

## Original Research Article

## A Cross Sectional Study on Knowledge, Attitude and Skills of Telemedicine among Health Care Professionals at Tertiary Care Centre

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**Abstract: Background:** IT enabled medical services such as Telemedicine and e-health is fast developing from the recent past which supports long distance health care services. The term is often used as an umbrella term that includes tele-health, electronic medical records, e-health and other components of health information technology. **Aim:** To assess the knowledge, Attitude, Skills towards health care professionals. **Methodology:** In this descriptive cross sectional study, questionnaire-based study among various levels of health care professionals at tertiary care centre, in ananthapuram district, Andhra Pradesh. The sample size was 177 by using convenient sampling method. The health care workers willing to fill the questionnaire were considered to have consented to the study. The same was mentioned at the start of the questionnaire. This study was carried out from December 2022 to February 2023. **Results:** Out of 177 health care professional's 52% females and 48% males. Most of the subjects belongs to 25 to 30 years were 58%. Least of the subjects 3.95% has no about telemedicine application, 22.59% heard about telemedicine applications and 73.44 know about the telemedicine application. Only 33.89% are in learner stage and 29.94% are experts in email sending. Ability of Microsoft usage is 49.2 %, 31.6% and 19.4% in learner, mediocre and expert level respectively. Only 9.6% has no idea on patient management through telemedicine, 56.49% heard about patient management through telemedicine and 33.89% knew that patient management can be done through telemedicine. **Conclusion:** Most of the study subjects lack of knowledge and skills towards telemedicine. So, need of training programmes among health care professionals and proper guidelines by government.

**Keywords:** Telemedicine, tele-health, Health Care Professionals.

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## INTRODUCTION

There are more number of benefits of telemedicine. Telemedicine increases timely access to appropriate interventions including faster access and access to services that may not otherwise be available. The provision of medical information and health services by using telecommunication and information technology defines telemedicine [1].

IT enabled medical services such as Telemedicine and e-health is fast developing from the recent past which supports long distance health care services. The term is often used as an umbrella term that includes tele-health, electronic medical records, e-

health and other components of health information technology [2].

While tele-health can be defined as “*The delivery and facilitation of health and health-related services including medical care, provider and patient education, health information services, and self-care via telecommunications and digital communication technologies*” [3].

Based on different modalities, the application of telemedicine can be classified (i) according to the mode of communication (audio and video), (ii) transmission of information (synchronous/asynchronous), (iii) the aim of the interaction (first

consultation or follow-up), and (iv) interaction among the individuals [4].

E-health may be synchronous/real-time or non-synchronous/ “store and forward”. It is seen as a means of overcoming the growing shortage of health practitioners in developing countries [5].

Telemedicine is an emerging technology in health sector in India, so it requires study to be done to know the health professionals and patients’ awareness and their attitude towards Telemedicine [6].

To facilitate the adoption of telemedicine in India requires information about the Knowledge, Attitude and Skills of the health care professionals [7].

## AIM

To assess the Awareness, Knowledge, Attitude and Skills of telemedicine of the health care professionals.

## MATERIALS AND METHODS

It was a cross-sectional questionnaire-based study for which due approval from the Institutional Ethics Committee was obtained. Current study among various levels of health care professionals at tertiary care centre, in ananthapuram district, Andhrapradesh. The sample size was 177 by using convenient sampling method. The health care workers willing to fill the questionnaire were considered to have consented to the study. The same was mentioned at the start of the questionnaire. Declined consent by the health care workers was the only exclusion criteria. This study was carried out from December 2022 to February 2023.

This study was assess the level of awareness, knowledge, and attitude toward telemedicine among the

health care professionals of tertiary-care centre of Ananthapuramu. The questionnaire was prepared by the contributors after a comprehensive review of the literature. The questionnaire contents were taken from previous study [8].

This questionnaire used for the study consists of four sections: 1. Demographic details; 2. knowledge about telemedicine; 3. Attitude regarding telemedicine; 4. Skills towards telemedicine.

Section 1 was personal and professional information of the participants like Name, Age, Gender, Designation, Department.

Section 2 was composed of 8 components to assess their knowledge of telemedicine. This section required a graded response on a three-point Likert scale ranging from ‘No idea’, ‘Heard’ and ‘Know’, respectively.

Section 3 was composed of 5 components to assess their Attitude towards telemedicine. This section required a graded response on a three-point Likert scale ranging from ‘Disagree’, ‘Not sure ’ and ‘Agree’, respectively.

Section 4 consisted of 5 components to evaluate the Skills of the participants towards telemedicine. The response was graded as ‘learner’, ‘mediocre’ and, ‘expert’.

The collected data were analysed based on the number and percentage scores by using Microsoft Excel 2016.

## RESULTS

**Table 1: Demographic and professional variables of health care professionals**

Variable		Frequency (n=177)	Percentage (100%)
Age	25 to 30 years	86	48.58
	31 to 35 years	63	35.59
	36 years and above	28	15.81
Gender	Female	92	51.97
	Male	85	48.03
Designation	Junior doctor	60	33.89
	Postgraduates	109	61.58
	Faculty	8	4.51
Department / speciality	Clinical	80	45.19
	Non clinical	97	54.8

**Table 2: Knowledge toward telemedicine among health care professionals**

Category	No idea	Heard	Know
Patient's management with drugs can be done through telemedicine.	16(9.03%)	44 (24.8%)	117 (66.1%)
Patients examination can be communicated through telemedicine	20(11.29%)	61 (34.96%)	96 (54.23%)
Patients investigations can be communicated through telemedicine	16 (9.03%)	20 (4.29%)	141(79.66%)
Follow up of patients can be done through telemedicine	20(11.29%)	20 (11.29%)	137(77.40%)
Management of patients with surgical procedures is practical in telemedicine	17 (9.60%)	100 (56.49%)	60 (33.89%)
Electronic medical record of patients registration can be maintained through telemedicine	0	12 (6.77%)	165 (93.22%)
Knowing more about computers and applications of IT system in medical field is a must for health professionals.	28(15.81%)	49 (27.68%)	100(56.49%)
Application of IT system in health care services reduces the financial burden to government.	7 (3.95%)	40 (22.59%)	130(73.44%)

**Table 3: Attitude towards telemedicine among health care professionals**

Category	Disagree	Not sure	Disagree
Telemedicine is part of medical education.	36(20.33%)	88 (49.71%)	53 (29.94%)
Face to face interaction of patients and doctors is possible through telemedicine	49(27.68%)	68 (38.41%)	60 (31.89%)
Images could be transmitted to a remote specialist for consultation	28(15.81%)	80 (45.19%)	69 (38.90%)
CMEs programmes effectively and in a cost effective way through telemedicine	31(17.51%)	78 (44.06%)	68 (38.41%)
Electronic home visits are possible for elderly people through telemedicine.	61(34.46%)	60 (33.89%)	56 (31.63%)

**Table 4: Skills toward telemedicine among health care professionals**

Category	Learner	Mediocre	Expert
Do you know how to send E- mails with file attachments?	60 (33.89%)	64 (36.15%)	53 (29.94%)
Do you know how to attend video conference?	65 (36.72%)	72 (40.67%)	40 (22.59%)
Do you know how to participate in e-discussion forums?	105 (59.32%)	44 (24.85%)	28 (15.81%)
Do you know how to set up web camera?	109 (61.58%)	44 (24.85%)	24 (13.55%)
Do you know Microsoft office?	95 (53.67%)	56 (31.63%)	26 (14.68%)

## DISCUSSION

Out of 177 health care professionals 52% females and 48% males. Most of the subjects belongs to 25 to 30 years were 58%.

The present study which was conducted in health care professionals reveals that 3.95% has no about telemedicine application, 22.59% heard about telemedicine applications and 73.44 know about the telemedicine application.

Prateek Malhotra *et al.*, conducted a study on health care students that showed that knowledge about the telemedicine application is as low as 52.1 %, average as 32.2% and high as 15.7% [9].

In current study showed 33.89% are in learner stage and 29.94% are experts in email sending. Ability

of Microsoft usage is 49.2 %, 31.6% and 19.4% in learner, mediocre and expert level respectively

Muhammed elhadi *et al.*, conducted a study on health care workers showed 37.7% had little / no experience in sending emails. Beginner level of computer ability is seen in 6.2%, average computer ability is seen in 67.2% and the professional is about 26.6% [10].

In present study showed 9.6% has no idea on patient management through telemedicine, 56.49% heard about patient management through telemedicine and 33.89% knew that patient management can be done through telemedicine.

Abodunrin, O. and Akanda, T. conducted a study on health professionals of Nigeria showed 8.4%

strongly disagree for the patient management via electronic media, 56.6% strongly agree for the patients management via electronic media and the rest are neutral [11].

Our study showed that 22.59% are expert in attending video conference, 40.67% are mediocre and rest are learner in attending video conference.

In mahalaxmi s petimani *et al.*, study showed 42.7% preferred video calling as mode of telemedicine followed by websites and personalised messages [12].

### Limitations

The study population represents only a small fraction of the medical community. So, the results obtained from this cannot be generalised to the whole community.

## CONCLUSION

Most of the study subjects lack of knowledge and skills towards telemedicine. So, need of training programmes among health care professionals and proper guidelines by government.

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