

Perceptions, Attitudes and Willingness of Fourth Year Medical Students for AY 2020-2021 on CIM CMSS-DOH Telemedicine Program: A Cross-Sectional Study

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Background: The COVID-19 pandemic has been a great challenge to medical education, nonetheless it also offered medical schools an opportunity to incorporate a developing technology to address the accessibility of health services in the form of telemedicine. However, the success of any new technology would depend on factors of the users who engage in it.

Objective: To determine the perceptions, attitudes, and willingness of fourth-year medical students enrolled in the Cebu Institute of Medicine for the school year 2020-2021 on CIM CMSS – DOH telemedicine program

Methods: This was an analytical, cross-sectional study design conducted to 150 fourth year medical students of the Cebu Institute of Medicine from June to July 2021 using a validated, researcher-made electronic questionnaire.

Results: The study had a response rate of 100 percent. Gender, pre-medical degrees and previous experience with telemedicine did not differ significantly in terms of their perception, attitude and willingness toward the telemedicine program. However, those medical students who are fluent in Tagalog have better attitudes toward it. A positive linear correlation also existed between the respondents' perception scores and attitude scores, as well as between their perception scores and willingness scores indicating that better perception towards the program indicated better attitude and willingness.

Conclusions: The result of this study can be used to address the limitations perceived and demonstrated by medical students during the pandemic and how telemedicine bridged the gap in medical education. This can be the basis of adding telemedicine in the current medical curriculum, which would translate to future graduates who are able to provide holistic healthcare by adopting new technological strategies.

Key words: Telemedicine, medical education, COVID-19 pandemic

INTRODUCTION

The COVID-19 pandemic has indeed brought about changes in the field of medical education and how it is being conducted. Following the directive from the World Health Organization (WHO), and the Philippine Department of Health, classes including the medical clerkship program, were suspended according to APMC COVID-19 Advisory No. 7, 2020. But amidst all this, COVID-19 has highlighted possibilities for technological advancement in the field of medical education.¹ Medical students quickly began alternative, novel educational experiences such as telemedicine.²

Telemedicine is the natural evolution of healthcare in the digital world. It is defined as the provision of health care services over a spatial distance through the use of telecommunication technology with the aim of benefitting a patient or population.³ By healing from a distance, it offers a new method of providing healthcare services across different geographical areas and is used to facilitate accessibility of healthcare services to people who do not have access to such services in their respective areas.⁴ It paves the way for medical students to learn how to

maintain a strong patient-doctor relationship, protect patient privacy, promote equity in access and treatment of medical conditions and seek the best possible outcomes¹ while being in the safety of their own homes. Through meaningful and sustained remote patient care in a wide variety of clinical settings, supervised by a faculty trainer, medical students still learn to practice history-taking, guiding patients through self-examination and acquiring clinical reasoning skills while incorporating telemedicine.¹

In March 2020, answering to the need of accessible health services while the country was in lockdown, the Department of Health launched the DOH COVID-19 emergency hotlines 02-894-COVID (02-894-26843) and 1555 in partnership with the National Emergency Hotline of the Department of Interior and Local Government (DILG), and PLDT and its wireless subsidiary Smart Communications Inc.⁵ The free telemedicine services are available 24 hours daily. Callers who suspect that they are infected with COVID-19 can ask questions, or can request for assistance if they have symptoms or if they have a known exposure of confirmed COVID-19 cases or of patients under investigation. They could also call for non-COVID related symptoms. The information collected from

emergency calls is transmitted to the COVID-19 Emergency Operations Center and other relevant agencies for immediate facilitation and response.⁵

Cebu Institute of Medicine – Clinical Medico-Social Services (CIM-CMSS) is a training and health service institution under the Department of Family and Community Medicine of CIM that provides comprehensive, accessible and quality primary and preventive health care services to the patients, families and communities. In such a set-up, a senior clerk sees individual patients in the context of the family and the community, and relates how health problems of the community or population affect families and individuals. The residents-in-training and faculty consultant of the department directly supervise the medical students during their community rotation.⁶ With the shift to online platforms of teaching, adaptations to the curriculum for the community medicine rotation of fourth year medical students has been done. In lieu of their face-to-face consultations done at the health center, the telemedicine program in collaboration with the Department of Health COVID-19 Hotline, serves as an alternative avenue in taking care of patients and families who need health care services and other expert advice to COVID-19 related problems. This is the first-ever institutionalized telemedicine program in the country done in collaboration between a medical school and the Department of Health. This was done through a three-way teleconferencing with the patient at the spoke site, the senior clerk at the hub site and the Family Medicine resident physician at another line directly “shadowing” the senior clerk taking the call. To maintain the privacy of the senior clerks, they will be referred to as “Case Managers” and given their own case manager number for identification. Pre- and post-consult coaching or review and evaluation for the senior clerks were done after each call by the resident-on-duty.

Done in a timely and practical manner, the telemedicine program helped the medical students achieve their learning goals and objectives in shifting towards remote care while aligning with social distancing guidelines and delivering high-quality, secure, and personalized health care. Sequentially, this has been a good training ground for preparing the next generation of physicians in using new technological platforms for health service delivery during this current and possible future pandemics.¹ However, one must take note that the success of any new technology would depend on factors such as knowledge, perception and willingness of users and professionals who engage in it.⁴ Thus, this study was conducted to determine the perception, attitudes and willingness on the CIM CMSS – DOH Telemedicine Program among the fourth-year medical students enrolled in the Cebu Institute of Medicine for the school year 2020-2021. Furthermore, the study aimed to identify a relationship between the socio-demographic variables and the following: perceptions, attitudes and willingness on the telemedicine platform and to determine the association between perception and attitude scores, as well as perception and willingness scores.

METHODS

Study Design and Setting

A cross-sectional study was undertaken among senior clerks of Cebu Institute of Medicine enrolled for the academic year of 2020-2021

to assess the perceptions, attitudes, and willingness after experiencing the CIM CMSS telemedicine program using a self-administered, validated, researcher-made questionnaire. The study was conducted from June 2021 to July 2021 through an online survey.

Population and Sampling Technique

A calculated minimum sample size of 115, assuming a 95% confidence interval with expected frequency of 50% with a 5% margin of error was needed in the study. This study was able to gather participants comprising the entire batch of CIM senior clerks for AY 2020 – 2021. Out of the 156 students, a total of 150 students qualified as those who rotated in CIM-CMSS and experienced handling patients online through the CIM CMSS – DOH Telemedicine Program. Students who did not experience the telemedicine program due to circumstances such as attending their online classes abroad, as well as those who have not rotated yet in community medicine were excluded.

Data Collection

The tool used for data collection was a researcher-made self-administered questionnaire. The senior clerks who finished their rotation in Preventive and Community Medicine and have experienced using the CIM CMSS – DOH Telemedicine Program were asked to answer an electronic questionnaire using Google Forms through their emails. Each participant was limited to one form submission through their respective e-mails. A consent form was included in the first part of the electronic form. Students who consented to participate in the study were then directed to the questionnaire portion of the form. It took each student around 10-15 minutes to answer the questionnaire. Those who did not consent to participate were redirected to an exit screen and data collection did not proceed. E-mails collected were deleted prior to data processing and analysis so that responses were not identified.

Research Tool

Validation of the Perceptions, Attitudes and Willingness on DOH COVID-19 Telemedicine Program Questionnaire

The tool aimed to assess medical interns’ perceptions, attitudes and willingness on the CIM CMSS – DOH Telemedicine Program. It has a total of 28 items made up of: 15 items for perceptions, 6 items for attitudes and 7 items for willingness. Respondents answered questions using a 5-point Likert Scale: 5-strongly agree; 4-agree; 3-neutral; 2-disagree; and 1-strongly disagree. The tool, which was originally made up of 31 items, underwent a series of revisions and pre-testing. Content validation was done by experts in the DOH COVID-19 Telemedicine Program. Revisions were also made based on experts’ suggestions. Content validity and reliability testing results are shown in Table 1.

Content Validity Indices such as Item-level Content Validity Index (I-CVI) and Scale-Level Content Validity Index (S-CVI) were all acceptable, thus the questionnaire has satisfactory level of content validity. Attribute Agreement Analysis, a form of inter-reliability

Table 1. Content validity and reliability testing results.

Measures of Validity and Reliability	Computed Values	Interpretation of Values
Content Validity Indices (CVI)		
Item-level Content Validity Index (I-CVI)		
ALL Items except Perception-2 and 15, and Attitude-7	1.00 ^a	Acceptable; highest index achieved
Items for Perception-2 and 15, and Attitude -7	≤0.67 ^a	Unacceptable; for omission
Scale-Level Content Validity Index (S-CVI)	0.96 ^b	Acceptable; above cut-off
Attribute Agreement Analysis		
Appraiser Agreement Matching	90.32% ^c	28 out of 31 items matched
p-Value for Fleiss' Kappa (vs >0)	0.019 ^d	Agreement is not due to chance
Reliability Testing (Cronbach's Alpha)		
Entire pretesting population	0.841 ^e	High reliability
Omitted Items Statistics	>0.841 ^f	Items with values >0.841 for omission

^a I-CVI refers to proportion of content experts giving relevant rating; highest value is 1.00;

^b both S-CVI, which refers to average of all I-CVI; and S-CVI/UA, the average of proportion relevance scores across all experts; highest value is 1.00;

^c percentage of appraiser's assessment that agree with each other; 95% CI (70.84-98.88)

^d for both responses (relevant or not); significant at <0.05;

mHo: The agreement between appraisers is due to chance.

^e Cronbach alpha for Internal Consistency; highest value is 1.00; cut-off is 0.70, deemed acceptable

^f Cronbach alpha cut-off for items to be omitted; over-all Cronbach alpha shall increase if these items are removed

measure, revealed that all the appraiser agreements are significantly different from what would be achieved by chance. Assessments made for each item were consistent among appraisers and thus, reliable.

Pre-testing was conducted among post-graduate interns (PGIs) who have experienced the telemedicine program. The overall Cronbach alpha is 0.84, which means that the items of the survey can reliably assess the same construct. The details for the Correlation Matrix and Item Analyses Statistics are appended. Item analysis was done to help identify problematic questions and revealed that by omitting Perception items 5, 8, 11, 13-17, and Attitude item 7 from the original version of the tool, the computed Cronbach's alpha can further increase from 0.841 to the values indicated in the last column for each of the aforementioned items (Table 2). Also, Item Statistics were computed. The mean score for the pre-testing group is 121.43 (SD=9.69). The summary report for SCORES is shown in Figure 1.

Lastly, respondents' scores have been tested for normal distribution (Anderson-Darling Normality Test) and with a p-value > 0.05, the data set followed a normal distribution. The details for the descriptive statistics are also appended.

Data Analysis

Descriptive statistics such as Mean, Standard Deviation (SD), Median, Interquartile range (Q3-Q1), Minimum and Maximum values are reported to describe the different numerical variables under socio-demographic profile of respondents. The same are used to report medical interns' perceptions, attitudes and willingness scores. Frequency distribution and percentage are used to present the data for categorical variables with frequency counts. 2-Sample t-Test was used to determine if there is significant difference between two groups of respondents based on their profile characteristics, in terms of their

Table 1. Reliability testing item analysis results.

Omitted Variable	Adj. Total Mean	Adj. Total SD	Item-Adj. Total Corr	Cronbach's Alpha if item is omitted
PERCEPTION-1	117.304	9.344	0.6043	0.8309
PERCEPTION-2	117.739	8.976	0.6664	0.8233
PERCEPTION-3	117.739	9.216	0.5880	0.8286
PERCEPTION-4	117.000	9.463	0.4170	0.8354
PERCEPTION-5	117.217	9.826	-0.2072	0.8549
PERCEPTION-6	117.739	9.372	0.3167	0.8376
PERCEPTION-7	117.435	9.034	0.6953	0.8232
PERCEPTION-8	117.783	9.534	0.1391	0.8434
PERCEPTION-9	117.087	9.443	0.4775	0.8344
PERCEPTION-10	117.609	9.243	0.4978	0.8312
PERCEPTION-11	117.478	9.558	0.1447	0.8421
PERCEPTION-12	117.739	9.430	0.2487	0.8400
PERCEPTION-13	117.130	9.799	-0.1801	0.8534
PERCEPTION-14	118.478	9.713	-0.0803	0.8542
PERCEPTION-15	118.130	9.730	-0.0961	0.8508
PERCEPTION-16	117.957	9.632	0.0267	0.8465
PERCEPTION-17	117.913	9.643	0.0122	0.8469
ATTITUDE-1	117.652	9.301	0.5479	0.8308
ATTITUDE-2	117.783	9.229	0.5167	0.8305
ATTITUDE-3	117.435	9.414	0.4244	0.8346
ATTITUDE-4	117.739	9.545	0.1443	0.8426
ATTITUDE-5	117.000	9.468	0.4073	0.8356
ATTITUDE-6	117.217	9.303	0.7249	0.8287
ATTITUDE-7	117.174	9.471	0.3723	0.8362
WILLINGNESS-1	117.478	9.145	0.6832	0.8255
WILLINGNESS-2	117.522	9.100	0.7186	0.8239
WILLINGNESS-3	117.870	9.206	0.5810	0.8286
WILLINGNESS-4	117.217	9.219	0.6751	0.8271
WILLINGNESS-5	117.000	9.249	0.6381	0.8283
WILLINGNESS-6	117.087	9.434	0.4148	0.8350
WILLINGNESS-7	117.391	9.208	0.6548	0.8272

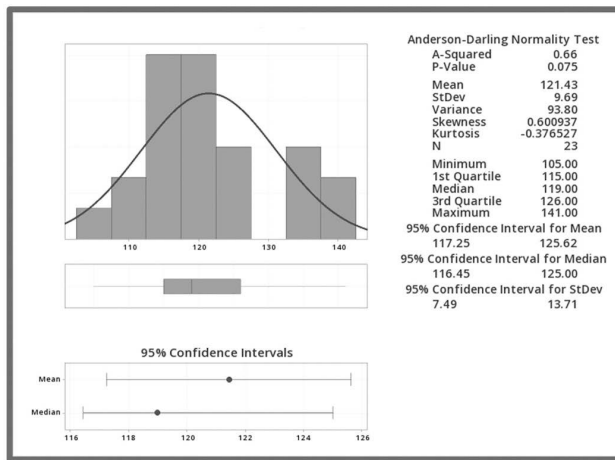


Figure 1. Summary report for SCORES.

perceptions, attitudes and willingness scores. Pearson-r Correlation was used to determine if there is association between perception and attitude scores, as well as perception and willingness scores. Regression Analysis was used to understand better the association between said scores. For all tests, confidence interval was set at 95%, comparison and association significant at <0.05, all hypotheses tested at 0.05 level of significance. Minitab, a statistical software package, was used in the statistical computations and analysis of data. Data were entered with Microsoft Excel Spreadsheet and then analyzed with Minitab version 19.0 for Mac Mojave OS.

Ethical Consideration

This paper was submitted to the Institutional Review Board. Participation in this study was purely voluntary. Informed consent was included in the first part electronic questionnaire. To maintain strict confidentiality, no names, tags, codes or markers, among others, were used to identify or link any of the participants to their answers. Only the researchers can access the data gathered. Once the study was done, all electronic responses gathered were removed and permanently deleted by the researchers. There was only minimal risk to the respondents of this study. The outcome of the study will benefit students in their education and training on primary health care during the pandemic and post-pandemic era.

RESULTS

A total of 150 fourth-year medical students participated in the study with a response rate of 100 percent. There were 87 female students (58%) and 63 male students (42%), with the majority being Filipino (99.33%) and fluent in Tagalog (56%). Most of them also had a health care-related pre-medical course (84.67%). Majority of the study population also had no prior experience with telemedicine (52.67%) (Table 3).

The mean total perception, attitude and willingness score of the respondents is 56.95, 23.45 and 29.86 respectively. A standard deviation

Table 3. Sociodemographic characteristics of 4th year medical students.

Respondents' Sociodemographic Profile	N=150	
	no	%
Sex		
Female	87	58.00
Male	63	42.00
Nationality		
Filipino	149	99.33
Non-Filipino	1	0.67
Tagalog Fluency		
Fluent	84	56.00
Not Fluent	66	44.00
Pre-Medical Degrees		
Healthcare-related	127	84.67
Non-healthcare	23	15.33
Natural and Social Sciences	21	
Others	2	
Experience in telemedicine		
No experience/Novice	79	52.67
With previous experience	71	47.33

of 5.38 for the perception over-all score tells us how spread out the data are from the mean and thus, more varied compared to the attitude and willingness scores. The lowest score for perception is 42.00. The highest perception score among 4th year medical students is 71. It must be recalled that the perfect score for perception is 75, and the higher the score the better the perception towards the telemedicine program. The top three statements where the respondents mostly agreed upon in perception in regards to the advantages and disadvantages in the program were the following: The program could provide easy access to health care for patients; CIM CMSS – DOH Telemedicine enables adoption of technology in healthcare; Preventive Medicine is practiced in the CIM CMSS – DOH Telemedicine Program.

The lowest score for attitude is 17.00. The highest perception score among 4th year medical students is 30. It must be recalled that the perfect score for attitude is 30, and the higher the score the better the attitude towards CIM CMSS - DOH telemedicine program. The top three statements were the respondents mostly agreed upon in attitude towards the program were the following: I am careful in prescribing medications and medical advices to my patients in telemedicine; I feel the need to evaluate the appropriateness and safety of using telemedicine depending on patients' needs; I feel the need to take appropriate steps to overcome limitations in the use of telemedicine.

The lowest score for willingness is 15.00. The highest perception score among 4th year medical students is 35. It must be recalled that the perfect score for willingness is 35, and the higher the score the better the willingness on the usage towards CIM CMSS - DOH telemedicine program. The top three statements where the respondents mostly agreed upon in their willingness towards the program were the following: I am willing to learn and improve my knowledge and skills in telemedicine; I am

willing to support ongoing refinement on telemedicine technologies; I am willing to contribute to the development of clinical and technical standards of telemedicine programs.

Table 4 presents the results when testing perception, attitude and willingness score differences between groups under various profile characteristics.

Upon comparing mean perception scores of male and female respondents, the p-value (0.267) is greater than the significance level. This means that when it comes to perception scores, there was not enough evidence to conclude that the difference between male and female respondents is statistically significant. Female and male respondents therefore do not differ significantly in terms of their mean perception scores. The same can be said when considering Tagalog fluency (p-value=0.061); pre-medical degrees (0.942); and experience in telemedicine (0.151). The respective groups under these variables do not differ significantly in terms of mean perception scores.

When comparing mean attitude scores of male and female respondents (p-value=0.179); those with healthcare-related and those with non-healthcare pre-med degrees (0.051); and those with and without experience in telemedicine (0.218), all p-values are greater than the significance level (0.05). The mean attitude scores therefore do not differ significantly within groups under sex, pre-medical degrees and experience in telemedicine profile variables. However, those who were fluent in Tagalog and those who were not, differed significantly in terms of their mean attitude scores (p-value=0.008). Fourth year medical students who declared to be fluent in Tagalog have a significantly higher mean score in terms of their attitudes towards the telemedicine program.

Thirdly, with p-value greater than the significance level, there is no significant difference in mean willingness scores between sexes (0.532). The same can be said for groups under Tagalog fluency (p-value=0.061); pre-medical degrees (0.062); and experience in

Table 4. Comparison of perception, attitude and willingness scores among respondents' characteristics.

Variables	Computed Values	p-Value	Interpretation
<i>Perception Score</i>			
Sex	Female $\mu_1=57.38$; Male $\mu_2=56.35^a$	0.267	No significant difference
Tagalog Fluency	Fluent $\mu_1=57.68$; Not fluent $\mu_2=56.02^a$	0.061	No significant difference
Pre-Medical Degrees	Healthcare $\mu_1=56.96$; Non-healthcare $\mu_2=56.87^a$	0.942	No significant difference
Experience in telemedicine	Novice $\mu_1=56.34$; With previous $\mu_2=57.62^a$	0.151	No significant difference
<i>Attitude Score</i>			
Sex	Female $\mu_1=23.23$; Male $\mu_2=23.75^a$	0.179	No significant difference
Tagalog Fluency	Fluent $\mu_1=23.88$; Not fluent $\mu_2=22.89^a$	0.008	Significant difference
Pre-Medical Degrees	Healthcare $\mu_1=23.31$; Non-healthcare $\mu_2=24.22^a$	0.051	No significant difference
Experience in telemedicine	Novice $\mu_1=23.23$; With previous $\mu_2=23.69^a$	0.218	No significant difference
<i>Willingness</i>			
Sex	Female $\mu_1=29.71$; Male $\mu_2=30.06^a$	0.532	No significant difference
Tagalog Fluency	Fluent $\mu_1=30.32$; Not fluent $\mu_2=29.27^a$	0.061	No significant difference
Pre-Medical Degrees	Healthcare $\mu_1=29.65$; Non-healthcare $\mu_2=31.00^a$	0.062	No significant difference
Experience in telemedicine	Novice $\mu_1=29.67$; With previous $\mu_2=30.07^a$	0.478	No significant difference

^a Mean values of scores; Comparison done with 2-Sample t-Test; significant at <0.05

telemedicine (0.478). There was not enough evidence to conclude that the differences between the respective groups under these variables differ significantly in terms of mean willingness scores.

Table 5 shows the results when testing the relationship between perception and attitude scores, as well as perception and willingness scores. Since the p-value for perception and attitude score (<0.001) is lesser than the significance level (0.05), there is enough evidence to conclude that the respondents' perception scores were associated with their attitude scores. Also, a computed value (Pearson's Rho) of 0.491 indicates that a positive linear correlation existed between the two variables. This means that higher perception scores are associated with higher attitude scores. Furthermore, linear regression analysis confirmed that perception score was indeed a significant predictor of attitude score (p-value of <0.001). The generated equation describes the relationship between these two variables—the coefficient for perception is 0.2064 which indicates that for every additional point in perception score one can expect the attitude score to increase by an average of 0.2064 points. Simply put, higher perception scores are associated with higher attitude scores. It must be noted however that this correlation does not necessarily imply a causal relationship (cause and effect) between the two.

Similarly, the p-value for perception and willingness score (<0.001) is lesser than the significance level (0.05). The respondents' perception score is significantly associated with their willingness score. Like the above, a computed value (Pearson's Rho) of 0.508 indicates that a positive linear correlation exists between the two variables. This also means that higher perception scores are associated with higher willingness scores. In addition, linear regression analysis indicates that perception score is also a significant predictor of willingness score (p-value of <0.001). The generated equation in Table 5 describes the relationship between these two variables. The coefficient for perception is 0.3216 which indicates that for every additional point in perception score one can expect the willingness score to increase by an average of 0.3216 points. Again, it must be noted that this correlation does not necessarily imply a causal relationship between these two.

DISCUSSION

The results of the study demonstrated that fourth year medical students still need to increase their knowledge on telemedicine in order

to improve their perception as shown by their perception scoring. It was relevant to note that the respondents would have had a better attitude towards the incorporation of telemedicine to their training as well as their willingness to learn more about it if their perception about the program was increased. It indicated a promising response for the outcome of the telemedicine program during and after the pandemic with higher degree of willingness to inculcate such an approach to their future practice of medicine.

According to Hayes, et al. 2020, which developed and evaluated a model wherein family medicine clerks' learning objectives were met via telemedicine clinical instruction, it was reported that students had a positive response to it since they felt that they made a difference during the pandemic and the faculty in turn felt that the students were helpful and they were able to provide meaningful clinical instruction. The study revealed that family medicine clerkships can be successfully delivered using telemedicine together with remote learning techniques and if social distancing precautions continue, this can be used to continue medical education and provide medical care.⁷ According to Dey and Bhattacharya, 2016, amidst all the students that they have studied, most students have heard about telemedicine, but almost a third do not know its application. Around seventy percent think that telemedicine has beneficial effects such as reduced cost of healthcare delivery and improved access to health services.⁸ It was reported that around fifty percent think that it can be used as a complementary tool to traditional methods and more than seventy-five were willing to use it in the future.⁸

In the study done by Kopp, et al., 2021, third year medical students were given the opportunity to join inpatient e-Consult teams. The students' experiences were largely positive with most of them strongly agreeing that the attending consultants promoted interactive and engaged learning and that the experience helped to expand their knowledge about consultant roles. They expressed that they would want to participate again if given the opportunity. The faculty was also largely positive about the experience with most agreeing or strongly agreeing with the importance of teaching medical students about telehealth. Both students and faculty agreed that teaching was a strength in the program whereas lack of in-person contact was a challenge.²

As shown by the respondents' top three statements in perception, attitude and willingness, it was evident that they see the importance of telemedicine especially in providing easy access to health care and

Table 5. Relationship between perception, attitude and willingness.

Variables	Computed Values	p-Value	Interpretation
Perception and Attitude	0.491 ^b	<0.001	Significant relationship
Overall Attitude Score = 11.69 + 0.2064 Perception Score ^c		<0.001	Significant relationship
Perception and Willingness	0.508 ^b	<0.001	Significant relationship
Overall Willingness Score = 11.55 + 0.3216 Perception Score ^c		<0.001	Significant relationship

^b Pearson's rho; value computed using Pearson Correlation; significant at <0.05

^c Regression equation computed using Linear Regression Analysis; significant at <0.05

practice preventive medicine as well as being careful in giving out appropriate treatments to their patients and honing their clinical eye. They were also willing to adapt within themselves the skills harnessed and develop further the program. According to Darnton, et al. 2020, remotely supervised medical students at home undertaking remote consultations with patients can be acceptable and educationally valuable. With appropriate preparation and supervision, students at home can be trusted to consult remotely with patients. However, one problem that was seen was the impact of unstable internet connectivity which was the main potential disadvantage and limitation of this study. They felt the online platform was a useful way to interact with patients, but they had frustrations with technical difficulties. It was also noted in this study that language barrier pertaining to Tagalog fluency affected the attitude in using the platform. Better language proficiency could boost their confidence in handling calls and patient interaction leading to better attitude scores. According to Atthami, et al. low physician communication skills could really be seen as a barrier in telemedicine.

The study also showed that increased perception also increases their attitude and willingness in using the program. Students overall found the telemedicine sessions helpful for refining their history-taking skills and that the knowledge gained would be helpful in their future practices. Similar findings by Martinez, et al, 2020, showed that medical students expressed a greater appreciation for the ability to perform an in-person physical examination due to this experience. They found out that telemedicine gave them an opportunity to refine their clinical skills while introducing a skill that will be commonplace in the post-pandemic environment. This could be adopted not only during a time of necessary distance learning but may also be continued as in-person education resumes in the future.⁹

Telemedicine's specific educational goals can also be incorporated into the curricula and integrated with existing clinical experiences.¹⁰ It is important to train future providers to use these technologies and provide these modes of care and let them learn to deal with the ethical, legal and regulatory implications of this new technology. Physicians must not only be trained to use telemedicine but also learn how to do so professionally, safely and in an evidenced manner.¹⁰

CONCLUSION AND RECOMMENDATION

CIM CMSS – DOH telemedicine program was able to bridge the gap brought about by the pandemic with medical education in the community medicine rotation. Despite being done online, the program has honed the students' skills in history taking, diagnosis and treatment of patients. Fluency in the chosen language of the patient could boost the students' confidence in handling calls thereby causing an increase in the attitude scores towards the telemedicine program. A positive linear correlation exists between the respondents' perception scores and attitude scores, the same is true for perception scores and willingness scores which is ideal. In the sampled population, better perception towards the CIM CMSS - DOH telemedicine program usually indicates better attitude and willingness.

Recommendations of the telemedicine program can be done through assessment through a satisfaction survey for both provider and

recipient in terms of primary care attributes namely comprehensive, continuous, first contact (or accessible), and coordinated care. There is also a need to assess barriers such as technical problems such as internet connectivity and availability of electrical power to improve the infrastructure. Further studies can also be done to assess diagnostic accuracy achieved by the system as well as its impact on patient referrals and outcome. All these studies can be done to further improve the use of telemedicine in health service delivery especially in geographically isolated areas.

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