

A Cross-Sectional Study On The Socio-demographic Profile And Social Perceptions Towards COVID-19 Vaccines Among Residents Of Quezon City

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ABSTRACT

Amidst the current pandemic, the Philippine government is doing different approaches to understand the Filipino population on how to encourage them to partake in the vaccine rollout against COVID-19. It has been known that there were various socio-demographic factors that may affect the perception of the population in receiving the vaccine against the coronavirus. The study aimed to assess the relationship between socio-demographic profile and perceptions of the residents in Quezon City when it comes to COVID-19 vaccines. A total of 385 respondents were selected via convenience sampling technique to answer the questionnaire distributed through Google forms.

The respondents demonstrated that their willingness to get vaccinated is highly influenced by their age, educational attainment, employment status, marital status, and religion which garnered p-value of ($p < 0.05$). The data obtained can conclude that the main vaccine-related factors that influence their perception of COVID-19 vaccines are vaccine efficacy and vaccine brand. It was found that among the sociodemographic factors, educational attainment ($\mu > 4.0$) has the most positive outlook towards COVID-19 vaccines specifically post-graduate respondents while occupation has the most negative outlook specifically blue collared jobs ($\mu < 4.0$).

Overall, the data collected from the research would help aid the local government of Quezon City in determining which population is hesitant and in favor towards vaccines and guide them in implementing the appropriate intervention. It also serves as a reference material for future researchers who are interested in studying the perceptions of people towards the COVID-19 vaccines. The researchers would also like to recommend for future studies to involve respondents who have taken the second booster shot and those who have yet to receive a first booster shot. It is also encouraged to utilize other sampling methods to maximize study sample's heterogeneity.

Keywords: COVID-19, vaccine efficacy, vaccine brand, sociodemographic factors, vaccine perception

1 INTRODUCTION

For almost two years now, countries all over the world have made efforts to stop the coronavirus pandemic from spreading. The World Health Organization (WHO) has responded to this global crisis with vaccine development and research as their principal action. The priority of the WHO is achieving equitable access to safe and effective vaccines by tirelessly working with different pharmaceutical partners all over the world to develop and manufacture coronavirus vaccines which would play a critical role in the ending of the COVID-19 pandemic (WHO, 2021). The Philippine government, in particular the Department of Health, are trying different approaches in understanding the Filipino population on how to encourage them to participate in the vaccination program. Based on the current situation of the local governments here in Metro Manila, vaccination sites are always fully operational with at least 50% of NCR's eligible population fully vaccinated vs COVID-19 (Aguilar, 2021). However, there is still a part of the population that is quite difficult to encourage to be vaccinated because of several socio-demographic factors that could influence the acceptance and perception of COVID-19 (Echoru et.al, 2021).

The knowledge of the people about the efficacy and side effects of the vaccine may be a factor in the decision making of taking the vaccine. Their perceptions on taking new vaccines in general such as their beliefs, traditions, religion, and ethnicity may also affect their decision to get vaccinated. The distance of vaccination sites and vaccine availability might also be a consideration of the residents in partaking in the vaccination program. Exposure, distance, and risk can be given account in the vaccination process. Another factor that affects the perception of individuals to getting vaccinated are testimonies and feedback about their experiences during and after vaccination.

Everything stated in earlier paragraphs were considered and studied by the researchers in order to determine the socio-demographic profile, perceptions, and other health history factors that would greatly affect the decision of the residents in Quezon City, Philippines in taking the COVID-19 vaccines. This research study can help aid the local government of Quezon City in determining which population is hesitant or in favor of vaccines and guide them in implementing the appropriate intervention. The researchers sought to answer the relation of the socio-demographic profile and perceptions of residents in Quezon City regarding COVID-19 vaccines. Which among the population in terms of their socio-demographic factors are willing to get vaccinated in relation with the following socio-demographic variables in terms of age, sex, educational attainment, employment status, income, marital status, and religion. Which socio-demographic profile of the individuals displays the highest percentage in terms of positive outlook towards COVID-19 vaccines and negative outlook towards COVID-19 vaccines. What vaccine-related factors affect the perceptions of the individuals towards COVID-19 vaccines in terms of vaccine efficacy, vaccine availability, and vaccine brand.

The study will benefit the local government in identifying which population would be needing an enhanced approach to help in the distribution of vaccines in Quezon City, Philippines. The findings of the researchers about the vaccine perceptions of the residents in Quezon City may serve as a guide for the Department of Health in doing the right approach for the distribution of vaccines to other parts of the Philippines as well. The study primarily focuses on determining the socio-demographic factors and social perceptions of individuals residing in Quezon City, (NCR) Philippines towards COVID-19 vaccines. Specifically, the study only includes the perceptions of individuals residing in the said city who are 18 and above.

2 RESULTS

Table 1 Frequency Distribution of the Socio-demographic Profiles of the Respondents

Variable	Parameter	n	%
Age	18-29	186	48.3
	30-39	93	23.2
	40-49	49	12.7
	50-59	44	11.4
	60 above	13	3.4
Gender	Female	180	46.8
	Male	197	51.2
	Prefer not to say	8	2.1
Occupation	White collared jobs	103	26.8
	Blue collared jobs	110	28.6
	Student	146	37.9
	Unemployed	26	6.8
Educational Attainment	Primary	4	1.0
	Secondary	137	35.6
	Tertiary	226	58.7
	Post-graduate	18	4.7
Civil Status	Single	235	1.0
	Married	132	35.6
	Separated	9	58.7
	Widowed	9	4.7
Religion	Catholic	311	80.8
	Islam	1	0.3
	Buddhist	-	-
	Iglesia ni Cristo	26	6.8
	Protestantism	3	0.8
	Born Again	36	9.4
	Seventh Day Adventist	3	0.8
	Jehovah's witness	-	-
	Baptist	2	0.5
None	3	0.8	
Monthly Income	Php 14,000 below	55	14.3
	Php 14,001 - 24,000	66	17.1
	Php 24,001 - 47,000	42	10.9
	Php 47,001 - 82,000	37	9.6
	Php 82,001 - 140,000	19	4.9
	Php 140,000 above	21	5.5
	Not Applicable	145	37.7

Table 1 shows the frequency distribution of the socio-demographic profiles of the respondents. A total of 385 respondents were acquired randomly to be part of the study. The majority of the respondents' gender were female (46.8%), followed by male individuals (51.2%), while the rest preferred not to declare. The respondents' ages are mostly between 18 and 29 years old (48.3%), followed by 30-39 years old (25.2%), while the age group of 60 and above have the least number of respondents. Most of the respondents' occupation are

students (37.9%). It is then followed by blue collared jobs (28.6%) and white collared jobs (26.8%) that have participated in the survey while only 6.8% are unemployed.

Majority of the respondent's highest educational attainment are tertiary level (58.7%) which consists more than half of the total respondents. It is also found that six out of 10 respondents are single while 3 out of 10 respondents are married. Most of the respondents are Catholics consisting 80% of the total respondents. The monthly income of the respondents is mostly not applicable, having around 37.7% of the total respondents, since most of them are students. There are only about 17.1% of the respondents that earn a monthly income between 14,000 pesos and 24,000 pesos, while 14.3% of the total respondents earn less than the said amount.

Table 2 Health Information

Statements	Yes	No
Have you or anyone in your family ever contracted COVID-19?	245	140
Do you have a current medical condition?	58	327
Do you have a past medical condition?	101	284

Table 2 above illustrated presents the health information background wherein 63% of the respondents stated that their family has contracted COVID-19. On medical conditions, 58 respondents appear to have current illnesses while almost twice of that had past medical conditions.

Table 3 COVID-19 Vaccine Information

Statements	Parameter	n	%
Have you been vaccinated?	Yes	384	99.7
If you have already been vaccinated, how many doses have you already received as of this day?	First dose	1	0.3
	Second dose	205	53.2
	Booster	177	46.0
If you have already been vaccinated, what under priority group are you registered?	A1	20	5.2
	A2	12	3.1
	A3	60	15.6
	A4	43	11.2
	A5	25	6.5
	ROP	225	58.4
If you have already been vaccinated, what is the brand of your vaccine?	Pfizer	75	19.5
	Moderna	44	11.4
	AstraZeneca	70	18.2
	Sputnik V	8	2.1
	Janssen	27	7.0
	Sinovac	156	40.5
	Sinopharm	3	0.8

Table 3 above displays the COVID-19 vaccine information of the study's respondents, and it shows that only one out of the 385 respondents are not vaccinated. For those who have been vaccinated, 5.2% belong in A1 priority group who are classified as healthcare frontliners, 3.1% belong in A2 which belong to senior citizens, 15.6% belong in A3 which

are persons with comorbidities, 11.2% belong in A4 which are frontliners in government service sectors, 6.5% belong in A5 which are the indigent class, while the remaining 58.4% are the remaining respondents under rest of the population. The most common brand vaccine is Sinovac which comprises 40.5% of the administered vaccine, followed by Pfizer with 19.5% and AstraZeneca with 18.2%.

Table 4 Willingness to Take COVID-19 Vaccines

	Mean	Interpretation
I like the idea of receiving the COVID-19 vaccines	4.09	Agree
If my friends, family, or peers will (NOT) take the said vaccine, I am likely to do so as well	2.17	Disagree
I am willing to take all the necessary shots (e.g., booster shots) for COVID-19 vaccines.	3.84	Agree
Reported cases of people experiencing side effects upon taking COVID-19 vaccines make me hesitant to take the vaccines.	2.50	Disagree
I am willing to take the COVID-19 vaccine because it is approved by the World Health Organization.	4.09	Agree
I will (NOT) take the COVID-19 vaccine because I think that it has (not) been well-studied by experts.	2.16	Disagree
I am willing to take any COVID-19 vaccine brand available in my locality	3.45	Agree
My culture, religion, or beliefs (DOES NOT) affect my decision in receiving the COVID-19 vaccines.	1.85	Disagree

Table 4 presents the mean score of the statements related to the respondents' willingness to take COVID-19 vaccines. On average, the respondents are positive in taking COVID-19 vaccines, most especially about the idea of receiving a vaccine. Regardless of the number of shots of vaccines and as long as it is approved by an authorized body, the respondents are willing to receive the COVID-19 vaccines. It is unlikely that the respondents would depend on their willingness to be vaccinated by external factors such as friends, family, or peers. Having side effects reported from news reports or direct people would not contribute to any hesitancy to take the said vaccine.

Table 5 Chi-Square results between the respondent's willingness to take COVID-19 vaccine and socio-demographic profiles

	S1		S3		S4	
	Age	p-value	Sex	p-value	Occupation	p-value
I like the idea of receiving the COVID-19 vaccines	107.316	.000*	32.655	.000*	138.413	.000*
If my friends, family, or peers will NOT take the said vaccine, I am likely to do so as well	102.526	.000*	25.762	.001*	115.536	.000*

I am willing to take all the necessary shots (e.g. booster shots) for COVID-19 vaccines.	123.320	.000*	22.081	.005*	128.587	.000*
Reported cases of people experiencing side effects upon taking COVID-19 vaccines make me hesitant to take the vaccines.	68.036	.000*	10.625	.224	77.404	.000*
I am willing to take the COVID-19 vaccine because it is approved by the World Health Organization.	108.660	.000*	10.986	.202	128.505	.000*
I will (NOT) take the COVID-19 vaccine because I think that it has not been well-studied by experts.	103.231	.000*	12.156	.144	133.947	.000*
I am willing to take any COVID-19 vaccine brand available in my locality	105.400	.000*	9.446	.306	85.468	.000*
My culture, religion, or beliefs (DOES NOT) affect my decision in receiving the COVID-19 vaccines.	44.901	.000*	6.447	.597	72.705	.000*

	S5		S6		S9		S10	
	Educational Attainment	p-value	Civil Status	p-value	Religion	p-value	Monthly income	p-value
I like the idea of receiving the COVID-19 vaccines	41.947	.000*	69.096	.000*	151.504	.000*	123.435	.000*
If my friends, family, or peers will NOT take the said vaccine, I am likely to do so as well	69.346	.000*	63.637	.000*	48.829	.000*	97.00	.000*

I am willing to take all the necessary shots (e.g. booster shots) for COVID-19 vaccines.	30.695	.000*	91.248	.000*	53.35	.003*	87.399	.000*
Reported cases of people experiencing side effects upon taking COVID-19 vaccines make me hesitant to take the vaccines.	45.407	.000*	50.958	.000*	43.241	.033*	63.985	.000*
I am willing to take the COVID-19 vaccine because it is approved by the World Health Organization.	34.781	.001*	74.967	.000*	84.687	.000*	86.678	.000*
I will (NOT) take the COVID-19 vaccine because I think that it has not been well-studied by experts.	50.456	.000*	73.496	.000*	47.932	.011*	105.44	.000*
I am willing to take any	28.821	.004*	77.520	.000*	71.624	.000*	93.245	.000*

COVID-19 vaccine brand available in my locality								
My culture, religion, or beliefs (DOES NOT) affect my decision in receiving the COVID-19 vaccines.	32.303	.001*	35.878	.000*	32.221	.266	80.496	.000*

Table 5 presents the chi-square results of respondent’s willingness to take COVID-19 vaccine towards socio-demographic variables. For Age variable, all statements are statistically significant ($p < .05$). Hence, we can conclude that age and willingness to take COVID-19 vaccine are related to each other. For Sex variable, statements 1,2,3 are statistically significance ($p < .05$). We can summarize the following by concluding that the positive idea of receiving COVID-19 vaccines is related to sex. It is also found that peer pressure on taking COVID-19 vaccines is related to sex. Furthermore, the willingness to take necessary shots for COVID-19 vaccines is related to sex while all other statements are not related to sex. For the occupation variable, all statements are statistically significant ($p < .05$). Hence, we can conclude that occupation and willingness to take COVID-19 vaccine are related to each other. For the Educational Attainment variable, all statements are statistically significant ($p < .05$). Hence, we can conclude that educational attainment and willingness to take COVID-19 vaccine are related to each other. For the Civil Status variable, all statements are statistically significant ($p < .05$). Hence, we can conclude that civil status and willingness to take COVID-19 vaccine are related to each other. For the Religion variable, only the statement regarding culture, religion, and beliefs is not statistically significant ($p > .05$). Hence, we can conclude that we do not have sufficient evidence to say that culture, religion, and belief is independent of religion itself. For the Monthly Income variable, all statements are statistically significant ($p < .05$). Hence, we can conclude that monthly income and willingness to take COVID-19 vaccine are related to each other.

Table 6 Mean Scores on Vaccine Perception based on Socio-demographic Profile

Variable	Parameter	P1	P2	P3	P4	P5	P7	P8
Age	18-29	4.70	4.61	4.47	4.58	4.72	1.55	1.73
	30-39	3.77	3.71	3.52	3.51	3.70	2.34	2.83
	40-49	3.82	3.63	3.47	3.35	3.67	2.49	3.10

	50-59	3.89	3.70	3.50	3.48	3.77	2.25	3.09
	60 above	3.92	4.08	3.77	3.92	3.92	2.08	3.15
Gender	Female	4.33	4.25	4.11	4.09	4.32	1.84	2.19
	Male	4.17	4.06	3.86	3.94	4.10	2.08	2.54
	Prefer not to say	4.25	4.13	4.00	4.13	4.25	1.75	2.25
Occupation	White collared jobs	4.38	4.23	4.13	4.18	4.34	1.64	2.28
	Blue collared jobs	3.47	3.35	3.17	3.13	3.41	2.72	3.25
	Student	4.77	4.72	4.53	4.61	4.77	1.50	1.66
	Unemployed	4.04	4.00	3.65	3.73	3.85	2.58	2.96
Educational Attainment	Primary	4.50	3.50	3.00	4.25	3.75	1.50	2.00
	Secondary	3.87	3.77	3.50	3.59	3.85	2.36	2.70
	Tertiary	4.42	4.33	4.22	4.21	4.38	1.78	2.22
	Post-graduate	4.83	4.83	4.72	4.67	4.72	1.22	1.89
Civil Status	Single	4.54	4.45	4.32	4.38	4.52	1.72	1.97
	Married	3.80	3.70	3.48	3.47	3.74	2.20	2.92
	Separated	3.33	3.00	2.89	2.78	3.11	3.22	4.00
	Widowed	4.00	4.00	3.44	2.67	3.67	3.33	3.11
Religion	Catholic	4.37	4.26	4.10	4.16	4.34	1.83	2.24
	Islam	3.0	3.0	2.00	2.00	3.00	4.00	4.00
	Buddhist	-	-	-	-	-	-	-
	Iglesia ni Cristo	3.50	3.42	3.27	3.15	3.27	2.50	2.92

	Protestantism	3.33	3.00	2.67	2.67	3.33	3.33	4.67
	Born Again	3.89	3.92	3.64	3.61	3.81	2.17	2.67
	Seventh Day Adventist	3.00	2.33	2.00	2.00	3.00	4.00	4.00
	Jehovah' witness	-	-	-	-	-	-	-
	Baptist	(5.00)	(5.00)	(5.00)	(5.00)	(5.00)	(3.00)	(3.00)
	None	4.33	4.33	4.67	4.33	4.33	3.00	3.00
Monthly Income	14,000 below	3.56	3.53	3.35	3.29	3.49	2.64	2.93
	14,001 - 24,000	3.64	3.42	3.45	3.45	3.73	2.56	3.06
	24,001 - 47,000	4.33	4.14	4.07	3.90	4.10	2.17	2.40
	47,000 - 82,000	4.49	4.35	4.14	4.00	4.22	1.70	2.08
	82,001- 140,000	4.32	4.21	3.81	4.21	4.32	1.63	2.63
	140,001 above	4.38	4.10	3.76	4.24	4.48	1.81	3.05
	Not Applicable	4.66	4.66	4.43	4.52	4.66	1.50	1.78

Table 6 displays the mean scores on vaccine perception per socio-demographic profile. For each socio-demographic variable, we can interpret it as the following. On the age variable, it is found that across all vaccine perception statements, the ages 18 to 29 years old obtained the highest mean scores. Thus, they have the most positive outlook towards COVID-19 vaccines. Meanwhile, ages 30 years old and older are indifferent towards the statement “COVID-19 vaccination is NOT necessary since having a healthy diet can suffice to combat the virus”. In terms of the *Gender* variable, it is found that females are most likely to have positive outlook compared to males, based on their mean scores, but neither gender has a negative outlook towards COVID-19 vaccines. In terms of the *Occupation* variable, it is found that across all vaccine perception statements the respondents who are students have obtained the highest mean scores compared to white, blue collared jobs and to those who are unemployed. This means that students have positive insight when it comes to COVID-19 vaccines. In terms of the *Educational Attainment* variable, it is found that across all vaccine perception statements, the respondents who had post-graduate studies gathered the highest mean scores. Thus, they are considered to have the most positive outlook when it comes to COVID-19 vaccines. On the other hand, those who had finished only primary school are neutral in terms of having knowledge and information about COVID-19 vaccines and those who had finished only secondary school are indifferent when they are asked about the

necessity of the COVID-19 vaccines to combat the virus. In terms of the *Civil Status* variable, it is found that across all vaccine perception statements, the respondents who are single have the highest mean scores. Hence, they have the most positive outlook on COVID-19 vaccines. Meanwhile, those who are married, separated, and widowed are neutral in terms of the necessity of the vaccine to fight the virus, and at the same time, the separated and widowed are indifferent about the vaccine being titled as a hoax. In terms of the *Religion* variable, it is found that across all vaccine perception statements, on the average, Roman Catholic respondents obtained the highest mean scores. Thus, they have the most positive outlook on COVID-19 vaccines. Religions like Islam, Iglesia ni Cristo, Protestantism, and Seventh Day Adventist are indifferent towards the necessity of the COVID-19 vaccines. Consistently, Protestantism and Seventh Day Adventist are neutral about the idea of COVID-19 vaccine being a hoax. In terms of the *Monthly Income* variable, across all vaccine perceptions, respondents who are not yet earning income have obtained the highest mean scores among other categories. Meanwhile, those who earn 24,000 pesos below and 82,000 pesos above are indifferent about the necessity of COVID-19 vaccines to fight the virus.

Table 7 Frequency Distribution on Vaccine-Related Factors

	Vaccine Efficacy	Vaccine Availability	Vaccine Brand
Which among the following factors affects your perception the MOST about COVID-19 vaccines?	277	34	74
Which among the following factors will you consider the MOST in accepting COVID-19 vaccines?	175	111	99
Which among the following factors will you consider the MOST in rejecting COVID-19 vaccines?	145	52	188

Table 7 represents the frequency distribution on vaccine-related factors. It shows that the vaccine efficacy has the highest percentage among the factors that affect the respondents' perceptions. Consequently, the vaccine brand has the least percentage relating to the perceptions of the individuals.

Table 8 Frequency Distribution of COVID-19 brand awareness and willingness

	Pfizer	Moderna	AstraZeneca	Sputnik V	Janssen	Sinovac
Are you aware of the following COVID-19 brands? Please check the box accordingly.	341	305	302	175	215	324

If all vaccine brands mentioned previously are available to the public, which vaccine brand are you willing to take? You may choose more than 1 preference.	317	248	160	40	103	112
Willingness Percentage (aware/willing)	92.96 %	81.31%	52.98%	22.86%	47.91%	34.57%

Table 8 presents the frequency distribution of COVID-19 brand awareness and willingness of the public to take a certain brand of COVID-19 vaccine. Results show that the top brand that people are aware of is Pfizer, followed by Sinovac and Moderna. The least option is Sputnik V and Janssen. The ratio of willingness to awareness is high in Pfizer (92.96%) and Moderna (81.31%). However, there is a low turnout of the ratio of willingness to awareness in Sinovac with only 34.57%. AstraZeneca has a little more than 50% turnout, while Sputnik V and Janssen are consistent with the brand awareness result which gives 22.86% and 47.91% ratio respectively. In conclusion, the highest percentage brands in willingness to receive the vaccines are as follows in order; Pfizer, Moderna, AstraZeneca, Janssen, Sinovac, and Sputnik V.

Table 9 Interpretation Table

Likert Scale	Range	Interpretation (Positively stated statements)	Interpretation (Negatively stated statements)
1	1.00-1.79	Strongly Disagree	Strongly Agree
2	1.80-2.59	Disagree	Agree
3	2.60-3.39	Neutral	Neutral
4	3.40-4.19	Agree	Disagree
5	4.20-5.00	Strongly Agree	Strongly Disagree

3 DISCUSSION

The results from the survey show that most of the respondents like the idea of taking the COVID-19 vaccine. Other countries in the Southeast Asia preferred to get vaccinated like in Malaysia (Mohamed et.al, 2021) and Bangladesh (Islam et. al, 2021). Majority of the respondents are also willing to take all the necessary shots for the said disease which is similar to the findings of a study conducted in China wherein 80% of the respondents accepted COVID-19 boosters amid the increasing COVID-19 variants (Lai et.al, 2021).

In taking the vaccines, most of the respondents agreed as well that their willingness to get vaccinated is not affected by external factors such as friends, family, or peers. Although parents and friends are key leveraging points in promoting adolescents' uptake of the COVID-19 vaccine (Rogers et.al., 2021), if an individual has access to reliable, evidence-based and trusted sources of vaccination information that are easy to comprehend, higher

vaccine acceptance will still be seen (Bolsewicz et.al., 2021) as the individual will be able to make informed choices for himself. Thus, it is evident that the information campaign conducted by the local city government of Quezon City regarding COVID-19 vaccines is effective.

Information campaigns also consist of the possible side effects that the COVID-19 vaccines may bring. Reported side effects in the news or direct people, however, does not contribute to vaccine hesitancy among the majority of the respondents. The same results are seen in the study conducted by Islam et. al. (2021). In their study, 90% of their respondents believed that they would experience side effects upon taking the COVID-19 vaccines, but the majority are still willing to get inoculated with the said vaccine. Willingness to get vaccinated against COVID-19 is mostly attributed to the people's trust in the healthcare system (Al-Mohaithef et.al., 2021) and the risk of contracting the virus and its severity (Al Qudeimat et.al., 2021).

In the Philippine setting, a survey revealed that about 77% of Filipinos have high trust towards scientists and medical professionals (Philippine Trust Index, 2021). With that, most of the respondents agreed that they are willing to take the COVID-19 vaccine since it is approved by the World Health Organization. The majority of the respondents believe that the vaccines are studied well by experts, and they are also willing to take any COVID-19 vaccine brand available in their locality as every vaccine available in the country is authorized by WHO (WHO, 2021). On the other hand, with regards to religious and cultural beliefs, these factors do not negatively affect the perception of the majority of the respondents against vaccines. In a similar study by Hafizh, M. et., al. (2021), the statements section of their survey measured the responder's willingness and hesitancy in taking the vaccine which also enquired about the responder's beliefs and attitudes toward the COVID-19 vaccine based on their previous history with vaccines, religious and social influences.

The researchers' finding that age and willingness to take COVID-19 vaccine are related to each other is consistent with a study conducted by Marzo et al. (2022) where it was found that younger people (aged 30 below) tend to be more willing to get vaccinated as they are more likely to stay updated on the latest information about COVID-19 since they are exposed to information and engage on online platforms such as the internet and social media. The results on peer pressure and taking COVID-19 vaccines is also consistent with relevant literature. Social influence has a high impact on COVID-19 vaccine acceptance. Low understanding and knowledge of the general population on COVID-19 and consequently its vaccines may confuse people and increase their reliance on recommendations from others, such as family members, biologists, doctors, or governments (Pelegrín-Borondo et al., 2021).

The positive association between occupation and COVID-19 vaccines is also consistent with other studies conducted. This is because employed individuals are more likely to have higher educational attainment as compared to unemployed individuals (Marzo et al., 2022). Moreover, the finding that educational attainment and COVID-19 vaccines are related to each other is in agreement with other research. Individuals with higher education are significantly more likely to get vaccinated for COVID-19 (Syan et al., 2021).

Education may influence these important health seeking behaviors, and in turn affect overall health. (Park et al., 2018). Relationship between civil status and COVID-19 vaccine willingness agrees with the findings of other studies. Married individuals are less likely to be willing to get vaccinated for COVID-19 (Marzo et al. 2021). However, this is also contrasted by the findings of a different study which noted that married individuals were more likely to be willing to get vaccinated as compared to single individuals (AL-Mohaithef et al., 2021). A possible explanation for the disparity between findings is that a majority of our respondents are single (61%). Findings between the relationship of income and willingness to get COVID-19 vaccines is consistent with other studies. Low-economic families are less willing

to be vaccinated compared to higher-income families. Limited health literacy and information among lower-income individuals may be the reason for reduced COVID-19 vaccine willingness (Marzo et al., 2022)

Socio-demographic profiles of the individuals have a significant relationship in their positive or negative outlook on COVID-19 vaccines. It is found that younger demographics have a more positive outlook in taking the vaccine because they are more knowledgeable in vaccine information due to their exposure in digital information and social media. Females tend to have a more positive outlook in taking the vaccine because females use health services more and that males are less likely to seek care due to masculine norms that males must be perceived as tough (Ungar, 2021). Students are found to have more trust in the healthcare system where they are more likely to have a positive outlook in taking the vaccine (Qiao, 2020). It is also found that students are more knowledgeable in health information since they are more exposed to social media. Post graduate studies educational attainment population have the most positive outlook towards vaccines since higher education levels are associated with increased vaccine agreeability, while individuals' lower education levels are associated with increased hesitancy. This type of respondents are thought to be well-informed in society since they are presumed to be aware of the consequences of not being vaccinated (de Figueredo et.al, 2021).

In terms of civil status, it has been found that the single population has the most positive outlook however it contradicts in a previous study which states that married individuals have better health experiences and outcomes (Hughes, 2009). This may be due to the fact that the majority of the respondents are single. People with a religion of catholicism have the most positive outlook because the majority of the respondents are catholics since the Philippines is known as a catholic country. Lower income groups tend to have a more negative outlook in vaccines which may be due to the population's lack of access to high-quality information and low health literacy (Bono et. al, 2021).

It has been found that vaccine brand, availability, and efficacy have a great significance for respondents in their perception about taking COVID-19 vaccines. Vaccine efficacy has the highest percentage in people's perception since it contributes a vital role in vaccine hesitancy of the individuals (Sirikalyanpaiboon et. al, 2021) where it states that efficacy is the most important factor in accepting the vaccine (Kaplan and Milstein, 2021). Vaccine acceptance of the individuals improved when the efficacy increased beyond 70% (Amit et al, 2021). Lack of confidence in the safety and effectiveness of COVID-19 vaccines contributed to vaccine hesitancy due to their doubts about the research and development of vaccines given their short clinical trials and use of new bioscience technologies (e.g., mRNA vaccine) for the first time in human vaccines (Han et al., 2021). Vaccine brand has a great influence for people taking the vaccine where the brand's ethical considerations, drug approval, and unintended side effects are part of their decision (Amit et. al, 2021).

The survey showed that Pfizer and Moderna are the most preferred and informed vaccine brands of the respondents where it can be rooted to vaccine's efficacy rate. As shown in clinical trials, the COVID-19 vaccine that had the highest efficacy is Pfizer-BioNTech (95%), followed by Moderna (94.1%), Gamaleya Sputnik V (91.6%), AstraZeneca (70.4%), Janssen (66.9%), and Sinovac-CoronaVac (65%) respectively (DOH, 2021). People's awareness and willingness to vaccines are also contributed to the vaccine's country of development where it was found that the country of development US-developed vaccines (Pfizer and Moderna) was preferred compared to vaccines produced in China and Russia (Sinovac and Sputnik) most likely due to geopolitical concerns (Kawata & Nakabayashi, 2021). It has also been found that the brand Sputnik V and Janssen garnered the least amount of people's awareness and willingness of the vaccine. This may be due to the issues of distribution with Sputnik V where there is a delivery discrepancy and vaccine expiration

problem (Gonzales, 2022). While in Janssen, it has been one of the brands being least distributed here in the Philippines where people are also found to be hesitant since it has multiple side effects like rare cases of blood clots combined with low levels of blood platelets occurring within three weeks of vaccination (DOH, 2021). Sociodemographic factors have an effect in the respondent's decision in taking the COVID-19 vaccines but also their willingness has been influenced by their perception on the vaccine brand, availability, and efficacy.

4 METHODOLOGY

4.1 Study Design

The researchers have adopted a correlational research design and data is collected through the use of surveys. A correlational research design is selected because it involves the measurement and assessment of the relationship between two or more variables (Stangor 2019). In the case of the study, the variables that the researchers want to assess are the socio-demographic profile and perceptions of the residents of all 142 barangays in Quezon City regarding COVID-19 vaccines. The results of the online survey quantitatively assessed the relationship between the said variables.

4.2 Study Population

The study population included residents from Quezon City, Philippines aged 18 and above. In determining the sample size of our study, the researchers used the Cochran's formula of finite population to calculate the sample size:

$$n = \frac{\frac{z^2 pq}{e^2}}{1 + \frac{z^2 pq}{e^2 N}}$$

Where n = sample size, z = score of the confidence level, p = proportion of population, $q = 1-p$, and e = margin of error. With that formula, the computed value for the sample size is 385. From the sample size, an acceptable 80% of the sample size can be used as a minimum to make the samples valid. The computed value of the minimum size is 308, the said value is backed up by our statistician. The population of 1,861,910 was from the Philippine Statistics Authority 2015 census and the age groups considered were age groups 18 and above. Due to the current situation of the country, no updated consensus was available. Thus, the researchers used the recent census data of the year 2015.

4.3 Survey Instrument

A convenience sampling technique was used to select respondents who are 18 years old and above in Quezon City, Philippines to answer an online questionnaire via Google forms, an online survey administration software. The questionnaire used in the study was modified and adopted from the study of Echoru, I. (2021) entitled "Sociodemographic Factors associated with acceptance of COVID-19 vaccine and clinical traits in Uganda: A Cross-

Sectional Study in Western Uganda. Prior to the dissemination, the researchers conducted a pilot study to determine the statistical soundness of the questionnaire made. It acquired a Cronbach alpha value of 0.7, which according to the studies of Taber (2017), is an acceptable, sufficient, or satisfactory level. Data collection proceeded immediately after which took approximately one month, March-April 2022.

The survey consisted of the following sections namely, sociodemographic details, health information, willingness to take COVID-19 vaccines, vaccine perception, and vaccine-related factors affecting COVID-19 vaccine perceptions. It is disseminated through different social media platforms as well as volunteers and different barangay officials of Quezon City for referrals. The researchers also made sure that the respondents have given their informed consent to participate in the study before answering the survey.

4.4 Statistical Analysis

The data is collected via google forms; it is collated in a separate google spreadsheet to extract the data per respondent. The anonymity and personal data of each respondent are safeguarded by assigning each respondent with a unique identifier accessible only to the researchers. The processing of personal information and the rights of each respondent are treated in accordance with RA 10173 (Data Privacy Act of 2012).

The data that the researchers have gathered from the study was analyzed using descriptive statistics, chi-square test, and percentage distribution. The software IBM SPSS Statistics version 25 was used for data entry and statistical analysis. According to Chin & Lee (2008), Descriptive statistics paint a picture of a situation, providing a concise numerical or graphical summary; while inferential statistics allows you to draw conclusions based on extrapolations and suggest explanations for a situation or phenomenon. Descriptive statistics such as the mean and standard deviation were determined per socio-demographic variable. With the use of inferential statistics, a Chi-Square test was used for the determination of which among the individuals have the highest vaccine acceptance in relation to their socio-demographic status. The said data was used to determine the relationship of the socio-demographic status to their perceptions. The computed data was interpreted also to determine the relevancy between the study's objectives and hypothesis.

5 CONCLUSION

The study conducted found that the respondents' sociodemographic profile has an impact and relation with their perception towards COVID-19 vaccines. The respondents also demonstrated that their willingness to get vaccinated is highly influenced by their age, educational attainment, employment status, marital status, and religion. The results showed that respondents who are in the age group of 18 to 29, has a high educational attainment, employed and stable income, single, and Catholic have positive outlook towards the COVID-19 vaccines while those who are in the age group 30 and above, primary level education attainment, unemployed and below minimum wage income, married, and other religion than Catholic showed a negative outlook towards the vaccine. Lastly, the data obtained can conclude that the main vaccine-related factors that influence their perception of COVID-19 vaccines are vaccine efficacy and vaccine brand. Vaccine availability did not greatly affect the perceptions of respondents compared to the vaccine efficacy and brand.

Based on the findings of the study undertaken and the conclusions formulated, the researchers of this study would recommend future researchers to conduct similar studies in different settings (e.g. other regions especially that are/were hotspots for COVID-19 cases).

The investigators of this study would also like to recommend for future researchers to conduct a study involving respondents who have already taken the second booster shot and those who have yet to receive a first booster shot, and correlate findings between the two respondent categories. Finally, the researchers also recognize that the study has its limitations. Snowball technique used to recruit respondents could restrict the study sample's heterogeneity. Also, the study population represented a high proportion of students who had more access to online surveys. The researchers recommend that the limitations mentioned be taken into consideration.

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