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Understanding the Motivation of Medical Technology Students in Manila in Pursuing Careers in Healthcare Amid Covid-19 Pandemic

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Abstract

Medical technologists played a critical role in response to the COVID-19 pandemic risking their health as they are constantly exposed to the virus. The researchers wanted to determine if Medical Technology students still want to pursue a healthcare career despite the risks and challenges brought by the current public health crisis. The main objective was to assess the factors that affect the intention and willingness of students to continue a career in the medical field. A quantitative correlational design was used to determine the relationship between the intention and willingness of Medical Technology students in pursuing a healthcare career. An online questionnaire was deployed to gather data from 328 respondents from all year levels of the Medical Technology department currently enrolled for AY 2021-2022 in a selected university in Manila. The data was analyzed using descriptive statistics using Pearson's correlation coefficient in the SPSS software. Majority of the respondents were willing to pursue a career in medical technology. The Adjusted R Squared revealed that 10% of the variability in the motivation is caused by factors of knowledge, perception, and attitude. Only perception had a significant impact. Pearson Correlation indicated a direct relationship with perception. The findings of this study showed that a high perception will result in a high motivation in pursuing a career in healthcare, and vice versa. Expanding the sample size will increase the reliability of results. Furthermore, utilization of other variables not employed in the study, as well as the use of other methods of analysis is recommended.

Keywords: COVID-19, Healthcare Career; Intention; Medical Technology; Motivation; Pursuing

Introduction

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is a virus belonging to the Coronaviridae family discovered in Wuhan, China in 2019. It has since become a worldwide public health dilemma that still affects people of all ages three years later. Without proper treatment, death may be the prognosis of this disease (Zheng, 2020).

Medical technologists all around the world have been testing specimens with infectious microorganisms day in and day out, especially during the pandemic. COVID-19 has increased the workload that medical technologists must endure to help promote public health and safety. It is not surprising how this increased workload has later taken a toll on the healthcare workforce. According to a study made in Cavite, Philippines, the mental health of several medical technologists has deteriorated since COVID-19 was discovered. An interview with medical technologists revealed that psychological distresses such as anxiety, depression, and worry are experienced by medical technologists on the daily (Baldo *et al*., 2021).

Despite the fact vaccines have already been produced to combat COVID-19, herd immunity in the Philippines, as stated by Lacsa & Cordero (2021), is hindered due to the lack of communication and prevalent corruption in the government. Classes in the country are still held online, and a concrete date for when face-to-face classes may resume does not seem to be in sight.

An online classroom setup would be an acceptable solution if it were to be done only temporarily. Unfortunately, online classes have been ongoing for more than a year, yet the country does not seem to be prevailing against the virus. According to the Philippines' Department of Health (DOH), a total of 20,339 cases were reported on August 23, 2021. Moreover, studies have shown that this pandemic has negatively impacted the quality of education delivered by schools. Not only will the difference in privilege among students give the classroom an unfair advantage to those who are more well-off, but the professor's unfamiliarity with virtual teaching also hinders the learning experiences of students (Khan & Ahmed, 2021). With new COVID-19 cases emerging and the lack of transparency from the government, it is imperative to determine if the Philippines may still expect a fresh batch of healthcare workers from younger generations. With this in mind, this study plans to evaluate the responses of Medical Technology students from a university in Manila on their perception of the healthcare field in the Philippines.

Students that are in the health-allied, science, and technology fields may or may not proceed to start their career as a healthcare provider, but as a possible addition to the future workforce and as critical first responders, a study that leans toward understanding their perspective can contribute to this research area which still has a lot to look into (Patel *et al*., 2017).

According to a study by Patel *et al*. (2017), assessing the healthcare workers' response is an increasing priority; it also includes the healthcare students such as pre-clinical, medical, nursing, and pharmacy students. Medical technology students are also included in this demographic. There are many aspects to healthcare students' responses with regards to working and/or volunteering in infectious disease crises, but the extent of disease knowledge presents a major influence. The mentioned study suggests that a higher willingness to work in an infectious disease outbreak resonates with the group of students who have significantly higher knowledge about it. Additionally, receiving disaster preparedness education and infectious disease control and prevention training are linked to their willingness to volunteer (Tran *et al*., 2021).

The B.S. Medical Technology (BSMT) curriculum in the Philippines is a 4-year program, which includes one year of internship, delivered through direct, indirect, and experiential learning. However, due to the COVID-19 pandemic, there is a sudden shift from face-to-face learning to an online mode of learning. Although it has been implemented for more than a year, there is an increasing concern regarding this mode of learning in the health allied courses. Despite the fact that online learning makes information more accessible, it seems that this mode of learning is inefficient and inadequate to teach the practical skills required in the medical field. Al-Balas *et al*. (2020) described the implementation of online learning as challenging, particularly in low-middle income countries. Moreover, the current situation of the pandemic has only allowed limited face-to-face classes but is still restricted to specific programs. Chen *et al*. (2019) emphasized the significance of laboratory learning as it provides the students the capability to perform and apply the lessons learned during lectures and gain experimental and collaborative skills. The online mode of education has provided laboratory simulations to substitute the experiments conducted in the pre-pandemic setting. However, it is still considered to be inadequate in helping the students learn the essential skills needed in the laboratory.

The constant challenges and situations in life make people rethink their choices and decisions despite being certain in the first place. In the perspective of choosing careers, several factors affect the students' decisions. However, the unexpected changes due to the pandemic and the necessity to adapt quickly have impacted people's lives and may have influenced student's career choices. According to a study conducted by Jo *et al*. (2021) regarding the undergraduate student interest in healthcare careers in the context of the pandemic, most of the students still showed an

evident interest in seeking a career in the medical field despite the ongoing crisis. These studies suggest that the sudden change because of the pandemic has led to different perspectives in career decision-making.

Medical technologists play an essential role in the field of medicine since they are the ones that perform laboratory tests needed in the diagnosis of diseases. Hoedt (2015) stated that medical technologists are important in improving future healthcare as they are responsible for early diagnostics, disease management, and less invasive intervention. This suggests that assessing the factors that influence the decision-making of medical technology students in pursuing a healthcare career is relevant as they have a significant role in the field. In addition, medical technologists can pursue higher medical education to become a physician in the future. It is essential to determine the students who will pursue medicine since there is currently a shortage of physicians in the country. According to the 2017 data of DOH, the Philippines has a medical doctor-to-population ratio of 0.4:1000. This ratio does not compare to the accepted standard of one doctor for every 1000 population. With that, it is crucial to assess the factors that can influence students' decision to take health allied courses as it can predict the future of healthcare in the Philippines.

The main objective of this study is to assess the extent of knowledge of B.S. Medical Technology students enrolled in a designated university in Manila on the COVID-19 pandemic, and how this has affected their intention of pursuing a career in healthcare amidst the current circumstances. The study specifically aims to:

1. Establish the sociodemographic profile of respondents enrolled in the B.S. Medical Technology program.
2. Determine the level of motivation of Medical Technology students in a designated university in Manila towards pursuing a path in the healthcare sector.
3. Evaluate the level of knowledge of Medical Technology students in a designated university in Manila regarding the COVID-19 pandemic.
4. Determine the perception of Medical Technology students in a designated university in Manila towards pursuing a path in the healthcare sector.
5. Determine the attitude of Medical Technology students in a designated university in Manila towards pursuing a path in the healthcare sector.
6. Identify the factors that influence the motivation of Medical Technology students in a university in Manila in pursuing a career in the healthcare sector.

Materials and Methods

The study employed a quantitative, correlational design with a survey questionnaire as the principal methodology to assess and evaluate the relationship between the motivations and willingness of medical technology students in a selected university in Manila to pursue a career in the medical field and factors such as knowledge, perception, and attitude towards the current COVID-19 pandemic situation that may affect and influence their career outlooks. Quantitative research, in its simplest form, creates meaning from collected data by employing a numeric or statistical approach in its design. According to Williams (2007), "quantitative research can be used in response to relational questions of variables within the research." By establishing a statistical basis, claims may be supported or refuted independent of the researcher's perception.

The study aimed to procure data from a pool of subjects from the four (4) year levels of the Department of Medical Technology in a selected university in Manila. To acquire the total population of the selected University in Manila, the Faculty Secretary of the Medical Technology department was consulted. Along with this, the researchers also requested school-based

organizations under the Department of Medical Technology, for the official student registry of first-year to fourth-year students. The student registry included the names of the participants listed based on their respective year level and section. The entire population of Medical Technology students of the selected university in Manila is approximately 2,205 students in total. Raosoft's sample calculator was utilized to compute the preferred number of respondents. Three hundred twenty-eight (328) respondents from a university in Manila were required. The margin of error was 5%, with a confidence level of 95%.

The inclusion criteria were the following: [1] currently enrolled in the academic year 2021-2022, [2] first to fourth-year medical technology students, [3] knows either English or Tagalog. With the given data, the researchers employed a stratified random sampling approach to guarantee equal representation of collected data from all sub-groups: in this case, the four (4) different year levels of the medical technology department. This ensures that the data from the first to fourth-year students are equally represented in the study.

The study was conducted through a survey questionnaire via online platforms, specifically through Google Forms. The questionnaire tool consisted of the following sections: demographics, motivations, knowledge, perceptions, and attitudes. The form also included a consent portion in which the respondents' permission will be asked for voluntary and confidentiality purposes. Individuals will have to agree to the consent form first before answering the set of questions. Nonetheless, if the individual were to leave in the middle of the question sheet, they may do so at any time. When the individual has fully accomplished the questionnaire, Google Forms will automatically save the data in a Google Sheet. The questionnaire was adapted from the different sources and then adjusted accordingly to the purpose of the study. It was tested using Cronbach’s alpha score for validity and reliability, and then confirmed by a statistician.

The demographics section of the questionnaire was adapted from Alsoufi et al.'s (2020) survey regarding the impact of the COVID-19 pandemic on medical students' knowledge, attitudes, and practices regarding electronic learning. This section consisted of the basic demographic information needed for the statistical analysis of the study. This includes the input of the respondent's name, birthday, age, sex, degree program currently enrolled in (medical technology), year level, email, and contact number. Furthermore, respondents were asked about their current financial situation due to the pandemic.

This motivations section of the questionnaire was adapted from Bakour's (2021) study on the motivational factors that influence students of diverse backgrounds to study medicine. The section was divided into two parts: [1] evaluation of the motivating themes of the respondents in pursuing a career in medical technology, and [2] determination of the willingness of the respondent to pursue his/her career despite the risks involved in the industry.

This knowledge section of the questionnaire was adapted from Azlan et al.'s (2020) study on Malaysia's public knowledge, attitudes, and practices towards COVID-19. The section was divided into two parts: [1] evaluation of knowledge regarding the COVID-19 virus and [2] primary sources of information in the respondents' knowledge regarding the COVID-19 virus.

The perception section of the questionnaire was adapted from Alsoufi et al.'s (2020) survey regarding the impact of the COVID-19 pandemic on medical students' knowledge, attitudes, and practices regarding electronic learning. This section evaluated the respondent's general perception of how the COVID-19 pandemic would affect the Medical technology students’ career decisions and future healthcare interests.

The attitudes section of the questionnaire was adapted from Alsoufi et al.'s (2020) survey regarding the impact of the COVID-19 pandemic on medical students' knowledge, attitudes, and practices regarding electronic learning. This section was further subdivided into four (4) subsections: [1] assessment of the problems that encountered during the pandemic, [2] assessment of the respondent's personal opinion regarding their futures due to the pandemic, [3] assessment of opinion towards authorities and their response during the pandemic, and [4] evaluation of overall well-being of the respondent.

When enough respondents were acquired, the data was analyzed through frequency and percentage distribution, weighted mean, and Pearson's correlation. Percentage and frequency distribution was used to investigate and quantify the demographic profile of the respondents.Weighted mean is a calculation that considers the relative importance of the numbers in a data set. Before performing the final calculation on a weighted mean, each number in the data set is multiplied by a predetermined weight. A weighted average can be more accurate than a simple average, which assigns the same weight to all numbers in a data set. Pearson's Correlation is a statistical test that relies on a method of covariance and is best used when measuring the relationship between two variables. In this study, the dependent variable is the motivation of the respondents, while the independent variables are the factors affecting the respondents' intentions in pursuing a healthcare career amidst the COVID-19 pandemic.

There is no conflict of interest to declare. Funds required by this study were equally taken from the authors. This study was not sponsored by any potential sources of conflict. In addition, respondents did not acquire any form of compensation or incentive from the researchers. The researchers did not sell any of the data collected and will destroy the raw data after publishing the study. Recruitment of respondents will be through email only. All ethical principles were followed in this study. The respondents must agree to the consent form before they can start answering. The consent form will have the details of the study and the purpose as to why the researchers are conducting the survey. No evidence of deception or coercion were present in the questions or consent form. All questions in the survey were straightforward and free from any biases.

Results and Discussion

Factors that Affect the Motivation of Medical Technology Students in Pursuing Higher Education in the Healthcare Sector

Table 1. ANOVA Table

ANOVA								
	Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**p-value**	**Decision**	**Remarks**
1	**Regression**	58.60	3	19.53	13.07	<0.001	Reject Ho	Significant
	Residual	484.12	324	1.49				
	Total	542.72	327					

Dependent Variable: Motivation
Predictors: (Constant), Attitude, Knowledge, Perception

The test is significant at the 5% significance level, ($p < 0.001$). Hence, it is expected that at least one of the factors is a significant predictor for the respondents' motivation. Moreover, the Adjusted R Squared computed 0.10, which means that 10% of the variability in the motivation is caused by the factors of knowledge, perception, and attitude, while the vast 90% proportion is caused by some factors not included in the model.

Table 2. Coefficients Table

Coefficients				
Independent Variables	**Coefficients (β)**	**p-value**	**Decision**	**Remarks**
(Constant)	-0.744	<0.001	Reject Ho	Significant
Knowledge	-0.026	0.70	Failed to reject Ho	Not Significant
Perception	0.383	<0.001	Reject Ho	Significant
Attitude	0.239	0.25	Failed to reject Ho	Not Significant

The Coefficients Table presents that there is a significant predictor proving the result found on the ANOVA Table. In fact, perception showed a significant impact ($p < 0.001$), thereby being used to predict the respondents' motivation. However, other factors in the study are found to be nonsignificant.

Finally, the regression equation can be modeled by: $\hat{y} = -0.744 + 0.383(\text{Perception})$, where $\hat{y}$ is the predicted motivation using Perception as factor. The y-intercept is -0.744 which is the respondents' motivation when all factors are zero. The beta coefficient of Perception is 0.383. All other things constant, a unit increase in Perception will increase respondents' motivation, on average, by a factor of 0.383.

Results have shown that only perception is the significant factor that affects students' motivation. According to Mokua & Muturi (2015), positive perception increases motivation that leads to the high performance of duties. This explains that students with positive perceptions regarding COVID-19 and its impact on their future plans and career are more likely to be motivated to continue studying medicine. Moreover, it can also be inferred that people with negative perception towards the COVID-19 pandemic are less likely to pursue higher education in the healthcare sector. In addition, the study conducted by Tempski et al., (2021) has shown that students are motivated to work during the pandemic due to altruistic reasons, perception of professional identity and good performance. It was observed in the study that students who perceived that they would become better healthcare professionals due to experiences brought by the pandemic are more inclined and willing to work.

Correlation of the Knowledge, Attitude, and Perception of Medical Technology Students and their Willingness in Continuing their Path in the Medical Field

Only perception had a statistically significant result ($p < 0.001$), as shown in the table. Furthermore, the positive correlation coefficient indicates that the variables mentioned have a direct relationship. As a result, when respondents' motivation is high, their perception is high, and vice versa.

Motivation is a determining factor for an individual to accomplish an objective (Hassan, 2020), whereas perception is described as the way information is organized, interpreted and consciously experienced (Spielman, 2014). Perception affects motivation because a person acts

based on how they perceive a certain situation or how they interpret it. The positive correlation coefficient between perception and motivation indicates that the variables mentioned have a direct relationship. As a result, when respondents' motivation is high, their perception is high, and vice versa. In a study conducted by Jo et al. (2021), assessing the interest of undergraduate students in a healthcare career, results have revealed that students show persistent interest in a healthcare career despite the ongoing pandemic. This suggests that the perception of the students on the pandemic can affect their motivation on pursuing a career in the medical field. Furthermore, it was observed in a study that the major motivation in choosing the medical field as a career choice is a prestigious profession followed by altruism (Hassan, 2020). This indicates that students who show persistent interest in healthcare careers are motivated either by an altruistic desire to help people due to the impact and effects of COVID-19 or they perceive working in the medical field as a highly respected career.

Table 3. Pearson Correlation between the Willingness of the Respondents in Continuing their Path in the Medical Field and their Knowledge, Attitude, and Perception

Variables	Correlation Coefficient	Interpretation	p-value	Decision	Remarks
Knowledge	-0.04	Very Weak Negative	0.50	Failed to reject Ho	Not Significant
Perception	0.32	Weak Positive	<0.001	Reject Ho	Significant
Attitude	0.10	Very Weak Positive	0.09	Failed to reject Ho	Not Significant

Conclusions

With the emergence of COVID-19 as a global pandemic in the early months of 2020, it has brought a great impact to every individual's life. This is still a developing case for Science and Technology, making it much more complicated for people to comprehend and adjust with the new normal. This study focused on the educational impact of the pandemic specifically on the motivation/s of tertiary level students that affected their willingness in pursuing healthcare careers in correlation with their knowledge, attitude, and perception. It was shown in the study that the respondents were aware of the factual information about COVID-19 with credible sources. The statistical analysis of their knowledge with regards COVID-19 corroborated that it is not a significant factor that directly affected the respondents' motivation. Furthermore, the attitude of the respondents also showed no definite significance with regards to the respondents' motivation. Thereby making knowledge and attitude unreliable factors since it displayed no relationship to correlate the respondent's motivation and their willingness to pursue healthcare careers. With the aid of Pearsons' Correlation, it was revealed that only perception showed a direct relationship and significance with the motivation of the respondents in pursuing careers in the healthcare sector. With all data and interpretations considered, the researchers concluded that if the respondents' motivation in pursuing a healthcare career in the future is high, the perception will also be high, and vice versa. Alongside these results, it must be noted that only 10% may be considered as a defining factor that directly affected the motivation of the respondents while the remaining 90% greatly relied on the possibility that it is due to other factors not included in this study.

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