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A Correlational and Retrospective Study Between the Lead Time of Rapid Antigen Nasopharyngeal Swab Testing Kits and the Sensitivity and Specificity of Results in Testing for SARS-CoV-2 Antigen

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ABSTRACT

The year 2019 introduced a novel coronavirus caused by SARS-CoV-2 virus, also known as COVID-19, and has affected millions worldwide. As the disease affects more people every day, the development of testing procedures has advanced to rapidly detect the SARS-Cov-2 antigen, a causative agent of COVID-19. This study aims to determine whether there is a significant relationship between the lead time of the rapid antigen nasopharyngeal test for the detection of SARS-CoV-2 antigen and its sensitivity and specificity. In this correlational and retrospective study, an archival data collection was employed, selecting patients who passed the inclusion criteria of having been tested for both rapid antigen nasopharyngeal swab test and a confirmatory RT-PCR test in the Multispecialty and Diagnostic clinic that served as the study setting. A total of 184 participants were chosen through purposive sampling for data retrieval, with 92 participants in each of the lead times included in the study, 5-10 minutes and 20-30 minutes, all employing the same lateral flow immunoassay principle. Data processing and analysis were done using the Chi-square test of association and a two-tailed Z-test for Two Proportions. The chi-square test of association showed a p-value of 0.368 ($\alpha = 0.05$), indicating no significant correlation between the two lead time groups in terms of sensitivity and specificity. The Z-test showed that there was no significant difference between the sensitivity and specificity of the two lead time groups showing a p-value of 0.208 and 0.211 ($\alpha = 0.05$), respectively. Since it has been found that the lead time does not have a significant correlation to the sensitivity and specificity of the test results, it presents that any of the test kits can be utilized since they can produce the same results with accuracy parameters having insignificant differences.

KEYWORDS: Lead Time, Lateral Flow Immunoassay, Rapid Test, SARS-CoV-2