework that could be modified and used to conduct cross-national comparative oral healthcare policy development, implementation and reform studies in order to ascertain what lessons could be learnt, and applied cross-nationally, from such an analysis. These lessons could be applied to both developed and developing countries in order to improve the oral healthcare policy development, implementation and reform processes, with the ultimate aim of ensuring improved oral healthcare policy outcomes for the population of these countries. The conceptual framework that has been proposed in this study is broad-based and can be adapted to different policy settings and environments. Whilst the proposed conceptual framework is context-specific it should be noted that any changes in the policy environment could affect the policy outcomes. Oral health policies are subjected to multi-factorial influences and each of these influences has the potential to affect the policy environment.⁴ Even a single change in these influences can affect the complex policy environment. A change in government, for example, can change the entire policy environment. However, for this study, the applicability of the information used in the proposed conceptual framework in the five constructs is its strength.

Strengths of the proposed conceptual framework

A strength of the proposed conceptual framework is that it seeks to obtain as comprehensive a view of the situation as possible, and uses the combined strengths of various different frameworks to do so. A further strength of this proposed conceptual framework is that it is broad-based and could be adapted to suit different health policy contexts and environments.

This proposed conceptual framework that has been developed in this study relied largely on policy papers, academic policy analysis, media statements and other literature in the public domain, and these have not always captured the desired detail. In other instances, health policy documents have not been made publicly accessible. A strength of this study is that by using the proposed conceptual framework, and by using multiple sources of data, sufficient information may be elicited from these policy documents and this assists with gaining a comprehensive understanding of the complex policy environment.

A further strength of cross-national comparative oral healthcare policy analysis studies is that whilst national/federal/state/provincial and territorial government policy efforts and accomplishments are studied and analysed, alternate private sources of healthcare delivery and policies are factored into the broad-based conceptual framework. Policy formulation does not occur within a vacuum and is influenced by policy limitations. Another strength is that it is broad-based and takes into account various health and non-health influences in the policy environment.

Limitations and Delimitations

The quality of policy analysis depends on a number of factors such as the accuracy of the data and the comprehensiveness and relevance of the information collected. Thus, the value of the proposed conceptual framework could be limited by the availability of data, and because the quality of the data used cannot be guaranteed. Some difficulties were encountered in accessing policy documents and in achieving a complete understanding of the processes involved in developing and implementing health policies, and this may be a shortfall of the proposed conceptual framework. These limitations reveal the inherent complexity of policy analysis and the complex nature of using conceptual frameworks when undertaking cross-national comparative oral health policy studies.

The delimitations in this study are that the proposed conceptual frameworks functionality and usefulness is limited only to an analysis of oral health policy development and implementation, although the impacts of other policy developments can and do affect oral and general health. This study recognizes these impacts, and recommends that further research be conducted that will take cognisance of them in the application of the proposed conceptual framework when conducting data collection and analysis, formulating results and arriving at conclusions and making recommendations. More research also needs to be conducted to understand the external and internal policy-making influences on policy developments and on undertaking cross-national comparative policy analysis.

Other delimitations of this study are that political and economic changes that have occurred within the study countries, as well as internationally, and which may account for unexplained, hidden or unjustified policy developments and implementation effects are not factored into the proposed conceptual framework.

Policy developments and reforms must be developed in a step-wise approach using available evidence that recognises the resource constraints, harnesses the private sector, and pays due cognisance to key stakeholder inputs.²⁴

Conclusion

The knowledge gained from using the broad-based conceptual framework could be extrapolated, with the necessary country-specific modification, into comparative policy analysis, policy formulation, implementation and reform initiatives in other countries.²⁵ Additionally, the lessons learnt from cross-national policy analysis could be used to formulate a general theory that could be applied to oral health policy analysis and development in other countries.

Recommendations

Key recommendations that arise out of this review:

- The proposed conceptual framework could be modified to suit local contexts, and that lessons that could be learned from using the proposed conceptual framework could lead to policymakers developing strategies that would allow for careful attention to be paid to processes and actors when developing or implementing legislation or policies.
- There is a need for inclusive stakeholder involvement in the actual policy analysis process, and policy processes should include the actual service providers when they are being analysed using the proposed conceptual framework;
- There is a need for high-quality, valid and reliable data so that appropriate policy analysis and forecasting could be undertaken. This could result in the analytical process using the proposed conceptual framework yielding results that are contextually relevant and appropriate to oral healthcare policy development, implementation and reform.

Conflict of interests: The authors declare that there are no conflicts of interest.

Ethical approval: Ethical approval was received from the Humanities and Social Sciences Research Ethics Committee of the University of KwaZulu-Natal (HSS/0010/013D).

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The most common offending type of snake and common biting place of snake bites in selected rural area, Sri Lanka

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Snake bite is one of the most abandoned public health concerns in poor rural communities and the annual mortality rate due to snake bites in Sri Lanka is the highest in the world. In Sri Lanka highest prevalence of the incidents was reported in North Central Province (NCP) located in dry zone of the country. The objective of the study was to identify the most common offending snake and most common biting place in snake bites of selected rural area from the province where the snake bite prevalence is highest. In this study, First mile post - Padaviya located in North Central Province (NCP) was selected as the study area. Out of the sample 52% had personal experiences of snake bites and they were categorized as victims for the purposes of the study.

The Log-linear model's output demonstrated that there was a significant association between the type of offending snake and snake bites (p-value <0.0001) and moreover, model parameter values indicated that the Russell's viper was the commonest snake responsible for many bites in study population. Regarding the common biting place, it was demonstrated that there is a significant association between site where snake bites occurred and snake bites incidents (p-value <0.0047). Moreover, model parameter values indicate that paddy fields are the common site where snake bites occurred. Furthermore, victims were examined to identify the most common bitten place of the body and it was indicated that the highest number of bitten site was recorded in below knees. This study suggests to encourage farmers to wear rubber boots to protect from snake bites specially Russell's viper bites. Further, community awareness programmes should be conducted in the above areas to reduce incidents of snake bites and to improve knowledge in accurate first aid techniques.

INTRODUCTION

Globally, around 125,000 snake bite deaths are reported annually. South Asia is the world's most heavily affected region which is probably due to predominant agricultural activities, presence of highly venomous snakes and lack of efficient snake bite prevention programmes (Alirol et al, 2010). In South Asia India has the highest number of deaths due to snake bites in the world (Warrell, 1999). In Sri Lanka, around 33000 Snake Bite envenoming are reported annually alone from government hospitals (Kasturirathna et al, 2008). This number may be more as several victims still are seeking treatments from indigenous medical practitioners. Chandio et al, (2000) showed that the estimated annual mortality rate due to snake bite in Sri Lanka is the highest in the world.

In Sri Lanka, highest prevalence of the incidence was reported in North Central Province (NCP) located in dry zone of the country and more venomous snakes are found in this area (Silva et al 2014; Kularathna, 2002). In this region, snake bite incidents are common amongst farmers whilst they are engaged in agricultural activities, walking alone roads especially at nights and sleeping on floors (Kularathna, 2002). Seneviratne & Dissanayake (2002) revealed that there are six medically important venomous snakes in Sri Lanka. They are Russell's viper (*Daboia russelli russelli*), cobra (*Naja naja*), the kraits (*Bungarus caeruleus* and *Bungarus ceylonicus*), saw-scaled viper (*Echis carinatus*) and hump-nosed viper (*Hypnale hypnale*). Although the prevalence of snake bites are high in Sri Lanka, limited number of snake bite studies have been attempted to investigate the most common offending snake, the area where snake bites happened and the bitten part of the body. As such, this study was undertaken to investigate above factors in a selected rural area in the North Central Province of Sri Lanka where the snake bite prevalence is the highest.

MATERIALS AND METHODS

In this study, First mile post -Padaviya located in North Central Province (NCP) was selected as the study area. Study was conducted during last two weeks of April 2011 to identify the most common offending snake and most common biting place of First mile post rural area, Padaviya located in North Central Province (NCP) rural area. Whole families were studied and 124 people were examined through an interviewer-administered questionnaire. Three members including the corresponding author were involved in the data collection.

Males and females aged 18-70 living in 1st Milepost, Padaviya were interviewed. People who are deaf and dumb, mentally ill, were excluded. A maximum of two adults from each family participated as volunteers. Certain houses were excluded, since the occupants were not available when data was collected. Of the 124 individuals, 65(52%) had personal experiences related to snake bites and they were categorized as victims for the purposes of the study. The data was entered and analyzed using Minitab 16 software and Statistical Analysis Software (SAS). Log linear model's p value and chi-square value were used to determine the significant association between snakebites and risk factors. P value <0.05 was considered as significant.

RESULTS AND ANALYSIS

Among the people who were interviewed, 60(48.4%) were male and 64 (51.6%) were female. It was revealed that 57.3% people were under the belief that the commonest type of bite is from Russell's viper, 29% from Hump nosed viper, 6.5% from Cat snake, 5.6% from Cobra and 1.6% from Kraits.

In contrast to the above 43% of victims were from Russell's viper, 26.2% from Hump nosed viper, 7.7% from Cobra, 6.2 % from Krait, and 6.2% from Cat snake. There were 9.2% cases for unidentified snake bites.

Table1: Statistical analysis of snake bites according to types of offending snakes

Offending snake	No. Of Victims	Frequency (%)	Log linear model estimated value	Pr> Chisq
Cobra	05	7.69	1.6094	0.1418
Russell's viper	28	43.07	3.3322	0.0011
Krait	04	6.15	1.3863	0.215
Hump nosed Viper	17	26.15	2.8332	0.0059
Cat snake	04	6.15	1.3863	0.215
Unknown	06	9.23	1.7918	0.0971
Non venomous	01	1.53	-	-

Log linear analysis was performed to compare and identify the relationship between victims and type of offending snake. The statistical analysis was done using log-linear model. The output demonstrates that there is a significant association between the type of offending snake and snake bites (Log-linear model's chi-square value is 6, p-value <0.0001).

Moreover, model parameter values indicated that the occurrence of a bite from Russell's vipers is 27.9 times (odds calculated by $e^{3.3322}$), (p-value 0.0011) and Hump nosed viper is 17 times, (odds calculated by $e^{2.8332}$), (p-value 0.0059) compared to non venomous snakes.

Also parameter values indicated that there is no significant differences among cobra (p-value 0.1418), kraits (p-value 0.2150), Cat snake (p-value 0.2150), and unidentified snakes (p-value 0.0971) compared to non venomous snakes bites.

Much emphasis has been given in literature for the place where snake bites occur frequently. According to the beliefs of the people in the study population, the commonest site where snake bites frequently occurred was the paddy field. See table 2.

Table 2: Site where snake bites occurred according to the beliefs

Site	No.of	No.of people	Frequency (%)	Sample proportion (95%CI)
In the house (at night)		23	18.54%	0.185484(0.121365, 0.265202)
Paddy field		95	76.61%	0.766129(0.681694, 0.837436)
Chena		05	4.03%	0.040323(0.013220, 0.091591)
Roads (travelling at night)		01	0.8%	0.008065(0.000204, 0.044113)

In contrast to the above, the results obtained for the site where the snake bite occurred according to the true personal experience of victims were 49.2% in paddy fields, 33.8% in homes and 16.9% in roads while travelling. Comparison of sites where the snake bite occurred and identifying high risk areas is one of the objectives in our research. That comparison and identification were statistically done by using Log linear analysis (see table 3).

Table3: Statistical analysis of the sites where snake bites occurred in snake bite victims

Incidental area	No. of Victims	Frequency (%)	Log linear model estimate value	Pr>Chisq
Paddy field	32	49.23	1.0678	0.0022
Home	22	33.84	0.6931	0.0605
Road	11	16.92	-	-

The Log-linear model's output demonstrates that there is a significant association between the bitten site and snake bites (p-value <0.0047). Parameter values indicate that paddy fields are the common site where snake bite can occur. Moreover, model parameter values indicate that paddy field were 2.9 (odds calculated by $e^{1.0678}$) (p-value 0.0022) times more likely to have a snake bite compared to other places.

Bitten location of the body is shown in table 4. It reveals that highest number of bitten location of the body is below the knees. It was revealed that only 8.06% wearing boots when they go to paddy fields. Further, it was found that there is a significant association between bitten place of body and snake bite incidents (Log-linear model's chi-square value is 100.80, p-value <0.0001).

Table 4: Statistical analysis of snake bites according to the bitten location of the body

Bitten part of the body	No. of Victims	Frequency (%)	Log linear model estimate value	Pr>Chisq
Leg	59	90.76	2.2687	<.0001
Hand	6	9.23	0	-

DISCUSSION

This study was carried out to find out most common offending snake, the site where snake bite occurred and the location of the body where the snake has bitten in a selected rural area in the North Central Province of Sri Lanka where a high density of venomous snakes has been recorded.

The results show that commonest type of snake bite is from Russell's viper followed by Hump nosed viper, Cobra, Krait and Cat snake. This was evident both from their beliefs and from the actual data of the victims. This result is agreed with Kularathna (2003).

The commonest site where snake bites were recorded is paddy fields followed by homes and roads. This may be related to high agricultural activities in this area and the majority of them being farmers.

The most common location of the body where the snake was bitten is below the knees. This can be attributed to the fact that the snakes are crawling animals and the chances of the accidentally stepping on the snake are high. Pe, Myint, et al, (2001) has shown that wearing rubber boots is very effective method in the prevention of snake bites, especially during the farming activities. Unfortunately very limited number of subjects are using above preventing method among the population. This study suggests to educate people to wear boots which will minimize snake bites and this will thereby minimize the chance of deaths due to snake bites.

Since paddy fields are generally situated away from several kilometers from the main roads, hospitalization of the snakebite victims takes considerable time period which will increase the chance of envenomation. As such, it is desirable to develop suitable first aid techniques such as Pressure Bandaging and Immobilization.

CONCLUSION

In conclusion, the results of the study reveals that the commonest offending snake in this area is Russell's viper and the commonest site where snake bites are recorded is the paddy field. Furthermore, the commonest bitten location of the body is the lower leg. Therefore, it is suggested to encourage the use of rubber boots to minimize cases of snake bites and subsequent deaths.

Keywords: envenoming

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Publications: Awareness of First Aid in Snake Bites among Villagers in a Rural

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A Study of the Relationships in Anesthesia Nurses' Work Stress and Job Satisfaction

ABSTRACT

Anesthesia nurses' work stress and job satisfaction will affect the quality of care, but the lack of relevant research in this area in Taiwan. The purpose of this study is to investigate (1) The study of the anesthesia nurses' work stress and job satisfaction, and analyze the relationship between personal background. (2) The correlation between work stress and job satisfaction. (3) The important factors of the anesthesia nurses' work stress.

This is a cross-sectional study, the object of the study is the anesthesia nurses in a medical center in Taiwan, total sample number is 73 people. The research tools include "Nurse Stress Checklist" and "Nurse's Job Satisfaction Scale". The statistical analysis of descriptive statistics, independent-samples t-test, One-way ANOVA, Pearson's correlation, and regression are preceded via SPSS 19.0 statistical software.

The results are: (1) The anesthesia nurses' work stress is in the mild-level (33.14%), and job satisfaction is in the normal-level (62.14%). Anesthesia nurses' youngest child age, religion, seniority of anesthesia care, total seniority of nursing career, and the average monthly salary, all have significant influence on their work stress level ($p < .05$). Anesthesia nurses' employed category have significant influence on their satisfaction of work environment ($p < .05$). (2) Work stress and job satisfaction are negative correlated ($r = -.24$, $p < .05$). Anesthesia nurses' youngest child age is the predictive factors of the work stress, it could explain 12% of the variance ($R^2 = .12$, $p < .001$).

The results of this study can help hospital administrators understand anesthesia nurses' work stress and job satisfaction. And it can be used as a direction to educate anesthesia nurses and help them to release their work stress, so as to increase their work satisfaction and improve the quality of medical service.

Keywords: Anesthesia nurses 、 work stress 、 job satisfaction

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ANTIMICROBIAL ACTIVITY OF AQUEOUS AND ETHANOLIC EXTRACTS OF ANACARDIUM OCCIDENTALE

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Objectives : To investigate in-vitro antimicrobial properties of aqueous and ethanol extracts of leaves of *Anacardium occidentale* on Gram positive cocci, Gram negative bacilli, multidrug resistant (MDR) Gram negative bacilli and fungus

Materials and methods:

Leaves of *Anacardium occidentale* washed, air dried, Pulverized to fine powder, stored at room temperature. The ethanol extract of leaves were prepared by Soxhlation method. The aqueous extract was prepared by crushing using sterile distilled water in the ratio of 1:1. Antibacterial susceptibility testing was done as per standard guidelines using agar well diffusion method. Microbial strains 10^6 Colonies (9 strains, 5 ATCC strains and 4 clinical strains) ATCC25923 Staphylococcus aureus, ATCC29212 Enterococcus faecalis, ATCC700603 Klebsiella pneumoniae, ATCC 25922 E.coli, ATCC27853 Pseudomonas aeruginosa, clinical strains of Streptococcus pneumoniae, MDR E. coli, MDR Klebsiella pneumoniae and Candida albicans were used. Ampicillin disc (10µg) and Ketoconazole disc (10 µg) (Hi-Media, Mumbai) were controls.

Results:

Ethanol extract of *Anacardium occidentale* exhibited antibacterial activity against all the strains. MDR E. coli strain had zone size 18mm and MDR Klebsiella zone size 15 mm diameter, ATCC29212 Staphylococcus aureus ,zone size of 29mm with ampicillin and no zone of inhibition with aqueous extract of *Anacardium occidentale*. Antifungal activity was exhibited by aqueous and ethanolic extracts of *Anacardium occidentale* was 7mm and 17mm diameter.

Conclusion:

Ethanol extract of *Anacardium occidentale* can be the drug of choice for MDR gram negative organisms and Candida albicans ,since MDR are threat to community and with limited available antibiotics in the market. Further studies are necessary to evaluate the accurate compound responsible for antibacterial and antifungal activity and toxicity of the compound for pharmaceutical applications

Comparing the Effects between Specific Exercises and Education for the Patients with Knee Osteoarthritis

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Abstract

Knee osteoarthritis is the most common joint disorder in the world, as it appears to be prevalent among 80% of individuals over the age of 75 years old. It is a major cause of chronic musculoskeletal pain and functional disability in the elderly population. Muscle weakness, especially of the quadriceps muscle, is one of the major musculoskeletal effects of knee osteoarthritis. Specific exercise is considered one of the major interventions in the conservative treatment of patients with knee osteoarthritis. The purpose of this study was to determine the improvements in pain and disability of specific exercises for symptomatic knee osteoarthritis. We used the key words, exercise or osteoarthritis, to search PubMed for controlled studies evaluating effects of exercise in patients with symptomatic knee osteoarthritis. Inclusion criteria for study designs were that controlled trials had experimental group (specific exercise) and control group (education), and articles were published within than 15 years. Effect outcomes included pain, functional ability, physical activity and self-questionnaire after specific exercises. Five studies were included, and all studies showed significant differences between experimental and control groups in improvements of pain, functional ability, physical activity and self-questionnaire. There were no statistically significant improvements in control groups, which received only education program. The specific exercises, included muscle strengthening, neuromuscular, and aerobic exercises, had effects in patients with knee osteoarthritis. However, these effects decline over time and finally disappear. The specific exercises needed considered long-term training, and outcomes in follow-up are also needed to investigate.

Key words: knee osteoarthritis, education, specific exercise

Comparison of Antimicrobial Effect of Antibacterial Soap Containing Triclosan and Plain Soap for Hand Hygiene

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Abstract:

US FDA issued a proposed rule in 2013, which made manufacturers to prove the higher efficiency of antibacterial soap compared to plain soap or water. In order to verify this, the antimicrobial activities of antibacterial soap containing 0.3% triclosan and plain soap were investigated against 20 strains proposed by FDA at 22 and 40°C for 20 sec (short-time exposure). Long-time exposure of each soap was also examined; soaps inoculated with *E. coli* were stored at 22°C, and their bacterial population was monitored up to 72 hours. There was no significant difference in antimicrobial activities between two types of soap against all 20 strains at 22 and 40°C in short-time exposure ($P > 0.05$). By contrary, higher activities were achieved by antibacterial soap than that of plain soap in long-time exposure (> 9 h) ($P < 0.05$). These results indicated that triclosan in soap shows an antiseptic activity in long-time storage, but antibacterial soap is not sufficiently effective for reducing bacteria in actual hand washing. The present study could be useful as practical and scientific information for related industries and governments to draw efficient management ways.

Key words: Antibacterial soap, plain soap, triclosan, antimicrobial effect, hand hygiene

Detection of *Listeria monocytogenes* and *Salmonella* in food by rapid microbiological methods

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Abstract

The detection of pathogenic bacteria is a fundamental objective of food microbiology to ensure food safety. Conventional microbiological culture procedures require at least 5-7 days. This time is an off-limited value for screening perishable food products, which is essential if food borne outbreaks are to be minimised.

A rapid and reliable detection method was developed by the combination of the redox potential measurement and real-time PCR methods. During the enrichment phase the *Salmonella* positive and *Listeria* negative samples could be screened by the redox potential measurement technique, further identification was carried out by applying real-time PCR technique.

Compared to 168 h detection time of the conventional culture method the *Listeria monocytogenes* can be detected within 7-36 h by the redox potential measurement and real-time PCR combination. In case of *Salmonella* detection, the results can be obtained in 7-24 h in opposite to the conventional method 114 h time requirement. The specific detection of pathogens in foods by this combined method is a rapid and reliable tool for the control of contaminated samples along the food production chain. A correct diagnosis is the highest priority, it is important for the handling and treatment of outbreaks.

Short bio-data:

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Development and initial evaluation of reliability and validity of the Symptom-Management Self-Efficacy Scale

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Abstract

Purpose : The purpose of this study was to develop and preliminarily evaluate the reliability and validity of the Symptom-Management Self-Efficacy Scale - Breast Cancer (SMSES-BC) related to chemotherapy.

Methods: The study included three stages. This paper presents the results of Stage 2 and Stage 3. In total, 34 items in the SMSES-BC were found from stage 1 in terms of qualitative findings, a literature review, and expert suggestions and were used for the psychometric properties test. The test-retest reliability and Cronbach's alpha were assessed in the first sample, which included 45 participants for the pilot test (stage 2). The second sample, which included 152 patients, was used to assess the construct validity in terms of exploratory factor analysis and concurrent validity (stage 3).

Results: The pilot test results revealed a test-retest reliability of 0.73 ($p < 0.001$) and Cronbach's alpha coefficient of 0.96 for the total scale. Three factors (managing chemotherapy-related symptoms, acquiring problem solving, and managing emotional and interpersonal disturbances) were identified from exploratory factor analysis of the SMSES-BC. The r value was 0.40 ($p < 0.01$), which supported the association between SMSES and General Self-Efficacy Scale (GSES) for concurrent validity.

Conclusion: The study results support an acceptable reliability and validity for the SMSES-BC that was developed for measuring symptom-management self-efficacy relevant to chemotherapy for patients with breast cancer. This study suggests further research to validate the construct of the SMSES-BC.

Boi-data

Associate Professor, Major: Cancer Nursing

Effect of Sensorimotor Integration Training on Balance among Patients with Stroke

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Abstract

[Purpose] This study attempts to investigate the impact that the sensorimotor integration training has on the recovery of balance among patients with stroke by examining the muscle activity and limit of stability (LOS).

[Method] A total of 25 subjects participated. The subjects were randomly allocated by the computer program to one of two groups control (CON) group (n=15), sensory integration training (SIT) group (n=13). The research subjects received intervention five days a week for a total of four weeks. CON group additionally received 30-minute general balance training, while SIT group additionally received 30-minute sensory integration training.

[Result] The improvement of ES and GM was more significant in SIT group than CON group. Also, the improvement of LA and LF was significantly higher in SIT group compared to CON group.

[Conclusion] Sensorimotor Integration Training can improve balance ability of patients with stroke by increasing muscle activity of stance limb muscles such as GM and trunk extensor such as ES along with enhancement of the limit of stability.

Effects of Tai Chi Exercise for Osteoarthritis Knee

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Abstract

Taiwan has entered the aging society, the elderly population is also increasing today, and elder people with osteoarthritis prevalence gradually rise. Select the appropriate movement to treat or prevent osteoarthritis, the elderly want to know, and tai chi is a palliative aerobic exercise, therefore, the study will discuss the effect of tai chi exercise about osteoarthritis knee. Search two literatures through electronic journals to understand research methods and results of the assessment. Compare two different tai chi exercise program to osteoarthritis symptoms and the situation of improvement. Two literature results that the 24-week and 12-week tai chi exercise program can effectively help patients with osteoarthritis relieve pain and improve the psychological problems. But 12 weeks program for the extent of joint stiffness and physical performance tasks, there was no significant difference. Tai chi is a suitable elderly exercise, can effectively help improve the symptoms of osteoarthritis, and improve the quality of life of the elderly. The 24 weeks program of tai chi exercise is recommended, more significant benefits for pain relief and enhances physical functions.

Key words: osteoarthritis knee, tai chi, physical function

Experiences in public welfare program for Korean disabled adults

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Abstract:

This study was to describe the process of public welfare program and develop a substantive theory that explains lifestyle in Korean disabled adults.

The participants were seven disabled persons and two managers who had participated in learning program in a social welfare center. Data were collected with in-depth interviews and analyzed by grounded theory in Strauss and Corbin (1990).

Through analyzing process, 34 concepts, 15 subcategories, and eight categories were deduced. In axial coding, casual condition, 'Suffering from unknown cause disability' and 'Isolated by social cause', context condition, 'Taking discriminative treatments for disabilities' impacted on phenomenon, 'Overcoming their conditions by oneself'. Intervening conditions was 'Taking social supports' and action-interaction condition, 'Enjoying welfare programs' totally lead to consequence in 'Controlling daily life' and 'Exploring their own social roles'. The periods of process were divided three stages, reflecting disabled situation, formation phase of social relation, and self-developing phase. The core category, 'Trying to be recognized as a member of society' incorporated the relationship between and among all categories and explained the process.

The findings indicate that learning program for the disabled helped to develop themselves as a member of society. Therefore, we would consider about social relationships and lifestyle in the disabled learning program.

Growth and Sporulation Characteristics of *Geobacillus stearothermophilus* under different conditions of milk

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Thermophilic bacilli, such as *Geobacillus* spp., are an important group of contaminants in the dairy industry. Though they are generally not pathogenic, their presence in dairy products is an indicator of poor hygiene. In addition, their growth and sporulation in sections of dairy manufacturing plants (55°C) result in improper metabolites. Thermophilic bacilli are a common problem in dairy product manufacture due to their heat resistance and production of unwanted material such as nitrate. One of the representative thermophilic bacilli is *Geobacillus stearothermophilus*; however, the research on the basic physiological property of this bacterium has been merely performed. In this study, the growth and sporulation of *G. stearothermophilus* in undiluted or diluted milk (1:10 and 1:100) depending on nutrient level were investigated at 55°C with 200 rpm shaking over the course of 24 hours (0, 3, 6, 9, 12, and 24 hours) with milk. Overnight culture was inoculated into normal milk and diluted milk (1:10 and 1:100) (c.a. 3.3 log CFU/ml), followed by incubating at 55°C with shaking (200 rpm) over the course of 24 hours (0, 3, 6, 9, 12, 24 hours). Both vegetative cell bacterial and spore populations were measured with plate counting method and spore counts were obtained after heat treatment (80°C, 15 min). Cultures at each time interval were heated at 80°C for 15 min to obtain spore count. In the results, *G. stearothermophilus* (initial population: 3.2 log CFU/ml) was totally inhibited in the undiluted milk within 3 hours (detection limit: 1 log CFU/ml), whereas it grew vigorously in the 1:10 and 1:100 diluted milk resulting in 7.3 and 6.3 log CFU/ml at the end of the culture period, respectively. The spore of this bacteria was detected continuously only in diluted milk; the spore counts in 1:10 and 1:100 diluted milk were 2.4 and 1.3 log CFU/ml at 24 hours, respectively. Generally, normal bacteria grow well in the milk due to its rich nutrient content. Interestingly, however, The result suggests the importance of *G. stearothermophilus* control in dairy manufacture since the milk used as raw material usually undergo diluting process.

Key words: *Geobacillus stearothermophilus*, growth, sporulation, milk, thermophilic bacilli

IN VITRO ANTIBACTERIAL AND ANTIFUNGAL ACTIVITIES OF AQUEOUS AND ETHANOLIC EXTRACTS OF ACACIA NILOTICA

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Objectives: To study in-vitro antibacterial and antifungal properties of aqueous and ethanolic extracts *Acacia nilotica* leaves against ATCC strains of *Staphylococcus aureus*, *Enterococcus faecalis*, *Klebsiella pneumoniae*, *E.coli*, and *Pseudomonas aeruginosa*, clinical strain of *Streptococcus pneumoniae*, multidrug resistant (MDR) strains of *E. coli* and *Klebsiella pneumoniae* and *Candida albicans*

Materials and Methods: Leaves of *Acacia nilotica* were pulverized to fine powder and stored at room temperature. The ethanol and the aqueous extract of the leaves was prepared. Antibacterial susceptibility testing was done on Muller-Hinton agar and antifungal susceptibility was tested on Sabouraud's dextrose agar using agar well diffusion method. Freshly grown 10⁶ Colony forming units microbial strains were used to inoculate the culture medium. A total of 6mm diameter wells were punched into the agar and filled with plant extracts. The plates were then incubated at 37°C for 18 h. Ampicillin disc (10µg) and Ketoconazole disc (10 µg) were used as controls.

Results: The antimicrobial activity was determined by measuring the diameter of zone of inhibition. It was observed that the ethanol extract of *Acacia nilotica* exhibited antibacterial activity against all the strains, and no zone of inhibition was seen with aqueous extract of *Acacia nilotica* . Antifungal activity was exhibited by aqueous and ethanolic extracts of *Acacia nilotica*.

Conclusion: Ethanol extract of *Acacia nilotica* showed antibacterial effects, especially on MDR *Klebsiella* and MDR *E. coli*. This extract can be used against MDR *Klebsiella* or MDR *E. coli* since MDR strains are a threat to the community. Aqueous extract or ethanol extract can be the choice for *Candida albicans* infection.

Influence of Treatment Temperature and Medium on Activity of Lytic Bacteriophages (STP-1, STP-2, and Esc-COP-1) against *Escherichia coli* O157:H7

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Abstract:

Although it is required to seek an appropriate condition of bacteriophage application to maximize their lytic effect in a practical use, few researches have compared their actual effect under different conditions using a time-kill assay. This study aimed to investigate the effect of treatment temperature (4 and 37°C) and medium (Luria-Bertani, LB, broth and 0.85% saline) on lytic effect of the *Escherichia coli* O157:H7-specific bacteriophage product (BP) newly developed in our previous study (mixture of STP-1, STP-2, and Esc-COP-1), drawing optimal treatment condition. *E. coli* O157:H7 at high (5-6 log CFU/ml) and low (2-3 log CFU/ml) bacterial loads were treated with the BP for 1, 6, 12, and 24 h. As a result, lytic effect of the BP was significantly affected by the treatment temperature; the effect was much higher when treated at 37°C than 4°C. Regardless of treatment medium, *E. coli* O157:H7 treated with the BP at 37°C were reduced up to undetectable level within 24 h (< 1 log CFU/ml), while the 4°C treatment did not affect to the initial microbial loads ($P > 0.05$). In the 37°C treated group, in addition, the treatment medium also affected to the lytic effect. Bacterial loads were significantly more rapidly reduced in the LB broth than 0.85% saline, for instance, the BP treatment in the LB broth achieved complete inactivation of the inoculum (> 4.5 log CFU/ml reduction) within 6 h, compared that 24 h needed in 0.85% saline. Consequently, 37°C treatment in the LB broth can be suggested as an optimal condition for the BP used in this study. This study provides useful basic information on the newly developed *E. coli* O157:H7-specific BP promoting practical use of them in various fields related to public health such as food industry, pharmaceutical, and veterinary medicine.

Key words: *Escherichia coli* O157:H7, bacteriophage product, temperature, treatment medium, environmental factor, lytic effect

Investigating the Impact of Cognitive-Behavioral Therapy on the Mental Health Status of Patients Suffering from Myocardial Infarction

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Abstract

Introduction and Purpose: Depression and anxiety, social dysfunction, and somatization in patients suffering from myocardial infarction are common and usually associated with mortality. Therefore resolution of depression, anxiety, social dysfunction, and somatization in these patients is an important step to reduce the probability of the next infarction. While, the present study aims to assess the impact of cognitive-behavioral therapy on the mental health status of patients suffering from myocardial infarction.

Materials and Methods: The controlled clinical trial was conducted. In general, 30 patients suffering from myocardial infarction were randomly assigned in two: intervention (n-15) and control (n-15) groups and investigated. The intervention group received eight sessions of Cognitive-Behavior Therapy individually, and the control group was not intervened. The General Health Questionnaire were used in order to collect data, and SPSS software (21) was used in analyzing the data.

Findings: There was no difference between the mean pre-intervention scores of depression, anxiety, social dysfunction and somatization, among the two groups, but based on the T-test, after the intervention, the mean depression scores in the intervention group (28.93 ± 6.193) has had a significant reduction compared to the control group (39.67 ± 5.327) ($p < 0.001$). Also, the mean anxiety scores of the intervention group (9.73 ± 2.789) has had a significant reduction compared to the control group (13.87 ± 2.200) post-intervention ($p < 0.001$). Furthermore, the mean scores of physical signs of the intervention group (2.27 ± 2.764) has had a significant reduction after the intervention compared to control group (12.93 ± 2.631), and a significant reduction can be seen in the mean social dysfunction scores of the intervention group (9.93 ± 2.576) after the intervention, compared to the control group (12.87 ± 2.949).

Conclusion: The results of this study showed that Cognitive Behavioral Intervention can be utilized as a beneficial intervention method for cardiac patients.

Keywords: Myocardial Infarction, Mental Health, Cognitive Behavioral Therapy

LOCAL HEALTH SYSTEMS IN THE INDIGENOUS MUNICIPALITY OF LAKE SEBU, SOUTH COTABATO, PHILIPPINES

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The Municipality of Lake Sebu is a first class municipality, situated at the highlands of the Upper Valley of the Province of South Cotabato, Philippines. It has a projected population of 87,433 for 2014 of which 65% are T'boli and other tribal people. Endowed with a vast array of natural wonders and rich cultural heritage, Lake Sebu is still beset by problems in health. Lake Sebu is one of the low performing municipalities in health as evidenced by non-achievement of ideal or standard performance indicators in health and disease outbreaks such as Malaria, Dengue, Measles, Cholera and high incidence of Tuberculosis and malnutrition.

In 2006, the municipality in its quest to better the health situation of its people, embarked on a deeper analysis of the situation with the Municipal Health Officer redesigning its strategies and approaches, taking into consideration the two major problems in health which are: 1. POOR ACCESS TO HEALTH CARE and 2. POOR QUALITY OF HEALTH CARE. Part of the strategy is to form our alliances with other health care agencies and partners and develop policies towards better health service delivery. In 2007, Save the Children with its project Advocacy for Improved Maternal and Child Health (AIM) paved the way for the crafting and eventual approval of the Reproductive Health Code of Lake Sebu (2008).

Lake Sebu's Health Statistics 2008 vs 2014

Health Indicators	2008	2014
Infant Mortality Rate	7	0
Maternal Mortality Rate	3	0
Fully Immunized Child	44%	95%
Facility based Delivery	24%	85%
Skilled birth attendance	32%	85%
TB Case Detection Rate	12%	85%
Malnutrition Ratio	16.7%	8.7%
Contraceptive Prevalence Rate	48%	59%
Households with Sanitary Toilets	32%	95%
Households with Access to Safe Water	48%	95%

With the realization and in depth analysis of Lake Sebu's health situation despite many health programs implemented by other organization, the municipality's solutions are health systems which answer the main problems on access and quality of health care. Thus these systems were developed with the legal mandate of the Reproductive Health Code that "The Municipality of Lake Sebu shall undertake to develop a comprehensive health system that will improve the health situation of its constituents."

Low income and injury types were indicators of elderly abuse inpatient: A nationwide evidence-based study

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Introduction: It was reported that cases of elderly abuse had increased in Taiwan. Since it was an obscure social problem, more study should focus on analyzing the factors of elderly abuse.

Objectives: The aim of this study was to compare elderly abuse inpatient with non-abuse by determining the characteristics of injury types, medical utilization, and the factors of hospitalization.

Method: The data of National Health Insurance Research Database (NHIRD) from 1997-2010 were used in this study. Patients over 65 years old were included in this study and divided into two groups according to ICD-9-CM. We identified either 995.8x or E967.x as abuse cases and E800-E949 unintentional injury as comparing group. SPSS 22.0 was used for data analysis.

Results: There were 431 elderly abuse cases and 895,335 control patients in this study. Abuse cases had 2.18 times higher percentage of low-income and 1.18 times of two or more injuries comparing with the control group; however, it had less medical expenditure (NT\$ 34,991 vs. NT\$ 66,362), operational treatment (25.9% vs. 50.3%), and length of days (7.5 days vs. 10.5 days). After adjusting age, gender, and medical utilization, we found that low income and injury types including intracranial injury, open wound of head and upper limbs, and contusion were the risk factors of elderly abuse hospitalization. **Conclusions:** Low income and injury types could be indicators to identify whether the elderly were suffering from abuse.

Motility and Biofilm Formation of *Escherichia coli* O157: H7 under Low-Shear Modeled Microgravity

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Abstract:

Under microgravity, which represents the space environmental condition, bacterial characteristics are changed in unexpected ways. The aim of this study was to investigate the influence of Low-Shear Modeled Microgravity (LSMMG: space condition) and Normal Gravity (NG: Earth condition) on motility and biofilm formation of *Escherichia coli* O157:H7 ATCC 35150, 43889, 43890, and 43895. Swim, swarm, and twitch motility tests were performed over the course of 48 hours (0, 3, 6, 24, 48 hours); while biofilms on glass micro-carrier beads formed by GFP-labeled *E. coli* O157:H7 was visualized by confocal laser scanning microscopy. In the motility test, all *E. coli* O157:H7 strains did not show significant changes between LSMMG and NG cultures except ATCC 35150 cultivated for 6 hours on swarm agar (Distance traveled: LSMMG < NG; $P < 0.05$). Interestingly, the average mean values of green fluorescence on the biofilm were higher in LSMMG cultures than in NG cultures (LSMMG: 1927 units, NG: 1007 units; $P < 0.05$). These results indicate that biofilm of *E. coli* O157:H7 was enhanced in the space environment by some extrinsic factors, such as low flow velocities of suspension, rather than motility of bacteria. Since the thicker biofilms let bacteria more resistant to various stresses, the enhanced biofilm formation under microgravity can be regarded as a health threat to astronauts. This study provides a comprehensive understanding of *E. coli* O157:H7 under microgravity condition, which serves as a caveat for future studies on space microbiology.

Key words: Microgravity, *Escherichia coli* O157:H7, motility, biofilm formation

Olive: A Nutraceuticals Against Alzheimer's Disease

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Abstracts

Alzheimer's disease (AD) is a chronic condition and the most common form of dementia characterized by significant memory decline as well as other cognitive difficulties. AD is an emerging public health problem that poses a huge global burden, around 44 million people are victims of AD dementia and that this will grow to more than 100 million cases by 2050, while in Australia there are more than 342,000 Australians living with dementia and expected to soar to almost 900,000 by 2050. The pathologic hallmark of AD is the deposition of extracellular senile plaques, intracellular neurofibrillary tangles and extensive neuronal loss. Currently, no treatment and cure for AD and researchers cannot definitively say what its cause. The available US Food and Drug Administration (FDA) approved medication delay the condition's development. Drug development for AD has many failures and proven to be very difficult including unacceptable toxicity.

Due to severity in side effect and narrow therapeutic effect, recent suggested dietary recommendation for AD including the minimize intake of saturated fats and trans fats, and increase the intake of vegetables, legumes, fruits, and whole grains. Olive (*Olea europaea*) fruit, leaves and extra virgin oil serve as good sources of unsaturated fatty acids and phenolic compounds offering versatile pharmacological activities mainly attributed to their antioxidant and free radical-scavenging activity. The inhibitory effect of these phenolics (biophenols) on the activity of key enzymes implicated in these disorders along with inhibition of toxic fibril formation in AD were determined and found the significant results. In conclusion, on the basis of significant enzyme modifying activities of olive biophenols results, it would become a powerful and safe nutraceutical agent against AD.

Biography

SYED HARIS OMAR have recently finished his PhD from the School of Biomedical Sciences, Charles Sturt University, Australia. His research interests are the investigation of olive biophenols against Alzheimer's disease pathology models in *in vitro* and animals. He has published several articles in peer reviewed journals and books chapters. Currently, he is a member of different scientific organization and editorial board member in a few journals. As a student, he received postgraduate scholarship award, conference support award and recently awarded as best oral presenter at FIP (International Pharmaceutical Federation) 2014. Moreover, he was actively involved in different activities including postgraduate student mentor, student representative committee member and vice president of international student club of Charles Sturt University.

PRIMARY HEALTH CARE FOR INDIGENOUS COMMUNITIES IN THE DEPARTMENT OF META, COLOMBIA

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ABSTRACT

In accordance with the need to overcome health inequities worldwide, is required rethinking the provision of services in multi-ethnic or multicultural environments, in a harmonious way with the characteristics and the language of the indigenous population, to ensure the active and meaningful participation of communities (1). The Primary Health Care (PHC) approach to ethnicity is a strategy through which it aims to respond to this problem. Despite there have been related legislation and the proposed allocation of own indigenous health systems in Colombia, the issue is quite recent in the country.

Multiple unrelated experiences that tend to a model of old selective PHC, have been implemented in the territory for the general population (2, 3). Those with differential ethnic approach involve major challenges for the formal health system to recognize the worldview of indigenous people and the dynamics of their own health system (4).

The department of Meta, consistent with national policy, began the approach to indigenous health based on PHC. In particular, the municipality of Puerto Gaitán which houses nine of the twenty indigenous reservations of the department, where the Municipal Health Secretary developed an exercise of implementing PHC with ethnic approach during 2014.

In this review, the Universidad Cooperativa de Colombia, in association with the Municipal Health Secretary of Puerto Gaitán intend to develop an ethnicity approach to the PHC model with the native indigenous population.

Objective: Evaluate the implementation of an exercise with Primary Health Care approach to indigenous ethnic population of the department of Meta, Colombia.

Methodology: Literature review was conducted to identify values, principles, approaches and implemented model attributes, process and outcome indicators proposed approach with emphasis on ethnicity.

Expected results: Identify the type of PHC implemented, the values that sustain it, the attributes and indicators and its sustainability in the medium and long term in the target population.

KEY WORDS: *Primary health care, indigenous population, natives groups, cultural competency, equity.*

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Short bio-data

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Areas of outstanding performance related to the project:

General practitioner with undergraduate training with emphasis in family medicine. Doctor of Public Health. Experience in the design, implementation and evaluation of Primary Care model with focus on Family and Community Health. Expertise in direction, management and planning of health care services and in projects first level, public health, public policy, advocacy and prevention activities, management and implementation of projects and community care programs. Experience in coordination of practice settings and research center in university hospital and member of the ethics research committee.

Reproductive Health of the Indigenous Rakhine women in Cox's Bazar, Bangladesh

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Abstract

Background - Reproductive health services are significant intervention to improve maternal and child health. How far these services are developed among the indigenous Rakhine women in Bangladesh.

Objective – To explore the reproductive health of the indigenous Rakhine women in Cox's Bazar, Bangladesh.

Methods - A cross-sectional study was conducted in the Rakhine villages of Cox's Bazar from January to March 2014, among 215 married women with at least one child aged one year or more were selected.

Result - The mean age of the respondents was 30.53 ± 6.4 years and mean age of marriage was 20.27 ± 3.5 years. Mean age of 1st pregnancy was 21.21 ± 3.5 years, mean parity was 1.93 ± 1.1 and 86.04% women preferred hospital and clinic for confinement. ANC was done in private doctor and hospital (52.08%), in Govt. hospital (23.25%), mean was 4.13 ± 1.36 times, 40.5% women did not attain for PNC, 59.5% completed TT5 doses. Most (97.2%) of them used colostrums as prelacteal feeding and 43.7% mother prefer paste rice, egg and potato as weaning food. Contraceptives used by them were mainly OCP (24.6%), Injection (20.9%), CT (19.5%) and Implanon (14.4%).

Conclusion – This study provides the reproductive health seeking behavior and health care utilization of Rakhine women were well except PNC.

Social determinants and blindness: Situational Analysis of risks, prevention, surgical services and eye care programmes in Nepal.

Case study in Gandaki and Dhaulagiri Zones – Western Region Nepal

Angelika Feldmann

Abstract:

About 285 million people are visually impaired worldwide; 39 million of them are blind. About 87% of the world's visually impaired live in developing countries. Social determinants of health are the economic and social conditions under which people live with determinate their health.

The objective of the study was to document the key dimensions of disparity, explore the political, policy, governance and insitutional context of eye health.

In the context of the present study information was collected from 1.053 persons, from Gandaki and Dhaulagiri Zones, Nepal between June and September 2011. Information on individual demographic characteristics, socio-economic factors, general health, inequality eye health service for women, environmental conditions, local risk factors, prevention and education was collected with a standardized questionnaire.

The present study found significant differences for eye health from outdoor pollution between males and females. Female perceived statistically significant that they get less priority for eye medical care following husband and children.

The present study has attempted to identify the gap around education and preventive of childhood eye health.

Keywords: social determinants; eye health; blindness; hospital based study; Nepal

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The association between socioeconomic status and the trend of health status: A longitudinal analysis

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Abstract

People with higher socioeconomic status are granted to have a better health status. Conversely, there is limited evidence to examine how the poverty affects the trend of one's health or quality of life in a long-term basis. Health inequality is still an important issue even in Taiwan under national health insurance with a >95% coverage rate. This study aims to examine the long-term effect of socioeconomic status on individual health trend through a longitudinal population-based cohort design.

This study employed a longitudinal analysis to examine factors associated with health status of community-dwelling adults aged 30 years and over. The community cohort study was conducted during 2006-2013, and 18,470 participants were recruited in northern Taiwan. The SF-36 of the participants' general health status was measured five times in five consecutive follow-ups. Factors including gender, age, education, marital status, income, and lifestyle habits were collected from the questionnaire performed by interviewers. Generalized estimating equations for repeated outcome were performed to determine the long-term relationship between the study variables and the trend of SF-36.

Overall, participants with the following characteristics: female, illiteracy, passive smoking, inactive lifestyle, and monthly income below 833 USD, were likely to have poor health status. After adjusting for covariates, a significantly decreasing trend of health status was found among the dwellers with older, inactive lifestyle, low educational level, and low income.

Low socioeconomic status was strongly associated with long-term trend of one's health status. The accessibility of health promotion resources and health education is deemed as the primary reason for poor health trend. A community-based intervention program designed for high risk groups is suggested. A health care system shall invest more resources on the poverty populations, which can be a cost-effective strategy for long-term reduction of health burden.

Keywords: short Form 36; longitudinal study; socioeconomic status.

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The stress index changes according to the types of floor impact sound

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Abstracts

Introduction

Recently, noise coming from the house above has become a great social problem among neighborhoods, also it can be cause of physical and psychological problems. In this study, we examined the stress index changes according to the different types of floor impact sound (FIS).

Methods

Ten men and 5 women were enrolled, and English listening test was performed under 12 different conditions of floor impact sounds which were made by the various combinations of sound with Bang machine, Tapping machine, Impact ball and Sound-proof mattress. The subjects were exposed to each FIS for about 3 minutes, and we examined the heart rate variability (HRV) continuously. Also we sampled 6 times of salivary cortisol and twice of urinary cortisol during the experiment. Repeated-measured ANOVA was performed for data analysis.

Results

The difference of salivary cortisol levels among the different FIS was significant ($p=0.003$). The difference of HRVs components according to the various FIS was significant in some parameters, such as Total power ($p=0.004$), low frequency ($p=0.002$), high frequency ($p=0.011$).

Conclusion

The salivary cortisol and some HRV parameters were significantly influenced by conditions of different FIS, the results suggest that the different type of FIS may have impact on stress index changes.

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Trajectory of lifestyle, self-management and quality of life among stroke patients

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Research Objectives:

Quality of life is an important outcome indicator for stroke patients. Lifestyle and self management potentially have a great impact on quality of life among stroke patients. The objectives of this study are to assess the relationship among lifestyle, self-management, and quality of life as well as to examine the trajectory of these variables over time among stroke patients.

Proposed Method:

The research will employ quantitative longitudinal research design. Data will be collected at four different points of time over the first years. We expect to recruit 80 participants. The instruments used to collect quantitative data will include a demographic questionnaire, the Health-Promoting Lifestyle Profile-II (HPLP-II), Self-management(PHS), and Medical Outcome Study Short Form-12 (MOS SF-12).

The inclusion criteria were: (1) diagnosed with stroke within the last three months (2) length of stay more than three days (3) The NIH score below 15 (4) have a clear conscience (5) able to communicate, and (6) Above 18 years of age. Potential participants will be invited in person at doctors' outpatient clinics during their return visit. Data will be collected by four questionnaires at four different points in time: at baseline and at 3, 6, and 12 months after discharge. In addition, a stamped, self-addressed envelope will be provided for participants' convenience in returning the questionnaires. As needed, the researcher will assist patients who need help to complete the questionnaires. Latent Growth Curve Modeling (LGCM) will be conducted to examine the longitudinal relationships among the target variables.

Expected Contribution:

The study results will provide valuable knowledge of the relationship among lifestyle, self management, and quality of life as well as the long-term trajectory of these variables among stroke patients .

Keywords: lifestyle, self management, quality of life ,stroke patients

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Water Supply Quality Associated with Toddlers Diarrhea in North Semarang District

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SUMMARY

Diarrhea was one of public health issues that happened related to environment sanitation. In 2009, diarrhea was one of the top ten public health issue on Central Java Province, based on the type of an extraordinary events. The number of diarrhea incident on Central Java Province, 2010, was 23.36 percent and 15.25 percent for toddler diarrhea incident.

Prevention and eradication program for diarrhea disease especially toddlers diarrhea had undertaken with many ways with public collaboration nor worked with many others sectors related, but the result still was not satisfied. Toddler diarrhea in North Semarang District still at the high number about 1.162 cases (2010). North Semarang District had the largest population density with 11.61/km² and 4.4 people for each household. The scope of clean water access was 58.59 percent and the scope for ownership of clean water source 51 percent. Based on sanitation data, the number of clean water scope was still not reach the target of Dinas Kesehatan Kota Semarang for 94.2 percent.

The research goal was to know the related of water supply quality with toddlers diarrhea in North Semarang District. This research was an observation analytic type with cross sectional method. All the toddlers in North Semarang District were the research population with 51 sample used by random sampling method and the mothers as a respondent. Chi square test was used for data analyzed.

Water quality was standards criteria that used to prevent the occurrence of disease in communities that were transmitted through water and it was the one of factor for toddler diarrhea. The result showed that 60.8 percent quality of water provision was not eligible and there was 58.8 percent toddlers in North Semarang District got diarrhea. Statistic analyzed reported that there's a significant result between water supply quality and toddlers diarrhea in North Semarang District (p value = 0.013).

Bivariate analysis showed that the result had p value 0.013 , it means that there was a relation between water supply quality and toddlers diarrhea in North Semarang District. Based on the result, water supply quality was one of factor that caused toddlers diarrhea in North Semarang District. These results was in line with Budiono and Arie Wuryanto's research whose said that there was relation between water quality with toddlers diarrhea (p value = 0.032). This research in accordance with the opinion that the incidence of diarrhea was influenced by water supply quality. The eruption of cholera outbreak in Sulawesi (1973 and 1982) occurred due to contamination at the source of clean water. The provision of clean water will lower the pathogenic germs. The conclusion of this research was the water supply quality was the factor that caused toddlers diarrhea in North Semarang District.

This study conclude that how was water supply quality in North Semarang District and analyzed about relation between water supply quality with toddlers diarrhea in North Semarang District.

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