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Assessment of Knowledge, Attitude, and Practice of Telemedicine in India

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Abstract*: This cross-sectional study is aimed to systematically access the knowledge, attitude, the practice of telemedicine by conducting population surveys during the COVID pandemic. The 20 items questionnaire was circulated to survey 404 people from the general population in Mumbai and Navi Mumbai, India who completed the questionnaire online from 5th April to 20th April 2020. The mean age of the respondents was 27.96 ± 7.99. The inferential statistics suggest that though the knowledge of telemedicine among the sample population stands at 47.5%, the use of this service is a mere 15.8%. $p<0.05$, α error at 5%, and β error at 20%, giving power to the study as 80%. The attitude towards using Telemedicine in times of a pandemic is highly positive, on the other hand, preference for in-person consultation is higher in normal circumstances. The reason is limited information. Having hit by the most overwhelming pandemic of all times, the promotion of Telemedicine amongst the Indian population is timely.

Keywords: Telemedicine, Assessment, Knowledge, Attitude, Practice

I. INTRODUCTION

The 2019 novel coronavirus (2019-nCoV) or the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as it is now called, is rapidly spreading from its origin in Wuhan City of Hubei Province of China to the rest of the world.[1] So much so that, the World Health Organisation has declared an international emergency – a global pandemic.[2] Healthcare workers being at the forefront in fighting this pandemic, are amongst the highest-risk population.[3] Along with this, a doctor's office is considered to be the highest source of infection. To protect both, healthcare workers and patients, the need for telemedicine arises more than ever before.[4]

The World Health Organization (WHO) defines Telemedicine as, "The delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for the diagnosis, treatment, and prevention of disease and injuries, research and evaluation and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities."[5]

As the complementary theory of strategy for strengthening health systems, emphasizing the role of current environmental and technological improvements in the lives of people, the use of telemedicine to access healthcare is gaining attention.

Technology must play a central role if a considerable improvement in quality and improvement in the healthcare system is to be achieved. Along with which, one of the major probes in leaning towards telemedicine now, in the event of the most overwhelming pandemic of all times – the Covid-19, the importance of telemedicine will be felt even harder by all the healthcare workers and the patients for the security of themselves. Thus, there's a dire need for patients having enough knowledge about telemedicine and being comfortable using it.

A. Background

Historically, telemedicine can be traced back to the mid to late 19th century with one of the first published accounts occurring in the early 20th century when electrocardiograph data were transmitted over telephone wires. Telemedicine, in its modern form, started in the 1960s in large part driven by the military and space technology sectors, as well as a few individuals using readily available commercial equipment. Examples of early technological milestones in telemedicine include the use of television to facilitate consultations between specialists at a psychiatric institute and general practitioners at a state mental hospital, and the provision of expert medical advice from a major teaching hospital to an airport medical center.[5]

[1] https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/
[2] https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen
[3] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7306961/
[4] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7437610/
[5] https://www.who.int/goe/publications/goe_telemedicine_2010.pdf

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Recent advancements in and increasing availability and utilization of, ICTs by the general population have been the biggest drivers of telemedicine over the past decade, rapidly creating new possibilities for health care service and delivery. This has been true for developing countries and underserved areas of industrialized nations. The replacement of analog forms of communication with digital methods, combined with a rapid drop in the cost of ICTs, has sparked wide interest in the application of telemedicine among health-care providers, and have enabled health care organizations to envision and implement new and more efficient ways of providing care. The introduction and popularization of the Internet have further accelerated the pace of ICT advancements, thereby expanding the scope of telemedicine to encompass Web-based applications (e.g. e-mail, teleconsultations, and conferences via the Internet) and multimedia approaches (e.g. digital imagery and video). These advancements have led to the creation of a rich tapestry of telemedicine applications that the world is coming to use.[5]

B. Objective

The objective of this study is to access the knowledge of telemedicine, the attitude and preference towards and its usage. The motivation for this study was the at-risk population of the healthcare workers and the patients to the coronavirus. COVID-10 being an infectious disease, healthcare workers, patients, and the doctor's office are the high-risk population and place. In such a situation, shifting towards the use of technology for the betterment of public health and reducing the risks is substantial. Though telemedicine is no longer a new technology, the usage of this service is highly limited. This study aims at understanding this inconsistency and proposing certain solutions for improvement.

1) *The potential of Telemedicine:* Technology has the potential to boost the standard of health care and to form it accessible to more people. Telemedicine may provide opportunities to form health care more efficiently, better coordinated, and closer to home. Research about telemedicine continues to be relatively new, but it's growing. As an example, studies have shown that both telephone-based support and telemonitoring of important signs of individuals with coronary failure reduced the danger of death and hospitalization for failure and improved quality of life. [6]
2) *Reasons Telemedicine Is Now More Important Than Ever*

Virtual care has offered a lifeline during a world health crisis. The platform's sudden growth could have permanent implications.

a) It Protects Medical Personnel and Patients from contagious diseases
b) It Increases Healthcare Access in Senior Living Communities and rural population
c) It Helps Conserve Supplies and Bed Space
d) It Supports Medical Specialties
e) It Brings Care and accessibility to Populations in Need[7]

II. MATERIAL AND METHODS

A. Design

The study is an online survey conducted in 2 provinces in India. Social networks like Facebook, Instagram, and WhatsApp have been the major platforms for the circulation of the questionnaire.

B. Data Collection

The survey data was circulated randomly amongst the general population from 20 years to the elder population to know their views on telemedicine and their knowledge regarding the same. A sample size of 404 was selected and the survey was circulated over the web via google forms. The questionnaire contained 20 questions, divided into 3 sections; knowledge-based, attitude-based, and practice-based. 3 of the questions were open-ended while rest 17 were closed-ended questions. To ensure the respondents feel free to answer, their name was not required. Age was kept to be the only personal parameter.

The practice section covered many aspects of telemedicine practices such as services used, the person used for. Questions were kept open-ended and a couple of them were yes/no questions.

The attitude questionnaire included eight questions based on the Nominal scale. This questionnaire aimed mainly on studying the attitude of the population towards efficiency and psychology towards telemedicine. Yes, answers were considered as a positive attitude. The data collection process took 15 days. (5th March – 20th March).

[6] https://www.mayoclinic.org/healthy-lifestyle/consumer-health/in-depth/telemedicine/art-20044878
[7] https://healthtechmagazine.net/article/2020/05/6-reasons-telemedicine-now-more-important-ever#:~:text=It%20Helps%20Conserve%20Supplies%20and,within%20a%20care%20delivery%20setting.

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C. Data Analysis

Data entry, data checking, and data analysis were done with Microsoft Office Excel Sheet (version 2010, Microsoft Redmond Campus, Redmond, Washington, United States) and the program SPSS (Statistical package for social science) version 21.0, IBM.

Class intervals of age groups have been divided in <24 years, 25-34 years, >34 years. The data were analyzed by descriptive statistics like frequency, mean and standard deviation, and inferential statistics like chi-squared tests, independent t-tests, and analysis of variance.

For all the statistical tests, $p<0.05$ was considered to be statistically significant, keeping α error at 5% and β error at 20%, thus giving power to the study as 80%.

* = statistically significant difference ($p<0.05$)

** = statistically highly significant difference ($p<0.01$)

= non-significant difference ($p>0.05$) for all tables

III. RESULTS

The questionnaire was circulated in over 500 people and about 80% of them completed the questionnaire. Mobile, tablets, and computers were the devices by which users completed the questionnaire. A total of 404 responses were observed amongst the population in Mumbai (Metropolitan) and Navi Mumbai (Suburbs) are of Maharashtra, India. Finally, 404 people from Mumbai and Navi Mumbai areas participated in this research survey. The mean age of the respondents was 27.96 $\pm$ 7.99. About 36 % were from the age group under 24 years, 50% between 25-34 years, and over 12% over 34 years of age. Table I.

TABLE I

Frequency distribution of people according to age as the demographic variable

Variable	Item	Frequency (Percentage)	Mean
			27.96 $\pm$ 7.99
Age	24 and under	147 (36.3)	
	25 – 34	206 (50.9)	
	Over 34	51 (12.6)	

According to the survey, knowledge of telemedicine is not significantly related to the age of the sample population.

The findings show that more than 52% population believe they do not know Telemedicine and over 73% wanted to know more of Telemedicine through promotions for them to be comfortable using it. Based on their knowledge, around 37% believed they have poor accessibility to telemedicine while 52% of responses were unsure. Besides, while over 54% of the sample population has used e-commerce services for medical purposes like ordering medicines, only 15% of people have used Telemedicine services. This points to the fact that more promotion of Telemedicine services is needed for the population awareness and is not related to inhibition regarding the use of all online services. Table II. Table III.

TABLE II

Distribution of individual responses to knowledge-based variables

Variable	Item	Frequency (Percentage)
Knowledge about 'Telemedicine'	Yes	192 (47.5)
	No	212 (52.5)
Need for Promotions	Yes	298 (73.7)
	No	106 (26.2)
Enough Accessibility of Telemedicine	Yes	45 (11.1)
	No	149 (36.8)
	Maybe	210 (51.9)

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Table III
Distribution of individual responses to attitude-based variables.

Variable	Item	Frequency (Percentage)
Preference of service in pandemic	Telemedicine	321 (79.4)
	In-person	83 (20.5)
General preference for service	Telemedicine	75 (18.5)
	In-person	329 (81.4)
Perceived shortcomings of Telemedicine	Accuracy	112 (27.7)
	Trust factor	33 (8)
	Miscommunication	48 (11.7)
The beneficiary of Telemedicine in the future	Yes	275 (68.1)
	No	129 (31.9)
More efficient service as perceived	Telemedicine	150 (37.1)
	In-person	254 (62.9)

The positive attitude about consultations seemed to be tilting more towards in-person consultations with over 81% of people preferring in-person consultation over Telemedicine based on their current subject knowledge. Ironically though, over 79% would prefer running to Telemedicine services in current times given the COVID-19 outbreak. The inclination towards in-person consultations can be related to the fact that over 69% of people held back on trusting Telemedicine services with over 26% questioning its efficiency and chances of communication gap on the open-ended question. Table III.
Comparison of frequencies of responses to each question was done with age groups <24, 25 to 34 & >35 and was found that for the question on accessibility, there was a statistically significant difference seen for the frequencies between the groups ($p<0.05$) with higher frequencies for the response maybe with age group 25 to 34 years.

TABLE IV.
Distribution of individual responses to practice-based variables.

Variable	Item	Frequency (Percentage)
Use of other online services	Yes	221 (54.7)
	No	183 (45.3)
Use of Telemedicine Services	Yes	64 (15.8)
	No	340 (84.2)

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IV. DISCUSSION

The objective of this study was to assess the knowledge, attitude, and practice of Telemedicine amongst the Indian population. The findings of this study suggest that approximately less than half of the sample population know what "Telemedicine" is but the use of Telemedicine stands at 15.8%. The highest responses for the reasons were questions about the accuracy of this service about chances of communication errors and psychological factors like lack of physical examination and trust issues related to technology. According to the 2020 census, the Indian population stands at 121 crores which contributes to 17.7% of the world population.[8] causing the risk of a further increase in COVID-19 cases.

Since the nationwide lockdown, the use of telehealth has seen a solid surge, the reason being the long-pending Telemedicine guidelines which were finally issued by the Indian Government.[9] The findings of this study addressed the necessity of such a provision and more promotion of such services.

In "Awareness, Knowledge, Attitude, and Skills of Telemedicine among Health Professional Faculty Working in Teaching Hospitals –

Zayabalaradjane Zayapragassarazan[1] and Santosh Kumar"[10] 41% of respondents had a high-level knowledge about Telemedicine which complies with the finding of this study. Regarding the attitude of the population, 39% of participants had a positive attitude towards Telehealth, which again complies with the results of the present study. This study was specifically directed towards the assessment of knowledge and attitude of Telehealth among healthcare workers.

The Indian Space Research Organisation has taken certain initiatives beginning in 2001, with the Telemedicine Pilot Project. ISRO's Telemedicine Centre stretches to around 100 Hospitals all over the country with 78 Remote/Rural/District Hospitals/Health Centres connected to 22 Specialty Hospitals located in the major cities as of 2005.[11]

Unfortunately, with a population of over 121 crores, the doctor-patient ratio in India is significantly low. To make up for such a situation, aggressive take over by Telemedicine is required. This scenario interlinks with the COVID-19 pandemic. In a country that ranks 2 in the total world population, and at Rank 1 in highest coronavirus cases in the world as of September 2020[12]. With a poor doctor-patient ratio, virtual medical services are a necessity to avoid the risk of disease transmission and to maintain the sanctity of frontline workers. Besides, the accessibility to virtual services in rural population is improving. As per the reports of a leading newspaper portal, for the first time in November 2019, India has more internet users in rural areas than the urban areas in Bangalore province of India.[13] This can be an apt time to launch and promote telemedicine services highly, for the betterment of rural Indian healthcare.

V. CONCLUSION

Promote and optimize the use of telemedicine services for the safety of HCP and patients while using the Framework for Healthcare Systems Providing Non-COVID-19 Clinical Care to determine when in-person care is appropriate. Include options for language interpretation, as needed. Communicate with insurers/payers to understand the availability of covered telemedicine, telemedicine, or nurse advice line services Use tele-triage methods for assessing and caring for all patients to decrease the volume of persons seeking care in facilities, especially during times of high transmission of contagious diseases such as COVID-19

Provide outreach to patients with limited technology and connectivity and offer flexibility in platforms that can be used for video consultation, or non-video options, when possible.[1]

Our findings suggest there are limited knowledge and certain myths about the use of Telehealth in the population. To increase its usage, we can take up certain directed measure like:

1) Promotion of Telemedicine in the population so that people are more comfortable using Telemedicine
2) Advancing mHealth so that Telemedicine reaches the rural population
3) Making Telemedicine comfortably accessible for the geriatric population
4) Promoting clear guidelines for people to understand when to visit the doctor's office and when to use Telemedicine

[8] https://censusindia.gov.in/2011-prov-results/paper2/data_files/india/Rural_Urban_2011.pdf
[9] https://www.mohfw.gov.in/pdf/Telemedicine.pdf
[10] https://pubmed.ncbi.nlm.nih.gov/27134899/
[11] http://www.televital.com/downloads/ISRO-Telemedicine-Initiative.pdf
[12] https://covid19.who.int/
[13] https://timesofindia.indiatimes.com/business/india-business/for-the-first-time-india-has-more-rural-net-users-than-urban/articleshow/75566025.cms#:~:text=BENGALURU%3A%20For%20the%20first%20time,million%2C%20as%20of%20November%202019.

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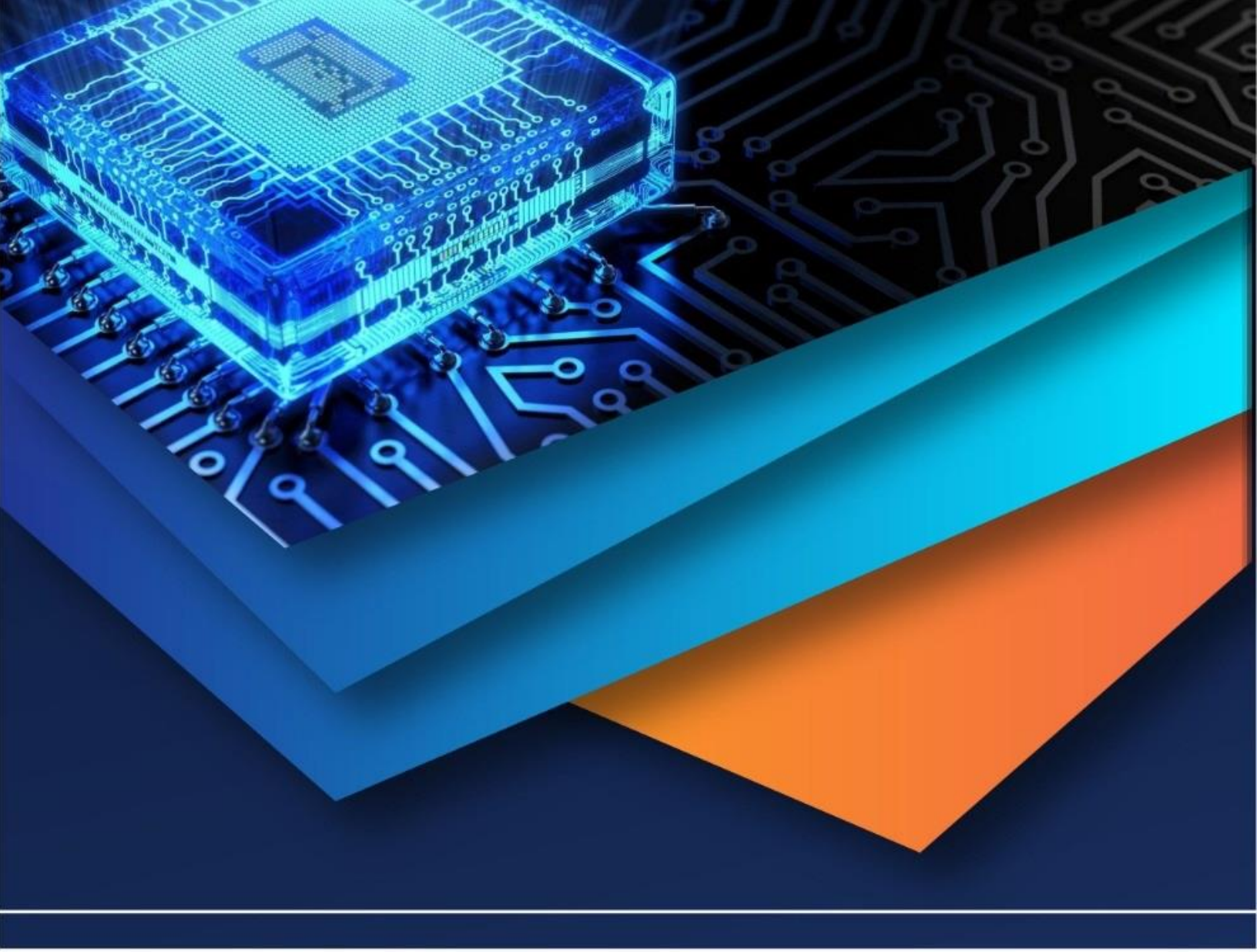
VI. ACKNOWLEDGMENT

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REFERENCES

[1] https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/
[2] https://www.who.int/goe/publications/goe_telemedicine_2010.pdf
[3] https://www.mayoclinic.org/healthy-lifestyle/consumer-health/in-depth/telemedicine/art-20044878
[4] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4587917/
[5] https://www.cdc.gov/coronavirus/2019-ncov/hcp/telemedicine.html

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