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ORIGINAL RESEARCH

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Assessing Knowledge, Attitudes and Practices of Health Professionals Regarding use of Telemedicine in Jhansi District, Uttar Pradesh, India

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ABSTRACT

INTRODUCTION: Telemedicine, the delivery of healthcare services remotely using communication technologies, has rapidly emerged as a transformative solution in the healthcare industry. The successful implementation of any new technology is influenced by several factors, including the knowledge and comprehension of the concept, acquired skills, attitudes towards technology, and the working environment of the professionals involved.

AIM: The main objective of this study was to assess the awareness, knowledge, attitude and skills of telemedicine among the health professionals working in various private and government teaching hospitals in Jhansi district of Uttar Pradesh, India.

MATERIALS AND METHOD: A cross-sectional survey was conducted among 110 healthcare professionals, including teaching faculties and practitioners from preclinical, para-clinical, and clinical departments in Jhansi district of Uttar Pradesh, India. A pre-validated self-administered questionnaire was used to assess the awareness, knowledge, attitude, and practice of telemedicine. Quantitative data was analyzed using descriptive statistics and the application of the t-test. The study provides valuable insights into the current state of telemedicine among healthcare professionals in the region.

RESULTS: The study found that among the respondents, 41% demonstrated good knowledge of telemedicine, while 35% had fair knowledge, and 24% lacked adequate knowledge. Regarding attitude, 39% exhibited a high attitude towards telemedicine, 31% had a moderate attitude, and 30% had a low attitude. In terms of practice, only 9% were skilfully practicing telemedicine on a regular basis, 35% were in learners or beginners stage of practice and 56% were unskilled and incapable of practicing telemedicine and handling related equipments.

CONCLUSION: The study findings indicate that while the respondents have limited experience and knowledge in telemedicine technology, a significant proportion of them exhibit a positive attitude towards telemedicine. It is imperative to prioritize the education and training of teaching faculty, practicing physicians, residents, medical students, and other healthcare professionals regarding telemedicine and its associated considerations.

KEYWORDS: Remote Health, Telehealth, Medicine.

INTRODUCTION

IT-enabled medical services, including telemedicine and e-health, have seen significant development in recent years, enabling long-distance healthcare support. These terms encompass various components of health information technology, such as tele-health, electronic medical records, and health-related education.[1] Telemedicine and e-health utilize electronic information and advanced telecommunication technologies to facilitate remote clinical healthcare, patient records, health education, public health, and health administration.[1,2] The World Health Organization defines e-health as the cost-effective utilization of information and communication technologies in supporting healthcare services, education, research, and health-related fields.[2]

E-health can be synchronous (real-time) or non-synchronous ("store and forward"), presenting a potential solution to address the scarcity of healthcare practitioners in developing countries.[2] However, the health sector has been less successful than other industries in harnessing the benefits of ICT applications.[3] The challenges faced in implementing e-health systems despite available literature are multifaceted. The successful integration of any new technology depends on factors such as professionals' knowledge, understanding, acquired skills, attitude, and the working environment.[3]

Telemedicine, being an emerging technology in the Indian health sector, necessitates a study to gauge the awareness and attitudes of healthcare professionals and patients towards its adoption.[4,5] To foster the implementation of telemedicine in India, it is crucial to assess the Knowledge, Attitude and Practice (KAP) of user groups.[6]

MATERIALS AND METHOD

This cross-sectional survey was conducted among diverse healthcare professionals, utilizing a sampling

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frame derived from a list of teaching and non teaching hospitals in and around Jhansi district of Uttar Pradesh. The study involved 110 volunteers from 10 hospitals who participated in the research.

To recruit participants, an email request was sent to 156 faculties, selected on the basis of availability. Out of the initial outreach, 136 faculties expressed their willingness to participate, and the questionnaire to assess Knowledge, Attitude, and Practice, along with an informed consent form, was then sent to them via email.

Ultimately, 110 complete and valid questionnaires were received from the respondents and were included in the analysis, adhering to the study objectives.

Section one of the questionnaire gathered participants' personal and professional background information, including name, age, sex, designation, computer knowledge, and subject expertise (pre-clinical, para-clinical, and clinical).

Section two consisted of 10 statements to assess participants' awareness of telemedicine. Responses were graded on a three-point scale: '0' for 'don't know,' '1' for 'heard of it,' and '2' for 'know about it.' Scores in this section ranged from a minimum of '0' to a maximum of '20.'

Section three assessed respondents' knowledge of telemedicine through 10 statements, to be answered with 'Yes' or 'No.' A score of '1' was assigned for 'Yes,' while '0' indicated 'No.' Scores in this section ranged from a minimum of '0' to a maximum of '10.'

Section four measured respondents' attitude towards telemedicine using 12 statements. Participants provided graded responses on a five-point Likert scale, ranging from '0' for 'strongly disagree' to '4' for 'strongly agree.' Scores in this section ranged from a minimum of '0' to a maximum of '48.'

Section five evaluated respondents' ICT skills and practice of the same through 12 statements. Graded responses on a four-point scale were assigned: '0' for 'not in practice','1' for 'learner,' '2' for 'mediocre,' and '3' for 'expert/ fluent practitioner'. Scores in this section ranged from a minimum of '0' to a maximum of '36.'

Section six provided an open-ended opportunity for respondents to share their opinions and provide additional comments related to the research topic.

Scoring: The raw scores for each section of the Knowledge, Attitude, and Practice (KAP) questionnaire were calculated. Additionally, the raw scores were converted to percentages. Based on the investigators' discretion, scores equal to or below 49% were classified as low, scores between 50% to 70% were considered average, and scores equal to or above 71% were categorized as high for KAP.

Quantitative data collected from respondents was entered into Microsoft Office Excel 2007. Descriptive statistics were computed for demographic characteristics and KAP, both and the t-test was applied. For the analysis of open-ended questions, content analysis was employed to categorize responses into three themes: observations by the authors, problems expressed by the respondents, and suggestions provided by the respondents.

RESULTS

The distribution of sub-samples included in the study is presented in the following statistics. Among the sample, 59% were male, while 41% were female. Government clinicians respondents constituted the largest proportion of the sample at 45%, followed by paraclinical respondents at 33%, and clinical respondents at 27%. Among the respondents, 78% were faculty members involved in teaching undergraduate medical students, while the remaining 22% were teachers engaged in postgraduate teaching within their respective specialties. The majority of the respondents fell within the age group of 30-40 years, comprising the highest percentage, followed by the 41-50 years age group, accounting for 36% of the sample. Respondents aged 51-60 years and above 60 years constituted 9% and 7% of the sample, respectively (Table 1).

The minimum and maximum scores (range) for each component of KAP were determined as follows: for 'Awareness,' the range was 13-20 out of a maximum score of 20; for 'Knowledge,' the range was 5-10 out of a maximum score of 10; for 'Attitude,' the range was 22-48 out of a maximum score of 48; and for 'Practice' range was between 12-36 out of a maximum score of 36 (Table 2).

The study assessed the levels of knowledge, attitude and practices among the sampled participants. The findings revealed that in terms of awareness, 12% of the respondents had a low level, 25% had an average level, and 63% had a high level of awareness regarding telemedicine.

Sample	n	%
Overall	110	100
Male	59	53
Female	41	37
Clinical	72	65.4
Paraclinical	33	30
Undergraduate teachers	78	70
Postgraduate teachers	22	20
Age 30-40 Years	53	48
Age 41-50 Years	40	36
Age 51-60 Years	7	16

Table 1. Demographic details of the study participants

Regarding knowledge, 24% of the respondents exhibited a low or below-average level of knowledge, 35% demonstrated an average or moderate level of knowledge, and 41% possessed a high or above-average level of knowledge concerning telemedicine (p=0.02), table 3.

Parameter	Knowledge (Maximum possible score= 10)	Attitude (Maximum possible score= 48)	Practice (Maximum possible score= 36)
Range	5-10	22-48	12-36

Table 2. Range of scores of the responses obtained

In relation to attitude, 30% of the respondents had a low or below-moderate level of attitude towards telemedicine, 31% held a moderate level of attitude, and 39% displayed a high level of attitude towards telemedicine (p=0.21). In terms of telemedicine practice, 56% of the respondents lacked adequate skills and weren't practicing the same, 25% possessed moderate skills, and only 19% demonstrated sufficient skills in the field of telemedicine to be practicing the same in clinics (p=.03) and is shown in table 3.

DISCUSSION

The results of this study are consistent with previous research on telemedicine awareness among healthcare professionals. Several studies conducted in India[7] and other regions[8,9] have also found that healthcare professionals have inadequate awareness, knowledge, attitude, and skills regarding telemedicine. Barton et al.[10] reported statistically significant differences in attitude, knowledge, and beliefs about telemedicine between specialist physicians who were users and non-users of telemedicine.

Similarly, a study conducted among Italian physicians reported that a majority had heard about telemedicine but considered it to be of limited interest.[11] These findings align with the present study, indicating the need for further awareness and education about telemedicine.

The findings of this study also support the role of teledentistry in dental education and emphasize the importance of developing knowledge, attitude, and skills among dental practitioners.[12,13]

Moreover, willingness to use telemedicine can be influenced by attitudes toward telemedicine itself, the patient-physician relationship, and the level of technology anxiety.[4,7]

Telemedicine inherently raises ethical concerns, particularly regarding the security and confidentiality of patient data.[14,15] To address these issues, it is crucial for healthcare professionals to have adequate knowledge and training in telemedicine ethics and medico-legal aspects.[16] This aligns with the sentiments expressed by the participants in our study.

In summary, these findings highlight the need for targeted interventions to improve awareness, knowledge, attitude, and skills related to telemedicine among healthcare professionals. Further research should explore effective strategies for enhancing telemedicine education and training to ensure its

Degree	Knowledge (n,%)			Attitude (n,%)			Practice (n,%)		
	Low	Average	High	Low	Average	High	Low	Average	High
Number	26	38	46	33	34	43	61	27	22
%	24	35	14	30	31	39	56	25	19
p-value	0.02*			0.21			.03*		

Table 3. Low, Average and High KAP scores attained by the study participants (NS: Non-Significant), significance of p value set at <.05

successful implementation in healthcare practice.

Limitations: This study was mostly subjected to faculty members and practitioners in selected medical colleges and hospitals in Jhansi District of Uttar Pradesh and was administered on the basis of convenience of the gathered contacts, hence the results cannot be attributed to the whole healthcare professional population.

CONCLUSION

Despite the limited awareness, knowledge, attitude, and practice of telemedicine among health professionals, a significant majority of them expressed a positive inclination towards telemedicine services. This highlights the urgency for improved dissemination of information regarding the latest research and advancements in telemedicine, as well as the need to enhance training workshops for health professionals and strengthen telemedicine infrastructure to expand access to underserved populations.

REFERENCES

1. Wootton R. Recent advances in telemedicine. British Medical Journal. 2001;323:557–60. PMC free article.
2. Idowu PA, Adagunodo ER, Idowu AO, et al. Electronic Referral System for Hospitals in Nigeria. Ife J Sci. 2004;6(2):161–62.
3. Abodunrin OL, Akande TM. Knowledge and Perception of e-Health and Telemedicine among Health Professionals in LAUTECH Teaching Hospital, Osogbo, Nigeria. Intl J Hlth Res. 2009;2(1):51–58.
4. Presseau J, Sniehotta FF, Francis JJ, Campbell NC. Multiple goals and time constraints: perceived impact on physicians' performance of evidence-based behaviours. Implement Sci. 2009;4:77. PMC free article.
5. WHO. Telemedicine Opportunities and Developments in Member States - Report on the second global survey on eHealth Global Observatory for eHealth series. 2010;2:96
6. Alexander D, Tom J, Anne K, Jorg A, Karl AS, Veli NS. Study on the economic impact of interoperable electronic health records and e-Prescription in Europe. Report on Methodology for evaluating the socioeconomic impact of interoperable HER and e-Prescribing systems. 2008. 73
7. Sushil KM, Rajeshwar ST, Tanushree C. Awareness and attitudes to telemedicine among doctors and patients in India. J Telemed Telecare. 2009;15(3):139–41.
8. Biruk S, Yilma T, Andualem M, Tilahun B. Health professionals readiness to implement electronic medical record system at three hospitals in Ethiopia: a cross sectional study. BMC Med Inform and Decis Mak. 2014;14:115. PMC free article.
9. Meher SK, Tyagi RS, Chaudhry T. Awareness and attitudes to telemedicine among doctors and patients in India. J. Telemed Telecare. 2009;15(3):139–41.
10. Meher SK, Kant S. Awareness and attitudes of geriatric patients towards telemedicine in India. Gerontechnol. 2014;13(2):262.
11. Ibrahim MIM, Phing CW, Palaian S. Evaluation on knowledge and perception of Malaysian health professionals towards telemedicine. J Clin Diag Res. 2010;3:2052–57.
12. Lynn MR. Determination and quantification of content validity. Nur Res. 1986;35:382–85.
13. Hugh RB, John AB, Eileen B, Kendon MM. A survey in the Grampian region of the knowledge, experience and attitudes of doctors to telemedicine. J Telemed Telecare. 2000;6(S1):217.
14. Monrad Aas IH. Working with telemedicine: user characteristics and attitudes. J Telemed Telecare. 2000;6(S1):66.
15. Barton PL, Brega AG, Devore PA, Mueller K, Paulich MJ, Floersch NR, et al. Specialist physicians' knowledge and beliefs about telemedicine: a comparison of users and nonusers of the technology. Telemed J E Health. 2007;13(5):487–99.
16. Gaggioli A, di Carlo S, Mantovani F, Castelnuovo G, Riva G. A telemedicine survey among Milan doctors. J Telemed Telecare. 2005;11(1):29–34.

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