



Original

Assessment of Awareness, Knowledge and Perspective towards Telemedicine among Medical Students in India

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Abstract

Background: There have been significant developments in the field of technology in recent times with telemedicine standing out as a transformative tool in patient-centered healthcare delivery, potentially revolutionizing how we diagnose, manage, and create future treatment plans for chronic diseases. This study assessed the awareness, knowledge, and perspective of medical students (MBBS) about Telemedicine in a private medical college in Pune, India.

Method: Using a cross-sectional design, the present study effectively employed a quantitative approach through a questionnaire-based survey. Data from 259 medical students from a private medical college in Pune, India were collected; including both males and females over the age of 18. The data was collected and statistically analysed using SPSS software version 29 and the chi-square test was used.

Result: The analysis of the collected data showed that 72.2% of male students presented with average knowledge about telemedicine, compared to 67% of female students, and this difference was found to be statistically significant. A maximum of 80.6% of students were aware that telemedicine technology has been used during COVID-19 to provide the best medical practices. 47% of medical students strongly agreed that telemedicine should be incorporated into their curriculum, out of which 58% had average knowledge about telemedicine.

Conclusion: While the use of telemedicine is common in many countries, the results of the current study showed that the medical student's knowledge of telemedicine technology was limited. The study suggests that more education and clinical exposure to telemedicine should be included in the medical school's curriculum.

Keywords: Telemedicine, Medical students, India, Knowledge, Awareness.



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Introduction

The World Health Organization has defined telemedicine as providing health services by all health professionals who use information and communication technologies to exchange accurate information for diagnosing, treating, and preventing diseases; research and evaluation; and continuous training and monitoring of health professionals. These all serve to improve and promote the health of individuals and communities.¹ The coronavirus disease (COVID-19) pandemic has caused widespread disruption of undergraduate surgical education worldwide.² During this time, all of us have come closer to technology in terms of connecting to people and even in terms of education.² This fast-moving world is developing a lot in terms of technology either in Software or Machinery. Information Technology sectors are not only in software companies and businesses but also in the medical field of telemedicine.³ Looking at the shift that it has offered in the past few years to doctors and patients, it is convinced to be the coming Era. It has proved to be a convenient and safer choice during the massive and deadly Pandemic COVID-19 the world went through two years.⁴

Health-care delivery follows a three-tier system, and health is the primary responsibility of the state.⁵ There is a difference in quality and accessibility to health care between urban and rural regions. Many regions in India are underdeveloped in terms of infrastructure and basic amenities. Due to a lack of health care and other daily needs, people need to travel to urban areas.⁶ The gap in healthcare between rural and urban areas can be effectively closed by embracing telemedicine technology and integrating it into the existing healthcare system.³ Establishing telecommunications infrastructure efficiently connects medical specialists with suburban and rural areas in India, ensuring that quality healthcare is accessible to all.⁷ Telemedicine and telehealth services are rapidly advancing to provide efficient and cost-effective healthcare, particularly during the current COVID-19 pandemic.⁸ Telemedicine enables real-time interactive communication between patients and physicians at distant sites, while telehealth specifically involves using technology to provide access to healthcare services across distances.

Telehealth is a broad concept that encompasses the use of technology to collect and transmit patient data, including telephones, email, and remote patient monitoring devices.⁹ It is used for providing health education or ancillary healthcare services. However, telemedicine has not been widely implemented due to strict regulatory laws and a lack of supportive payment

structures. The government and private sectors have wholeheartedly engaged in and made significant contributions to telemedicine activities. Telemedicine has received valuable support from the Indian Space Research Organization and the Department of Information Technology and has been effectively implemented through the state government.¹⁰ Several leading corporate hospitals have launched their telemedicine networks. One notable example is the Apollo Telemedicine Networking Foundation, which initiated its telemedicine operations in January 2000.¹¹

India started developing telemedicine facilities two decades back. From 2003 to 2004, numerous telemedicine nodes were established nationwide.⁹ Further, in 2009, the National Rural Telemedicine Network (NRTN) and National Medical College Network (NMCN) were conceived and started in 2012–2013.¹² The National Knowledge Network (NKN), another initiative by the Government of India, was brought up to connect all academic institutions in the country. The aim is to integrate with the global scientific community. As of now, NKN has already interconnected 831 institutions, including 151 medical institutions.

Several studies have identified various barriers to telemedicine adoption and successful implementation, including those related to technology, legal and national policy, healthcare professional resistance, staff training, reimbursement policy, patient participation, and process concerns.^{13,14,15,16} The flexibilities implemented during the pandemic are being considered for permanent adoption nationwide. While some policies reducing telemedicine security measures may be reversed, there is an ongoing debate at the federal and state levels regarding the removal of reimbursement for audio-only services.¹⁷ Funders and practitioners are also exploring interventions to bridge the digital divide, expand telehealth access, and enhance its quality for underserved patients.¹⁸

There are very scanty studies¹⁹ assessing the knowledge of Telemedicine among Medical students in India. Against this background, the current study aimed to evaluate medical students' knowledge, awareness, and attitude towards Telemedicine in Pune. The study outcomes will enable us to know the deficits among medical students that may contribute to the underutilization of telemedicine services.

The current study assessed the awareness, knowledge, and perspective of medical students (MBBS) about Telemedicine in a private medical college in Pune, India

Method

Study design

An observational, cross-sectional study was done to assess the awareness, knowledge and perspective of MBBS medical students about telemedicine in India, Pune.

Sample size estimation

The sample size for the study was calculated by using 95% confidence interval (CI), and a proportion of telemedicine knowledge and attitude of 50% since there is no previous study done in the same population in this country, with an absolute precision to be 6.5. Accordingly, the sample size was calculated as 228. A total 259 students participated in the present study.

Study setting and study population

MBBS students from a private medical college above 18 years of age and willing to participate were included in the study.

Study period

The study period was 1st August 2022 to September 2022.

Data collection tool

A pre-designed, pre-tested, semi-structured questionnaire was used for data collection. The questionnaire was developed in English and validated. For measurement four properties were assessed; internal consistency, content validity, structural validity and construct validity. The questionnaire also consisted of multiple-choice questions.

The five sections of questionnaires are as follows:

- Socio-demographic background: It will include participants' age, gender, etc
- General information about Telemedicine
- Awareness about Telemedicine
- Knowledge about Telemedicine
- Perspective about Telemedicine

There were six questions of Knowledge about Telemedicine. Students were categorized as "good knowledge" if they answered four or more questions correctly. In addition, students were categorized as having "average knowledge" if they answered three and if the students answered less than three questions correctly then it was categorized as "poor knowledge"

Ethical permission

Institutional Ethics Committee Approval was obtained. Before beginning the study, the study procedure was explained to the participants and informed consent was taken from them. The respondents were assured that

their confidentiality would be maintained, and ethical principles were followed. The questionnaire was developed in English. The data collection tool was prepared by using the Google survey tool (Google form) and the generated link was shared with study participants via mail, WhatsApp and Facebook. For those who did not have access to an online platform, interviews were taken by the data collector.

Data collection method

The survey was conducted via an online platform through Google Forms with the permission of The Principal of the college. The data collector had sent survey invitations containing general information about the survey, including its purpose and consent statement via e-mail or text messages to registered who met the inclusion criteria. Each participant was allowed to answer the survey only once to avoid duplication. After the data collection, Microsoft Excel was used for data cleaning.

Data analysis

The data was analysed using Statistical Package for Social Sciences (SPSS) version 29. The results were presented in tabular and graphic format. For qualitative data various rates, ratios, and percentages (%) were calculated. For quantitative data the mean SD, mean, etc. was calculated. The knowledge score was calculated for each section. The chi-square test was applied to test the association between knowledge categories with awareness and perspective about Telemedicine in medical students. Throughout results, 95% confidence interval will be used and a p-value < 0.05 considered a statistically significant.

Results

The Association of General Information about Telemedicine with the Knowledge Category is shown in Table 1. A total of 259 medical students participated in the survey, with females making up the majority at 52.89%, followed by males at 45.9%. The study showed that 72.2% of male students presented with average knowledge about telemedicine, compared to 67% of female students, and this difference was found to be statistically significant. The students who were aware of telemedicine had a statistically significant average knowledge of 71.22% about telemedicine.

It was interesting to note that medical students who have attended any formal telemedicine session had an average knowledge level of 69.8%, which is statistically significant. This indicates the positive impact of formal sessions on enhancing students' understanding of Telemedicine.

It has been observed that students from colleges with a telemedicine unit possess an average knowledge of 81.4% in telemedicine, which is statistically significant. Those students who were willing to attend a training program to enhance their knowledge of telemedicine had an average understanding of 69.4% regarding telemedicine, which is statistically significant.

Medical students who were familiar with the latest Telemedicine guidelines achieved an impressive average knowledge score of 72.7%, which was a statistically significant accomplishment. Maximum students, 80.6%, were aware that Telemedicine technology was used during COVID-19 to provide best medical practices (Table 2).

Table 3 shows the association of perspective about Telemedicine with the Knowledge category. 47% of medical students strongly agreed that telemedicine should be incorporated into their curriculum, out of which 58% had average knowledge about telemedicine. We also observed that 21% strongly agreed with the implementation of Telemedicine in India. Of those, 43% had an average knowledge score, which is statistically significant. We could also see that 35% agreed that there would be a loss of personal touch for patients, out of which 56% had a statistically significant average knowledge score.

Discussion

The purpose of the current study is to assess the knowledge, perception, and willingness of medical students toward telemedicine. A total of 259 medical students participated in the present study.

Due to the COVID-19 pandemic, patient visits to hospitals are restricted unless it's an emergency. Telemedicine has the power to enhance doctor-patient interactions, promote health, and improve healthcare access in remote areas. This approach can alleviate social isolation, eliminate long wait times for healthcare services, and contribute to growing patient numbers. Successful adoption of telemedicine in healthcare depends largely on healthcare professionals' knowledge and attitude toward patients' acceptance of the technology. Successful adoption of telemedicine in healthcare depends largely on healthcare professionals' knowledge and attitude toward patients' acceptance of the technology.

The study revealed that the majority that is 81% of medical students heard about telemedicine, and 72% of the students attended telemedicine-related sessions. Our

study findings related to knowledge are inconsistent with the findings of other studies, where only 14.7% could describe telemedicine and its use correctly.²⁰ A study conducted in northern Iran among 532 clinicians found that the vast majority of their study participants (96.1%) had insufficient knowledge of telemedicine.²¹ Another study conducted in Puducherry, India, among 120 professionals at a tertiary hospital also showed similar results. It was found that 59% had insufficient knowledge about telemedicine.²² Due to limited exposure to telemedicine applications in their courses and the early stages of telemedicine adoption in the country, there is a lack of awareness and knowledge related to telemedicine.

In Kunwar et al.'s study,²³ although many students had previously been exposed to the concept of telemedicine, they had not undergone any formal telemedicine training. As a result, they requested its integration into their curriculum, which contrasts with our study's findings. Though telemedicine has been implemented in India by law since March 25, 2020, based on our study, one could perceive lots of challenges such as a lack of understanding, awareness, communication, and trust in technology. Moser et al.²⁴ claimed that 75% of students believed they would benefit from teleteaching or telelearning, which aligns with our study results. In Kunwar et al.'s study,²³ 77.4% of students declared they were familiar with the term "telemedicine" and it was going with our study results.

The exposure of healthcare students to telemedicine in India is limited compared to other countries, which could be the main reason for this. The present study reveals important information about the knowledge, perception, and willingness on the part of healthcare students, who are expected to be the future of the healthcare sector and shoulder the responsibility of the widespread adoption of telemedicine. Even though telemedicine has become a part of the medical act, it is suggested that, before implementation, it is essential to increase user's knowledge of the technology and illustrate its capabilities and benefits. The relevance of telemedicine for improving access to care was acknowledged by 82.8% of students and residents in a study done in French Medical students.²⁵ Enhanced knowledge and clear perceptions of technology will help them to accept it. This can be accomplished by integrating telemedicine into the student curriculum and providing them with training programs. 143 doctors from 14 different hospitals in India agreed that telemedicine is important and requires proper hospital training programs.¹⁹

A training intervention that was carried out among staff nurses for telemedicine in Bengaluru proved that this is an effective method to increase awareness toward telemedicine and increase adoption.²⁶ This is the right time, as the attitude and perception of physicians and also patients toward telemedicine and the adoption of technology are changing due to the present scenario of COVID-19. Recent article regarding the use of telemedicine in ophthalmology stand as a testimony to this.²⁷

Implications of the findings of this study

The pandemic has sped up the move to telemedicine and created opportunities for medical schools to prepare students for this transition. Incorporating telemedicine into medical school curricula will expose medical students to relevant telemedicine technologies and increase their understanding of the complex ethical, regulatory, and legal issues related to such cases.

Strengths and Limitations of the Study

The main limitation of the study is that it was based on a larger population. It would be more beneficial and applicable to include a larger and more diverse sample of healthcare students from various regions. Nevertheless, as such studies related to knowledge, perception, and willingness among healthcare students are very less, this study is expected to contribute to closing the gap. Although medical students showed enthusiasm for the widespread use of telemedicine, they demonstrated only average levels of knowledge about it. These findings emphasize the need for health and education policymakers to take responsibility for training and empowering medical students in digital health and telemedicine literacy, as they are key contributors to public health.

Conclusion

While the use of telemedicine is common in many countries, the results of the current study showed that the medical student's knowledge of telemedicine technology was limited. The study suggests that more education and clinical exposure to telemedicine should be included in the medical school's curriculum. Cost and feasibility are the issues that current healthcare providers who are using telemedicine are facing; other challenges are the lack of organization, technical skills, internet infrastructure or telemedicine equipment, and inadequate financial support. Additionally, Telemedicine users are concerned about ethical issues, patients' data, and privacy. More analysis regarding the feasibility and cost-effectiveness of increasing Telemedicine training among medical students needs to be addressed in future studies.

Declarations

Ethical Consideration: Institutional Ethics Committee Approval was obtained. Before beginning the study, the study procedure was explained to the participants and informed consent was taken from them. The respondents were assured that their confidentiality would be maintained, and ethical principles were followed.

Authors' Contribution: Study conception and design: Dr. Mahajan and Kodre, data collection: Kodre; analysis and interpretation of results: Dr. Deshmukh, Dr. Gothankar and Dr. Adhya; draft manuscript preparation: Dr. Mahajan, Dr. Gothankar. All authors reviewed the results and approved the final version of the manuscript

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References

1. Wells D, DeNiro KL, Ramsey A. Telemedicine in Drug Hypersensitivity. *Immunol Allergy Clin North Am.* 2022;42(2):323–33.
2. Ray I, Agarwal V, Agarwal T, Pande A. Medical Student's Perspective Regarding Undergraduate Surgical Education with Special Reference to Pandemic. *Indian Journal of Surgery.* 2022;84(1):104–8.
3. Haleem A, Javaid M, Singh RP, Suman R. Telemedicine for healthcare: Capabilities, features, barriers, and applications. *Sensors International.* 2021;2:100117. Doi: <https://doi.org/10.1016/j.sintl.2021.100117>
4. Omboni S, Padwal RS, Alessa T, Benczúr B, Green BB, Hubbard I, et al. The worldwide impact of telemedicine during COVID-19: current evidence and recommendations for the future. *Connected Health.* 2022;1:7. Doi: <https://doi.org/10.20517/2Fch.2021.03>
5. Kumar A. The Transformation of The Indian Healthcare System. *Cureus.* 2024;15(5). Doi: <https://doi.org/10.7759/2Fcureus.39079>
6. Krishna Nair J, Mishra P. Household basic amenities and female educational outcome: An exploration of complementarities in rural India. *J Clean Prod.* 2023;415:137439. <https://doi.org/10.1016/j.jclepro.2023.137439>
7. Maroju RG, Choudhari SG, Shaikh MK, Borkar SK, Mendhe H. Role of Telemedicine and Digital Technology in Public Health in India: A Narrative Review. *Cureus.* 2023;15(3) Doi: <https://doi.org/10.7759/2Fcureus.35986>

8. Kichloo A, Albosta M, Dettloff K, Wani F, El-Amir Z, Singh J, et al. Telemedicine, the current COVID-19 pandemic and the future: a narrative review and perspectives moving forward in the USA. *Fam Med Community Health*. 2020;8(3) <https://doi.org/10.1136%2Ffmch-2020-000530>
9. Board of Governors in supersession of the Medical Council of India Telemedicine Practice Guidelines Enabling Registered Medical Practitioners to Provide Healthcare Using Telemedicine. 2020;
10. Chellaiyan V, Nirupama A, Taneja N. Telemedicine in India: Where do we stand? *J Family Med Prim Care*. 2019;8(6):1872. Available from: <https://pubmed.ncbi.nlm.nih.gov/31334148/>
11. Acharya R, Rai J. Evaluation of patient and doctor perception toward the use of telemedicine in Apollo Tele Health Services, India. *J Family Med Prim Care* [Internet]. 2016;5(4):798. Available from: <https://pubmed.ncbi.nlm.nih.gov/28348994/>
12. Telemedicine Division, Mohfw, Govt. of India Joint Secretary : Dr. Vishwas Mehta, IAS. Available from <https://www.nhm.gov.in/images/pdf/Telemedicine/Telemedicine.pdf>
13. Fieux M, Duret S, Bawazeer N, Denoix L, Zaouche S, Tringali S. Telemedicine for ENT: Effect on quality of care during Covid-19 pandemic. *Eur Ann Otorhinolaryngol Head Neck Dis..* 2020;137(4):257–61.
14. Chang PJ, Jay GM, Kalpakjian C, Andrews C, Smith S. Patient and Provider-Reported Satisfaction of Cancer Rehabilitation Telemedicine Visits During the COVID-19 Pandemic. *PM R*. 2021;13(12):1362–8.
15. Duarte A, Gouveia e Melo R, Lopes A, Rato JP, Valente J, Pedro LM. Lessons Learned from the Impact of the COVID-19 Pandemic in a Vascular Surgery Department and Preparation for Future Outbreaks. *Ann Vasc Surg*. 2021;73:97–106.
16. Regelman MO, Conroy R, Gourgari E, Gupta A, Guttman-Bauman I, Heksch R, et al. Pediatric Endocrinology in the Time of COVID-19: Considerations for the Rapid Implementation of Telemedicine and Management of Pediatric Endocrine Conditions. *Horm Res Paediatr*. 2020;93(6):343–50.
17. Khodadad-Saryazdi A. Exploring the telemedicine implementation challenges through the process innovation approach: A case study research in the French healthcare sector. *Technovation*. 2021 ;107:102273. <https://doi.org/10.1016/j.technovation.2021.102273>
18. Anawade PA, Sharma D, Gahane S. A Comprehensive Review on Exploring the Impact of Telemedicine on Healthcare Accessibility. *Cureus* [Internet]. 2024;16(3).
19. Malhotra P, Ramachandran A, Chauhan R, Soni D, Garg N. Assessment of Knowledge, Perception, and Willingness of using Telemedicine among Medical and Allied Healthcare Students Studying in Private Institutions. *Telehealth and Medicine Today*. 2020;5(4). <https://doi.org/10.30953/tmt.v5.228>
20. Bhattacharya S, Dey I. Knowledge and Perception of Telemedicine among Post Graduate Students of a Tertiary Hospital Of West Bengal. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*. 2016;15(6):8–11.
21. Sheikhtaheri A, Sarbaz M, Kimiafar K, Ghayour M, Rahmani S. Awareness, Attitude and Readiness of Clinical Staff Towards Telemedicine: A Study in Mashhad, Iran. *Stud Health Technol Inform*. 2016;228:142–6.
22. Zayapragassarazan Z, Kumar S. Awareness, Knowledge, Attitude and Skills of Telemedicine among Health Professional Faculty Working in Teaching Hospitals. *J Clin Diagn Res*. 2016;10(3):JC01–4.
23. Kunwar B, Dhungana A, Aryal B, Gaire A, Adhikari AB, Ojha R. Cross-sectional study on knowledge and attitude of telemedicine in medical students of Nepal. *Health Sci Rep*. 2022;5(2). <https://doi.org/10.1002/hsr2.532>
24. Ghaddaripouri K, Mousavi Baigi SF, Abbaszadeh A, Mazaheri Habibi MR. Attitude, awareness, and knowledge of telemedicine among medical students: A systematic review of cross-sectional studies. *Health Sci Rep*. 2023;6(3). <https://doi.org/10.1002/hsr2.1156>
25. Yaghobian S, Ohannessian R, Iampetro T, Riom I, Salles N, de Bustos EM, et al. Knowledge, attitudes and practices of telemedicine education and training of French medical students and residents. *J Telemed Telecare* [Internet]. 2022;28(4):248–57.
26. Khan I, Dhanalakshami MK, Naveena JH. Effectiveness of SIM on Knowledge Regarding Telemedicine among the Staff Nurses. *International Journal of Nursing Critical Care* [Internet]. 2015 Dec 24 [cited 2024;1(2):14–9.
27. Assaye BT, Belachew M, Worku A, Birhanu S, Sisay A, Kassaw M, et al. Perception towards the implementation of telemedicine during COVID-19 pandemic: a cross-sectional study. *BMC Health Serv Res*. 2023;23(1):1–10.



Table 1. Association of General Information on Telemedicine and Knowledge Category

SN	General Information about Telemedicine		Knowledge Category (%)			Total (%)	Chi-Square	p-value
			Good	Average	Poor			
1	MBBS student	1 st year	8(17.4)	34(74)	4(8.6)	46(17.7)	2.72	0.841
		2 nd year	11(16.41)	46(68.6)	10(15)	67 (25.8)		
		3 rd year	18(16.36)	76(69.09)	16(14.54)	110(42.4)		
		4 th year	9(8.18)	22(20)	5(4.54)	36(13.8)		
2.	Gender	Male	20(16.8)	86(72.2)	13(11)	119(45.9)	20.24	<0.001
		Female	26(19)	92(67)	19(13.8)	137(52.8)		
3.	Heard about Telemedicine	Yes	46(21.7)	151(71.22)	15(7)	212(81.8)	68.33	<0.001
		No	0(0)	6(33.3)	12(66.6)	18(7)		
		May be	0(0)	14(63.6)	8(36.3)	22(8.4)		
		Don't know	0(0)	7(100)	0(0)	7(2.7)		
4.	Attended any formal session on Telemedicine	Yes	45(24)	130(70)	11(6)	186(72)	43.71	<0.001
		No	1(1.3)	48(65.7)	24(33)	73(28.1)		
5.	Telemedicine unit present in college/hospital	Yes	18(13)	114(81.4)	8(5.7)	140(54)	93.26	<0.001
		No	27(53)	22(43.1)	2(4)	51(19.6)		
		May be	0(0)	16(61.5)	10(38.4)	26(10)		
		Don't know	1(2.2)	27(61.3)	16(36.3)	44(17)		
6.	Willing to attend training program on Telemedicine	Yes	42(20.3)	143(69.4)	21(10.1)	206(79.5)	19.46	<0.001
		No	4(14.8)	19(70.3)	4(14.8)	27(10.4)		
		May be	0(0)	16(61.5)	10(38.4)	26(10)		

Table 2: Association of awareness about Telemedicine with Knowledge category

SN	Awareness about Telemedicine		Knowledge Category (%)			Total (%)	Chi-Square	p-value
			Good	Average	Poor			
1	Familiar with recent released guidelines of telemedicine in the country	Yes	39(23)	123(72.7)	7(4.1)	169(65.2)	45.86	<0.001
		No	6(10)	40(63.4)	17(30)	63(24.3)		
		May be	0(0)	3(42.8)	4(57.1)	7(2.7)		
		Don't know	1(5)	12(60)	7(35)	20(7.7)		
2.	Telemedicine used during COVID 19 time	Yes	43(20.5)	148(70.8)	18(8.6)	209(80.6)	34.25	<0.001
		No	3(12.5)	10(41.6)	11(46)	24(9.2)		
		May be	0(0)	9(69.2)	4(30.7)	13(5.01)		
		Don't know	0(0)	11(84.6)	2(15.3)	13(5.01)		

Table 3. Association of Perspective about Telemedicine with Knowledge Category

SN	Perspective about Telemedicine		Knowledge Category (%)			Total (%)	Chi-Square	p-value
			Good	Average	Poor			
1	Feel comfortable being treated by telemedicine	Yes	45(20)	161(71)	21(9.2)	227(87.6)	30.4	<0.001
		No	1(3.1)	17(53.1)	14(14.7)	32(12.3)		
2.	Would you as medical professionals suggest this to your relative	Yes	43(21.2)	145(71.7)	14(7)	202(78)	39.2	<0.001
		No	2(12.5)	7(43.7)	7(43.7)	16(6.1)		
3.	Telemedicine should be incorporated into the medical school curriculum	May be	1(2.43)	26(63.4)	14(34.1)	41(15.8)	39.08	<0.001
		Strongly agree	39(32)	71(58)	12(10)	122(47)		
		Agree	2(3.2)	45(72.5)	15(24.1)	62(24)		
		Neutral	5(7)	59(83)	7(9.9)	71(27.4)		
		Disagree	0(0)	2(66.7)	1(33.4)	3(1.15)		
4.	Telemedicine saves time and money in obtaining an expert opinion	Strongly disagree	0(0)	1(100)	0(0)	1(0.38)	68.89	<0.001
		Strongly agree	30(54.5)	24(43.6)	1(1.9)	55(21.23)		
		Agree	6(11)	39(71)	10(18.1)	55(21.23)		
		Neutral	6(6.1)	74(76.2)	17(17.5)	97(37.4)		
		Disagree	0(0)	7(77.8)	2(22.3)	9(3.47)		
5.	Telemedicine should be implemented in India	Strongly disagree	4(9.3)	34(79.06)	5(11.6)	43(16.6)	75.43	<0.001
		Strongly agree	31(56.3)	24(43.6)	0(0)	55(21)		
		Agree	4(6.77)	45(76.27)	10(17)	59(22.78)		
		Neutral	6(6.8)	65(74.7)	16(18.3)	87(33.5)		
		Disagree	0(0)	9(82)	2(18.1)	11(4.24)		
6.	You will be at a loss for the personal touch that patients have towards in Telemedicine	Strongly disagree	5(10.6)	35(74.4)	7(14.8)	47(18.1)	29.69	<0.001
		Strongly agree	4(12.5)	25(78.1)	3(9.3)	32(12.35)		
		Agree	30(32.2)	53(56.9)	10(10.7)	93(35.9)		
		Neutral	10(12)	61(73.4)	12(14.4)	83(32)		
		Disagree	0(0)	5(55.6)	4(44.5)	9(3.4)		
		Strongly disagree	2(4.7)	34(81)	6(14.2)	42(16.2)		