

Knowledge and Perception of Telemedicine among Post Graduate Students of a Tertiary Hospital Of West Bengal

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Abstract: In recent years there has been a great concern to introduce telemedicine into healthcare system throughout the world. This initiative can change medical education and health care delivery to a large extent. However, its use seems to be limited till date. So this study was carried out to evaluate the knowledge and perception of telemedicine among post graduate students of a tertiary hospital of West Bengal. The study was conducted among 150 PG students of NRS Medical College, Kolkata. Most of the students were male and were less than 30 years of age. Although 88.7% heard about telemedicine, almost one third of the students do not know its application. About 70% of the students think that telemedicine has beneficial effects like good understanding of the subject, reduced cost of health care delivery, improved access to health services, improved quality of care and decreased transport cost for patients. Regarding future prospects, about 50% think that it can be used as a complementary tool to traditional methods and more than 75% are willing to use it in future. Almost half of the students are aware about the limitations like technical problems, cost, expertise and ethical issues. Therefore, postgraduate students should be made aware about telemedicine and its use and should be encouraged for active participation in the sessions.

Keywords: Telemedicine, Perception, Post graduate students, Health care services

I. Introduction

In recent years there has been a great concern to introduce telemedicine into healthcare system both in India and abroad. According to WHO Telemedicine refers to the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities[1].

The services provided through telemedicine includes:

1. Primary care and specialist referral services to a patient rendering a diagnosis through live interactive video or the use of store and forward transmission of diagnostic images, vital signs and/or video clips along with patient data for later review.
2. Remote patient monitoring, including home telehealth, using devices to remotely collect and send data to a remote diagnostic testing facility (RDTF) for interpretation. Such services can be used to supplement the use of visiting nurses.
3. Consumer medical and health information includes the use of the Internet and wireless devices for consumers to obtain specialized health information and on-line discussion groups to provide peer-to-peer support.
4. Medical education providing continuing medical education credits for health professionals and special medical education seminars for targeted groups in remote locations[2].

In this era of communication explosion, telemedicine encourages intra and inter hospital communication, both at national and international level. Introduction of TM can change medical education and health care delivery to a large extent. These systems link urban concentration of physicians with widely dispersed groups of rural patients and rural primary care givers can gain from this initiative. However, its use seems to be limited till date particularly in the eastern part of India and in the government sector. Doctors are not fully convinced and familiar with telemedicine [3]. Little is known whether the health care providers of our state have adequate knowledge on telemedicine. At the same time, the health care providers should be ready to accept and use this new radical instrumental and administrative changes which can change their medical practice and professional behavior. The perceptions and opinion of post graduate medical students and teachers also need to be explored so that improvements can be made both at recipients and deliverer ends and increase the use of TM in future. Therefore this study was undertaken to evaluate the knowledge and perception of telemedicine among post graduate students of a tertiary hospital of West Bengal.

II. Methodology

A descriptive epidemiological, cross-sectional study was conducted among the post graduate students of NRSMC, Kolkata from May to July,2015. Among 239 PG students, 150 responded to the study. Telemedicine sessions were introduced at NRSMC from 4th August,2014 and 25 sessions were held till date. Ethical permission was obtained from the college ethical committee. A predesigned, pretested, unanimous self-administered questionnaire was used for the study. The questionnaire consisted of three sections, first relating to the personal information of the students, second part assessed their access to computer, computer literacy and knowledge about telemedicine and in the last part enquires related to the perception of students regarding the advantages and disadvantages of telemedicine and its future prospects were made using a three point Likert scale. Data obtained was analyzed using SPSS 17 version and presented as descriptive statistics.

III. Results

Among 150 students participating in the study, 26% belonged to 1st yr, 32% were 2nd yr and the rest were final yr PGTs. Majority (62%) of the students were males and 59.3% were less than 30 yrs of age, mean age being 31.15.(Table-1)

Table1. Age & Gender Distribution of the Students

Age	Male (%)	Female (%)	Total (%)
< 30	48 (38.7)	41(28)	89 (59.3)
30 - 40	31 (16.7)	12 (7.3)	43 (28.7)
> 40	14 (6.6)	4 (2.7)	18 (12)
Total	93 (62)	57 (38)	150 (100)

Although 88.7% of the post graduate students heard about telemedicine only 14.7% could describe it correctly. Most of the PG students (52%) knew that telemedicine was available at NRS Medical College but only 34.7% attended at least one session at the institute. About 31% of the students do not know the fields of application of telemedicine. Use of telemedicine in various fields of medical education, diagnosis and management of clinical cases and health information was mentioned by 36% of students. The study revealed that 96% students were computer literate and has access to computer either at their residence /office.

Benefits of telemedicine as perceived by the 60% to 70% of PG students includes good understanding of medicine, its feasibility in present setting, improved access to health care and cost effectiveness for patients living in inaccessible areas(Table-2).

Table2. Perception of Pg Students Regarding Benefits of Telemedicine (N=150)

Sl.no	Benefits	Agree	Undecided	Disagree
		No. (%)	No. (%)	No. (%)
1	Gives good understanding of medical subjects	108 (72)	34 (22.7)	8 (5.3)
2	Feasibility at the institute in terms of scheduling & physical arrangement	102 (68)	40 (26.7)	8 (5.3)
3	Improves access to health services	103 (68.7)	35 (23.3)	12 (8)
4	Improves quality of care	87 (58)	55 (36.7)	8 (5.3)
5	Reduce medical error	73 (48.7)	55 (36.7)	22 (14.7)
6	Reduce cost of maintaining a medical office	91 (60.7)	40 (26.7)	19 (12.6)
7	Rational use of funds	90 (60)	48 (32)	12 (8)
8	Decrease transport cost for patients	100 (66.7)	43 (28.7)	7 (4.6)

Almost 50% of the students agreed that Telemedicine can be used as a complementary tool to traditional methods of diagnosis and treatment and will improve patient satisfaction and more than three fourth of them are willing to use TM in future(Table-3).

Table3. Perception of PG Students Regarding Future Use of Telemedicine (N=150)

	Aspects of future use	Agree	Undecided	Disagree
		No. (%)	No. (%)	No. (%)
1	Telediagnosis can be used as a complementary tool to traditional diagnosis	74 (49.3)	58 (38.7)	18 (12)
2	Willing to use telemedicine in near future	114 (76)	30 (20)	6 (4)
3	Will recommend telehealth to others	99 (66)	43 (28.7)	8 (5.3)
4	Will increase patient survival	63 (42)	65 (43.3)	22 (14.7)
5	Will improve patient satisfaction	73 (48.7)	53 (35.3)	24 (16)

Regarding the disadvantages of Telemedicine, 56% feels that cost for setting up the equipments are high, technical and electrical problems exist and ethical and legal issues relating to treatment of patients need clarifications (Table-4).

Table4. Perception Of Pg Students Regarding Disadvantages Of Telemedicine(N=150)

	Disadvantages	No. (%)
1	Do not know	28 (18.7)
2	No	38 (25.3)
3	Yes	84 (56)
3a	Cost	27(18)
3b	Technical	61(40.7)
3c	Ethical & Legal	4(2.7)

Multiple response

According to the PG students, technical problems are primarily responsible preventing the extensive use of TM followed by lack of expertise and lack of information among the health care professionals(Table-5).However, 62.7% have given positive views regarding its future prospects(Table-6).

Table5. Reasons for not being used extensively. (n=150)

	Reasons	No. (%)
1	Cost	18(12)
2	Technical	71(47.3)
3	Lack of information	11(7.3)
4	Lack of expertise	49(32.7)
5	Do not know	37(24.7)

Multiple response

Table6. Overall View of Telemedicine among Pg Students

	Views	No. (%)
1	Good	94 (62.7)
2	Not sure about improvement	56 (37.3)
	Total	150 (100)

IV. Discussion

Telemedicine is being used across distances for health promotion, disease control as well as education, management and research for health. In our study, 150 PG students of NRS Medical College provided their perception about telemedicine.

The study revealed that although 88.7% of the post graduate students heard about telemedicine, only 14.7% of the students could describe TM correctly and 36% could mention the various fields where it can be implemented. Similar finding was obtained in a study carried out in the Northern Province of Iran[4] where the clinicians overall knowledge of telemedicine technology was low. Another study carried out in Uganda[5] revealed that 41% of the health care personnel were not knowledgeable about TM, same as that found in Nigeria(41.5%) [6]. In Malayasia, 83.3% of health care staffs have knowledge about telemedicine[7]. These differences in knowledge may be due to the varied duration of implementation and functioning of telemedicine program in respective places.

Among the PG students participating in our study, 72% think that TM gives good understanding of the medical subjects and appreciated its interactive nature. However in Pakistan[8], 91.1% of the students think that it augments learning and 58.89% considered TM to be a better mode of learning than traditional teaching.

Patients from rural areas often have to travel long distances and spend money or lose their daily wages to attend tertiary hospitals. Almost two- third of the PG students of our institute feel that TM can improve access to health care and improve quality of care. They also feel that it can reduce the transport cost for patients as well. Similar findings have been obtained while studying the perceptions of doctors in Wardha.[9] In Romania,[10] 44.29% of medical students have similar perception regarding access and 27.14% think that it lower transport cost but only 14.29% think that TM can improve quality of care. On one hand telemedicine reduces the scope of face to face communication with the doctor and on the other increases the chance of getting more expert opinions, so its role in improving the quality of care is still controversial.

Our study revealed that 60% of the students think that introduction of TM will reduce cost of maintaining medical office and can make rational use of funds. Students from Pakistan[8] (74.44%) and Romania [10] (54.29%) also think that TM can be cost effective. Clinicians from the Northern province of Iran[4] perceived these advantages of telemedicine at moderate level.

Regarding the limitations of telemedicine, 56% of our students mentioned about the technical problems like electricity, picture and voice quality and lack of technical experts and cost for setting up of proper infrastructure and its maintenance. Ethical and legal issues has been raised by 2.7% of students. These disadvantages have also been perceived by 40.83% of students in Pakistan.[8] So it is important to be critical about using telemedicine, but at the same time its implementation for better diagnosis and treatment should be encouraged.

When enquired whether TM can be used as complementary tool to traditional diagnosis, 49.3% of the PG students of our institute agreed to this view. In Romania,[10] 80% agreed to this but in Pakistan[8] only 14.4% agreed. In UK,[11] although TM was welcomed by nursing staff as a complementary tool but the GPs gave a cautious welcome. They perceived that TM would increase their work burden & potentially undermine their professional autonomy.

Among the study subjects, 76% are willing to use telemedicine in future. Among Nigerian[6] students 70.5% have similar attitude. Majority of the clinicians in Iran[4] thought that the use of this technology is necessary. In Malaysia[7], 80% liked the idea of remote communication through TM and 98% wanted enhanced education program relating to TM. About two third (66%) of the students responded positively to enquiries regarding recommendation of telemedicine to their colleagues. This was found to be 97.78% among the students of Pakistan[8] and 69% among Nigerian students[6].

Telemedicine have already been applied in emergency and medical care in various parts of our country. The students think that cost, technical problems, lack of information and expertise of health care personnel are important barriers challenging its extensive use in our state. Such problems have been mentioned by students of Romania also.[10] Active involvement of specialist and health personnel from different departments can lead to successful implementation of this method.

The differences noted in the studies conducted in other countries may be due to the fact that most of our students are not exposed to telemedicine for long and have not used telemedicine in the practical fields & lack of personal interest

V. Conclusion

Telemedicine is being used in various states of the country and abroad to a large extent. However, its use in our state is very limited particularly in government sectors. In the present study only one tertiary hospital could be included and 50% of the post graduate students participated which may be due to lack of personal interest or lack of time in health care setting. The study revealed that many of the post graduate students do not know about telemedicine and have not attended TM sessions. So, postgraduate students should be made aware about the introduction of telemedicine, its use and its beneficial effect. Proper knowledge and positive perceptions of this modern technology are prime factors to encourage users to use telemedicine in the future. They should be encouraged for active participation in the sessions and put it into practical use for better patient care. The technological, ethical and legal issues concerned with telemedicine should also be considered simultaneously.

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