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Knowledge and Attitude Regarding Telemedicine Among Interns in Teritary Care Center, Kanyakumari District, A Cross Sectional Study

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Abstract
Telemedicine is an evolving mode of healthcare delivery that enables remote consultation using communication technology. With its growing role, especially post-pandemic, it's crucial that future physicians are well-informed and carry a positive outlook towards its use. To assess the knowledge and attitude toward telemedicine among medical interns of private medical college. A cross-sectional study was conducted among 190 medical interns using a validated, semi-structured questionnaire with 15 questions-7 assessing knowledge and 8 evaluating attitude. Data was collected via questionnaire and analyzed using SSPS version 20.0. Out of 190 interns, 58.4% demonstrated moderate knowledge (scores 4–5), while 21.1% showed good knowledge (scores 6-7). About 90% agreed that telemedicine improves healthcare accessibility, but only 83.2% knew that informed consent is mandatory. Positive attitude was found in 65.3% of participants, while 34.7% were either neutral or had concerns about reliability and ethics. Interns displayed moderate knowledge and a generally positive attitude toward telemedicine. However, critical gaps remain regarding legal and procedural understanding. Structured educational integration is recommended to improve preparedness.

INTRODUCTION

Telemedicine, the use of information and communication technologies to deliver healthcare services remotely, has emerged as a transformative force in modern medicine. Its potential to bridge geographical, logistical, and temporal gaps in care delivery has gained prominence, especially in the wake of the COVID-19 pandemic. In countries like India, where a significant portion of the population resides in rural and underserved areas, telemedicine offers a practical and scalable solution to longstanding issues of healthcare accessibility and equity[1].

Recognizing its importance, the Ministry of Health and Family Welfare (MoHFW), Government of India, released official telemedicine practice guidelines in March 2020. These guidelines outline the legal, ethical, and clinical framework for its implementation across various levels of the healthcare system. Despite its growing institutional acceptance, the successful integration of telemedicine into routine clinical practice depends heavily on the preparedness and receptivity of future healthcare professionals[3].

Medical interns, being at the cusp of independent clinical practice, represent a crucial target group for telemedicine education and orientation[6]. Their knowledge and attitude toward telemedicine will play a pivotal role in its ethical and effective utilization in the years to come. However, existing literature suggests variable levels of awareness and a lack of formal training among medical undergraduates regarding the principles and practice of telemedicine[4-7].

This study was conducted to assess the current level of knowledge and the prevailing attitude of medical interns toward telemedicine. To assess Knowledge and Attitude towards Telemedicine among interns.

MATERIALS AND METHODS

A cross-sectional study was conducted at Sree Mookambika Institute of Medical Sciences, Kulasekharam, located in Kanyakumari District, Tamil Nadu, South India. The study was carried out over a period of two months, from March to April 2025, and involved 190 MBBS interns from the institution. Interns who were present during the data collection period were included in the study, while those who were absent at the time of data collection were excluded.

Data Collection Process: Data collection began after obtaining informed consent from the participants. A pre-designed, pre-structured, validated questionnaire was used to collect data from the students. Questionnaire containing two sections carrying knowledge and attitude towards telemedicine was given. Sample size estimated as 190. Data was collected through Google Forms and analyzed using SSPS version 20.0.

RESULT AND DISCUSSIONS

Key findings are 90% knew telemedicine delivers remote healthcare, Only 83.2% were aware that informed consent is legally required, 38.9% wrongly believed that telemedicine can be used for all types of consultations.

The study revealed a generally positive outlook among participants toward telemedicine, with 72.5% viewing it as beneficial and 87.8% considering it essential for the future of medical practice. There was strong support for incorporating telemedicine into the medical curriculum (63.2%), and an overwhelming majority (95.3%) emphasized the need for proper training. Additionally, 72.7% believed that telemedicine could help reduce the workload on tertiary care centers. However, notable concerns were also expressed-90% of participants felt that telemedicine might compromise the doctor–patient relationship, and 85.2% were apprehensive about potential legal liabilities. Confidence levels were mixed, with only 52.3% of participants feeling confident in conducting teleconsultations, highlighting the need for targeted training and institutional support (Table 2).

To assess the level of knowledge regarding palliative care, a structured questionnaire comprising seven knowledge-based questions was administered to the study participants. Each correct response was awarded one point, resulting in a maximum possible score of 7. Based on their total scores, participants were categorized into three groups: those scoring 6 to 7 were considered to have good knowledge, those scoring between 4 and 5 were classified as having moderate knowledge, and those scoring below 4 were considered to have poor knowledge. Among the 190 interns surveyed, 40 interns (21.1%) demonstrated good knowledge, 111 interns (58.4%) had moderate knowledge, and 39 interns (20.5%) had poor knowledge. These findings indicate that while more than half of the participants had a moderate understanding of palliative care, only a small proportion exhibited high-level knowledge, highlighting the need for enhanced education and training in this domain.

The present study revealed that a majority of interns (58.4%) had moderate knowledge about telemedicine, while only 21.1% demonstrated good knowledge. Critical gaps were observed in understanding medico-legal aspects, such as the requirement of informed consent. Despite this, 65.3% of interns showed a positive attitude, indicating openness toward integrating telemedicine into future practice.

These findings are consistent with previous studies

Table 1. Knowledge regarding Telemedicine among interns

S. No.	Knowledge Question	Correct Responses (%)	Frequency
1	Telemedicine is the delivery of health care at a distance using ICT	67.4%	128
2	Telemedicine was introduced in India in the year	78.9%	150
3	Telemedicine can be delivered via	93.7%	177
4	Official telemedicine partner in India	74.7%	142
5	Telemedicine practice in India must be conducted by	98.9%	188
6	Telemedicine can be used for	53.7%	102
7	Obtaining informed consent in telemedicine	79.9%	151

Table 2: Attitude of Interns regarding telemedicine

S. No.	Attitude Statement	Strongly Agree N (%)	Agree N (%)	Neutral N (%)	Disagree N (%)	Strongly disagree N (%)
1	I believe telemedicine is a useful in delivering health care access and services	54(28.6)	83(43.9)	33(17.5)	19(10.1)	0
2	I believe telemedicine will play major role in the future of medical practice	73(38.4)	93(48.9)	19(10)	5(2.6)	0
3	I believe telemedicine compromises doctor patient relationship	64(33.7)	96(48.9)	23(12.1)	7(3.7)	0
4	I think telemedicine should be integrated into undergraduate medical curriculum	48(25.3)	85(44.7)	52(27.4)	5(2.6)	0
5	I believe telemedicine can help to reduce the workload in tertiary care centres	50(26.5)	108(57.1)	24(12.7)	7(3.7)	0
6	I feel confident in my ability to conduct a basic teleconsultation with patient	4(2.1)	40(21.1)	91(47.9)	55(28.9)	0
7	I feel that proper training is essential before allowing doctors to practice telemedicine	90(47.4)	79(41.6)	15(7.9)	6(3.2)	0
8	I am concerned about legal liabilities when using telemedicine	94(49.7)	67(35.4)	20(10.6)	8(4.2)	0

Table 3: Knowledge and attitude regarding telemedicine in interns

Domain	Criteria	Number of Interns	Percentage (%)
Knowledge	Good (Score 6–7 out of 7)	40	21.1%
	Moderate (Score 4–5 out of 7)	111	58.4%
	Poor (Score <4 out of 7)	39	20.5%
Attitude	Positive (=5 out of 8 items marked "Agree")	124	65.3%
	Neutral/Negative (<5 "Agree" responses)	66	34.7%

by Kumar *et al*. and Malhotra *et al*., which also reported favorable attitudes but inadequate training. A notable portion of interns remained uncertain about telemedicine fully replacing in-person consultations. Concerns regarding privacy, legal clarity, and clinical limitations may contribute to this hesitation[3].

Similarly, a study conducted by Singh et al. reported that while over 70% of medical undergraduates acknowledged telemedicine's potential to improve healthcare accessibility, only 28% felt adequately trained to use it confidently in clinical settings. This reinforces the current study's observation that positive perception does not necessarily translate into practical readiness.

The results underscore the need for structured telemedicine education in the medical curriculum. Hands-on exposure, ethical guidelines, and simulation-based training can help build competence and confidence among future healthcare providers.

CONCLUSION

Interns generally showed moderate knowledge and a positive attitude toward telemedicine. Despite its acknowledged benefits, confusion remains about regulatory requirements. Addressing these gaps through curricular inclusion is critical to ensure competent, ethical telemedicine delivery.

Limitations of the study:

- Single-center study limits generalizability
- Self-reported answers may carry response bias
- Does not evaluate actual skill or practical application

Recommendations:

1. Incorporate Telemedicine Training into Medical Curriculum: Medical colleges and teaching hospitals should integrate structured telemedicine training modules during undergraduate and

internship programs to enhance interns' knowledge and practical skills.
2. Conduct Regular Workshops and Hands-On Sessions: Organize periodic workshops, simulation exercises, and real-time telemedicine consultations to improve interns' confidence and competence in using telemedicine technologies.
3. Develop Clear Guidelines and Protocols: Institutions should establish standardized protocols and ethical guidelines for telemedicine consultations to ensure patient confidentiality, data security, and professional accountability.
4. Increase Access to Telemedicine Resources and Infrastructure: Improve availability of reliable internet connectivity, telemedicine software, and technical support in teaching hospitals to facilitate smooth telemedicine practice for interns.
5. Promote Awareness of Legal and Ethical Aspects: Educate interns on the legal, ethical, and privacy concerns related to telemedicine to foster responsible and compliant practice.
6. Encourage Research and Feedback Mechanisms: Encourage ongoing research to monitor the effectiveness of telemedicine education and gather intern and patient feedback to continually improve telemedicine services.

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