Qualitative Approach on Adoption of E-Governance Health Care Services for Rural Development during COVID-19

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Abstract--- Among the developing Asian countries, India is the country occupied with nearly 70 percent of the people resides in rural areas. Information and Communication Technology (ICT) plays a major role in facilitating several services to the people living in rural villages and enhances their productivity to meet their basic requirements. Several initiatives have been made by our government to effectively deliver their services for the low-income group people. Remarkable delivery channels have been specially designed and to reach the underserved population in our society. E-governance is said to be the most popular model for providing doorstep services to the unreached segments in our country. It performs as an instrument between citizens and the government in multiple fields like agriculture, health care services, financial inclusion, general services like electricity bill payment, e-ticketing, e-filling, and retrieving information related to government schemes & policies. Out of all these initiatives, in the present pandemic situation of COVID-19 health care services have attained a major space in the mindset of the people. Innumerable challenges have been experienced by the people especially living in remote places for attaining health care services from the professionals. The primary objective of this research study is to assess the experiences, challenges, and satisfaction of the rural people for accessing the applications developed for obtaining health care services through collecting qualitative data from 31 rural respondents belong to Kanchipuram district. The major finding of the study has pointed out the benefits of teleconsultation services facilitated by the government under the e-health care system for rural people.

Keywords--- e-health Care, e-governance, Rural People, Teleconsultation.

I. Introduction

The phrase "E-governance" is described as the activity of facilitating government services through Information and Communication Technology (ICT). It acts as a mediating variable between the behavioral intention of people from rural villages and their actual usage of technology based services from the government (Bhuvana and Vasantha, 2020) and it acts as a drivers for achieving financial inclusion effectively (Bhuvana, Vasantha and Bharath, 2016). It isa comfortable mode for transferring information between the citizens and the government (Varun and Pulidindi, 2015). Experts describe the concept of e-governance services as "SMART", which is Simple, Moral, Accountable, Responsible, and Transparent in facilitating the services to the people in the country. The Direct benefit transfer of LPG subsidies have increase the technology based banking services among the rural citizens (Bhuvana and Vasantha, 2019). The main goal of e-governance services is to act in an effective, smooth, and transparent way of providing quality service for the people. It seems to be a pathway for quality interaction between the citizens and government, government with employees, government to government, and between government and business people (Armstrong, Gandhi & Lanjekar, 2012).E-governance system has already been well designed, structured, and utilized successfully in various countries across the globe. When developing countries like India are considered it is found to be still in a growing state. Out of 70 percent of the entire population in India lives in rural villages and it consumes below 80 percent of the literacy rate in Tamil Nadu when compared with other states in India. It seems to be a major challenge to reach rural people for facilitating quality services by government officials (GOI, 2015). The government of India has taken several drives for the development of remote villages to

acquire awareness and knowledge on accessing the e-governance services by the rural people. Having these conditions as objectives common service centres (CSCs) have been set up in rural villages to obtain their fundamental, needs in one place. Many digital mode services like agriculture, financial inclusion, education, and health care are provided for the benefit of rural people under Common Service Centres (CSCs) (Bhuvana and Vasantha, 2020).

A deadly pneumonia virus was marked by the WHO (World Health Organization) on December 31, 2019, in China. A cluster of cases has been reported with this new virus and several people have been infected by this virus in Wuhan city, China. It is named as "Novel CORONA Virus 2019"(WHO, 2020). This virus infects the respiratory tract of the human body and is widely spread among human beings. Most developing and developed countries like the United Nations (US), Brazil, China, Germany, India, and Italy have been reported with the Lakhs of infected cases (Civil Service India, 2020), World health organization has instructed to take up hygiene measures like wearing face masks, use hand sanitizers for averting the Virus (WHO, 2020). The Indian government has taken several initiatives to safeguard the lives of people especially those who reside in rural villages since the health care facilities and awareness are much lesser in those areas. During this situation, health care services have been offered under common service centres (CSCs) through ICT like Teleconsultation, Tele-Diagnosis, Telemedicine, and general health care advice to the low-income group people (CSC Health, 2020). With a further extension of these services, on April 2nd 2020 in India, a mobile application called "Arokiya Setu App" has been structured by the Ministry of Electronics & Information Technology. This application helps people to detect and map the location where the coronavirus has been highly infected. It acts as a user-friendly application that helps the people even in rural villages to fight against this virus. The attitude of the rural citizens is considered to be a predominant factor for accessing e-governance services (Bhuvana and Vasantha, 2020) Hence this study has examined on focusing the experiences, challenges, and satisfaction on e-health care services provided for the rural people by the Indian government during the pandemic state of COVID-19

II. Objectives

2.1. To Investigate rural citizen experience on availing e-governance health care services during COVID-19

2.2. To Examine the perception of rural people towards health care services facilitated under e-governance.

III. Literature Review

The widespread of Information and Communication Technology has reached every segment of our country. The usage of services through ICT has increased the number of mobile and internet users in all the states of India (TRAI Report, 2011). Developments in information and telecommunication technologies have come up with its potential to improve the growth of teleconsultation services. The application of ICT facilitates medical services to the people residing in unreached segments in our country. It helps in eliminating the distance barriers that improve access to clinical services for the people who are residing in remote places. It is highly beneficial for people to reside in isolated places to meet their needs in emergency and critical situations. ICT connects medical practitioners and patients in rural villages through several web applications, thereby the low-income group people could easily get quality health care services from the medical expert at a very low affordable cost (Margaret et al, 2015).

There is various emerging discipline that exists in the domain of teleconsultation services, such as tele radiology, tele ophthalmology, tele oncology, and tele cardiology. The access of ICT facilitates the platform for early detection, resource sharing, diagnosis, prevention of diseases and treatments, free health services, delivering medical and health advice (Nandakumar et al, 2008).The system of video conferencing communication between doctors and patients in rural places is found to be easier and provides the correct medical advice. Through this system, appropriate and suitable treatment and advice could be recommended for the patients. Innovated medical devices help in quick transmission of information related to patients (Mishra, 2008).Report by health expert committee of twelfth five years plan has stated that different strategies for facilitating health care services are required to be adopted for addressing the challenges and difficulties faced by the people living in rural areas. Through ICT the health care system in rural areas has to be upgraded (Economic Review, 2015). Denied health care facilities in rural villages and lesser access for quality of health care services is seem to be widening. The utilization of smartphones across the globe has provided a great extent for accessing health care applications and seeking clinical advice from medical experts. This innovative health care system fills the gap that exists in the vacant position of medical practitionersin rural places (Margaret et al, 2015).

The phrase "Citizen Satisfaction" is defined as the collective judgment made by the citizen of a country in terms of quality in performing the government through facilitating services (Van Ryzin, 2016). Information Quality, Trust, and Usability are the three factors that examine the satisfaction of e-governance services among rural people (Bhuvana & Vasantha, 2020). System Quality is stated as the efficiency of the Information system related to the convenience, reliability, and other components that are related to the performance of the system (Petter and McLean, 2009).The most preferable features and characteristics of an information system are flexibility, sophistication, and

response time that examines and measures the citizens' needs and values (Saxena, 2005). Improving the education on Information and Communication Technology among the rural people increases the usage of e-governance services frequently for satisfying their basic needs and requirements (Bhuvana and Vasantha, 2020).

People who reside in rural villages sufferfrom chronic diseases such as heart disease, diabetics, and cancer. There is no better-evaluated e-health care system that ismaintained and supported in the health care centres of rural villages (Beatty, 2013). Low-income people from rural villages continue to adopt home remedies and consult local health service providers when they have health-related illnesses (Essien and Williams, 2009). Even when health care centres exist in rural places, in visiting hours of medical practitioners and the absence of medicines seems to be greater challenges faced by the rural people (Hill and Wardlaw, 2001). Shortage of drugs and medical practitioners and essential health care devices are found in rural health care centres (Eysenbach and Diepgen, 2001). With suitable policies of social protection ICT applications should be implemented that enables the rural poor to get benefited through acquiring knowledge and information related to health care issues (Foros, Kind and Sand, 2005).

IV. Methodology

4.1. Research Design

The purpose of the research study is to analyses the experience of rural people for availing e-governance health care services during COVID-19. This research study is exploratory in creation. Hence a qualitative approach has been selected to conduct the research study. Authors have stated that a qualitative study has been made in natural settings and attempting to interpret the meaning of people's life. It has been further argued that qualitative research includes the collection and use of empirical materials such as interviews and personal experience (Denzin & Lincoln, 1998). Arguments related to qualitative research are dependent on its sensitivity and descriptions of the ideas and concepts of concerned individuals (Alvesson, 1996).There is also an increased likelihood of developing empirically supported new ideas and theories and, finally its increased relevance and interest to practitioners. There exist several new ideas that are empirically supported and many theories thatincrease the relevance and interest of the practitioners (Gray, 2013). To make a real and valuable contribution to the research study, the authors should adopt an interpretive approach that specifies the relevant and present issues, change in the surroundings, behavior, and attitude of individuals (Collins, 1998).

4.2. Sampling Framework

The users of e-health care services under e-governance from selected the villages of Kanchipuram district have been chosen as respondents for the study. There are 13 females and 18 males in the study between the age group of 18 years to 55 years who have prior experiences in accessing e-health care services. Most of the participants have accessed e-health care services from their home computers, office workstations or through their smartphones. Most of the participants are educated (6 are 10th Std, 12 are graduates, 10 are 12th Std, and 3 are Business people). Moreover, the majority of the interviewees have stated their range of competence in accessing e-health care services online as Excellent (5 respondents), Above Average (7 respondents), Average (9 respondents), Below Average (6 respondents), and Very Poor (4 respondents)

4.3. Data Collection

Data collection through a qualitative approach highly requires participants who share unbiased information (Creswell John & Plano, 2007). Therefore choosing the appropriate respondents to conduct the study seems to be a challenging task. The primary objective of the research study is to examine the experiences of the e-health care users in rural villages of Kanchipuramdistrict; the abundant participants are targeted and selected for the study. The respondents are recruited through purposive non-probability sampling (Miller & Chandler, 2002). Face to face, the in-depth interview has been conducted with the selected participants. Through in-depth interviews, the distance between the interviewer and interviewee is reduced that facilitates the qualitative and valuable data from the participants (Stokes & Bergin, 2006). The respondents have been interviewed with the below-listed questions.

1. How frequently they visit health care centers.
2. What are the health care services provided by the health officials during COVID-19.
3. How do they experience the usage of Arokya Setu Application;
4. How teleconsultation services helped them to avail health care services from health professionals.
5. How health care professionals responded to their health care services.
6. What are the challenges that are faced by them for accessing health care services.
7. Did they receive generic medicine from the health care centers.
8. How well they are satisfied with the information from the Health care centers.
9. What aspects of e-governance health care services are lacking in delivering its facilities for rural people.

The interview has been conducted between October to November 2020 with the respondents residing in the rural villages of Kanchipuram district. The selection of participants from the villages of Kanchipuram district has been justified with the literacy rate of 76 percentage and it is found to be lesser than the average literacy rate of Tamil

Nadu. A semi-structured interview with a list of 9 questions has been framed to gather the information from the rural respondents for analyzing their experience towards e-health care services and their perception of availing health care services under e-governance. Five different demographic questions have also been asked to the respondents. 30 to 40 minutes time duration has been taken to complete the interview. The handwritten notes have been taken by the interviewer for recording the information from the participants.

V. Findings and Discussion

The examination has been made on the perception and experiences gained by the rural citizens towards accessing e-health care services. Based on the objectives of the research study the three different dimensions have been segregated based on the usage of e-health care services. The first dimension is the participants' experience, the second dimension is their challenges and the third dimension is their satisfaction. First of all the respondents have been tested with their modality in accessing e-health care services when compared with the traditional and direct way of getting health care services from the government. The highly specified experience received from the respondents is safety. The variable safety plays a pivotal part in the health care system that helps in managing patients' risk as well as improves the process of diagnosing any issues related to health (Stroetman, 2007).

5.1. Frequency of Visiting Health Care Centres by the Respondents

A respondent (Male, 45 years old) has stated that "they visit health care centres to get consultations from the doctors to check their blood sugar level and get regular medicine for 6 months once. Another respondent (Female, 55 years old) has pointed out that "they do not visit the healthcare centres as it is far away (approximately 10 Kms) from their house as it takes much time to reach the health care centres". The rest of the respondents have stated that "they sometimes visit health care centers for general consultation and getting health care products. The utilization of primary health care services is highly mandatory to overcome any illness and the services offered by the health care centres support the members of the family to prevent the diseases from their treatments (Rushender R et al, 2016).

5.2. Health Care Services Provided by the Health Officials During COVID-19

A respondent (Female, 26 years old) has expressed that the health care officials have visited their places through Mobile Medical unit van to check their health conditions. The health officials have made a free health care checkup between 15-20 days and if in case the patient requires long-term treatment, the hospital has been suggested by the medical practitioners. A respondent (female, 41 years old) has stated that health care professionals have given a diet chart related to the importance of nutrition for increasing the immune system in the human body. The majority of the respondentshave claimed that the officials have inculcated the health-seeking behavior among rural people. The team members have supported the people having lifestyle diseases such as diabetics, respiratory problems, anemia, and skin infections. Particular attention has to be paid to the delivery of required health care services to the targeted population in remote villages. Maternal, reproductive, child and newborn health, management and prevention of communicable diseases, chronic illness, and addressing the emergencies are considered essential services (WHO, 2020).

5.3. Experience in theUsage of Arokya Setu Application

A respondent (Male, 20 years old) has determined that health care officials instructed to install has Aroya Setu Application in their smartphones. The health officials explained the features and importance of this application for tracking the location of COVID-19 cases in their nearby areas. A respondent (male 35 years old) has articulated that the officials have demonstrated with their smartphone through various connecting modes such as Bluetooth and retrieving information about COVID-19. The rest of the respondents have declared that officials have narrated the security, privacy, and transparent functions of the Arokya Setu Application. This mobile application acts as a pillar in limiting the COVID-19 cases across the countries by detecting the accurate mapping of places (GOI, 2020).

5.4. Availing Teleconsultation Services from Health Professionals

A respondent (Male 45 years old) felt happy in acquiring teleconsultation services through a mobile unit van. They feel safe in getting consultations online during the pandemic situation of COVID-19. They have gained primary care services through teleconsultations from the general practitioners at free of cost. A respondent(Female 48 years old)) feels that receiving teleconsultation services from the medical practitioners save cost, time, and avoid traveling a long distance to the health care centres. Many respondentshave pointed out their health condition got much improved through teleconsultation and also specialty doctors are also available for teleconsultations. The association of Information and Communication Technology (ICT), possession of infrastructures such as connectivity, hardware devices, and dedicated and well-trained professionals are considered to be the interrelated factors for the successful implementation of teleconsultation services (Arunima and Jayakumar, 2019).

5.5. Response from Health Care Professionals for Health Care Services

A respondent (Male 46 years old) has determined that health care professionals have clarified all the queries related to their health issues and prescribed medicines. A respondent (Female 38 years old) has stated that the medical practitioners have responded well in their native language and they got enough clarifications related to general health care and preventive measures of COVID-19. Most of the respondents have stated that it takes nearly 15-20 minutes in teleconsultation and they have received appropriate treatments through obtaining the correct medical advice. Isolation of people living in rural areas was found to be more difficult in accessing health care services at anytime and anywhere basis. This shows that there is a need for improving access to high-quality health care services among rural people. Teleconsultation is the only way that is instrumental in enlarging the reach of rural people (C-DAC, 2011).

5.6. Challenges Faced While Accessing Health Care Services

A respondent (Female 55 years old) has specified that they could acquire health care services only from the general practitionersand have faced several difficulties in getting a consultation with their regular medical practitionersand family doctors. A respondent (Male, 49 years old) has pointed out that teleconsultation services through Mobile unit van and in health care centres could meet their health care needs once in 15 to 30 days. They find it difficult to wait till the notification arises for teleconsultation services and the emergency needs on health care services are not up to the mark through teleconsultation services. Few respondentshave stated that they have network connectivity issues in acquiring teleconsultation services. The delivery of "health for all" at an affordable cost and with a reachable healthcare system for every individual in a society is said to be the guidingprinciple in the plan of 2030. With maximum deliberateness and ambiance, the teleconsultation project has been successfully implemented. But still to what extent its utilization and effectiveness have been reached to every corner of the society is seems to be a significant question (Economic review, 2015).

5.7. Obtaining Generic Medicines from Health Care Centers

A respondent (Male 50 years old) has stated that there exists a delay in receiving regular medicine for health diseases and diabetic disorders. A respondent (Female 28 years old) hasclaimed that even though they feel comfortable with teleconsultation services, they need to approach health care centers and nearby pharmacies for buying health care products and medicines. They specify that ordering medicines online with doctor prescriptions could save their time in stating in a long queue at health care centers. The rest of the respondents have stated that they do not face any challenges or difficulties are availing of regular medicines in health care centers. Efficient medicine supply management approves the performance of sustainable availability and access for needy medicine in the public health care sectors (Sangeeta Sharma and Ranjit Roy Chaudhury, 2015).

5.8. Satisfaction Towards Receiving Information from the Health Care Centers

A respondent (Female 34 years old) has statedthat several medical camps have been organized by the health care officials during the pandemic situation of COVID-19. The officials have stayed at the same village and they are accessible anytime for delivering their services. A respondent (Male 43 years old) has narrated that the medical practitionershave organized many awareness programme and capacity building programmes on e-health services. They have done a follow up properly for any health-related issues of the patients. Most of the respondents have stated that the health officials have educated them in availing e-health services and they are happy with the services rendered from them. Patient satisfaction is one of the most important factors to determine the success of a health care facility. Patient satisfaction is considered to be an important dimension to examine the successful implementation of the health care facilities Low-income group people visit government hospitals and health care centres hence their satisfaction in obtaining the health care services is highly predominant. Therefore the patients from rural villages should be treated with respect and courtesy (Faiza, 2019).

5.9. Various Aspects of e-governance Health Care Services that are Lacking in Delivering its Facilities for Rural People

A respondent (Male 30 years old) has claimed that rural areas have been characterized as the regions that are lagging in obtaining essential healthcare infrastructure and well trained medical practitioners. Information and Communication Technology acts as a tool in connecting people and reduces disparities between rural and urban areas. Even then the network facilities are found to be inaccessible, unaffordable, and unavailable for the majority of people residing in rural areas due to their cultural, economic, and social barriers. The respondent (Female 23 years old) has disclosed that the challenges of the digital divide, negligence in health care services, poor communication networks, and worst referral systems are the significant issues faced by the rural poor for getting better health care services. The distribution of doctors in rural settings seems to be gloomy due to a lack of infrastructure and facilities. This creates rural people to make them feel isolated for obtaining quality health care services (Patnaik & Patnaik, 2015).

VI. Conclusion

The study finding has recommended that the successful connection of Information and Communication Technology (ICT) is strongly associated with the actions made by the health care officials together with the availability of dedicated and trained healthcare professionals, connectivity, and hardware devices in rural places. The collection of these components is highly mandatory for the execution of teleconsultation services to poor people.But still many respondents in the present study have stated that connectivity issues, lack of consultation with their regular doctors, and the absence of medicines in health care centres are the difficulties faced by them in obtaining health care services through teleconsultation services. ICTs have a strong potential for dissemination and knowledge to make efficient and productive health care services. The study has proved that organizing medical camps, frequent use of teleconsultation services, documentation of teleconsultation services, increasing grants by the government to improve the maintenance and resolving the technical issues improves the speedy adoption of technology-based government services among the rural people.

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