COVID19 INDIA website and preventing the spread of the corona virus in Chennai, Tamil Nadu: An Assessment

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ABSTRACT: The significant role and contributions of e-health platforms is well recognized in preventive healthcare. Preventive health services have always been promoted by digital health platforms, where online medical guidance has proved its exertions through vital contributions in infectious disease management to deal with various issues and problems towards patient perception, diagnosis, treatment and care. This paper explores the effectiveness of COVID19INDIA website in medical setting along with the issue of information needs of the general public and perceptions about this website. Using qualitative research methods, the issue of how the general public can obtain information about coronavirus pandemic from this website has been analyzed. The results established the potential motivation for the public to use this e-health platform. Based on the results, implications have been derived for designing better online health services connecting the masses to the caregivers and medical professionals.

KEYWORDS: Preventive health services, coronavirus pandemic, infectious disease management and online health services.

I.   INTRODUCTION

The global internet services are growing at an exponential rate and it is bringing with it innovative ways of transacting, communicating, learning, socializing and transforming every aspect of daily life. Further, the rise of health information on the internet affects the doctor-patient relationship because of the frequent use of medical information on the internet. It is quite obvious that the internet could change the information-seeking behavior of users and their attitudes. People have always been looking for ways to obtain information about their health by browsing the internet for information that will help them to decide whether or not to visit a doctor/ hospital. Searching for health information on the internet is always easy and convenient and at the same time proper as well as authentic answers are to be ensured. Moreover, the internet can help people to search for disease symptoms and treatments. These days, patients use social media communities such as blogs, online communities, and e-mails to share illness symptoms and treatments and these activities will only tend to increase in the future as it is happening now with a pandemic.

COVID 19

The current situation is highly fluid with respect to Covid 19 as not only the individuals and the society at large but also the national governments of the globe have no clue both about the cure and the spread. The guidelines communicated by World Health Organization (WHO), to a certain extent helped to formulate policies and strategies to reach the people who are exposed to the dangers of corona virus. Nevertheless, the each nation state follows its own strategy to reach out the people to face the risks associated with the pandemic. However, the question is how far they have succeeded and/or to what extent they are able to contain the situation?

COVID19INDIA.ORG

India has created Covid19india.org which is one among the many Covid-19 information sites based in India that provides detailed information about the spread of the pandemic. Indian Government is taking strict measures to stop the expanse of Corona virus pandemic. In the fight against COVID-19, many online sites such as Covid19India.org, too are helping people to know about social distancing and self-isolation, besides providing

other updates. This website has been providing the users with recent data about the confirmed cases, suspected individuals and death tolls from the Coronavirus pandemic in India. Apart from this we have Aarogya setu (the bridge for liberation from disease) is an Indian open-source COVID-19 "contact tracing, syndromic mapping and self-assessment" digital service, primarily a mobile app, developed by the National Informatics Centre under the Ministry of Electronics and Information Technology (MeitY).

Covid19India.org is an Indian website built to provide detailed information about the Corona virus affected areas in the country. Handling this heat map website is simple. One can search for the website and view the graph that shows the increment in the number of confirmed, active, recovered and deceased cases in India. The column below provides an insight about all the COVID-19 affected states and the number of cases inclusive of the recovery and the patients died details in it.

An individual can gain the data by clicking on the states in the heat map of India. The Corona virus information site will provide brief information on the confirmed patients, death tolls and recoveries as a whole in a single click. As COVID 19 cases in India are on the steady rise, this website provides instant updates with the 'Last Updated Time'. This helps the user to know about the fresh situation unfolds. The information website provides accurate and legit information from Official governmental websites. Regarding the data credibility of this site, the details are collected from press release of the States, official government links and reputable news channels. In addition, data are validated by a group of volunteers and pushed into Google sheets.

RESEARCH ISSUE

The purpose of this study is to examine the health website characteristics, which can indicate website quality. In addition, the perceived usefulness and intention to use this health website have been analyzed based on the Information Acceptance Model. Most of the studies have found a relationship between health website quality and the intention to use such sites. The results of this study could be a major contribution for both health website designers and the users, who are patients. The results have practical implications for managers and other online operators in the healthcare industry.

Objectives of the Study

1.   To study the characteristics of health website and its quality

2.   To examine the dimensions of perceived quality of health information website and risk perception

3.   To find out the relationship between intention to use the health website and reliability of the same.

Presentation Format

   The content of the paper is structured as follows. First, a brief review of literature on the quality of health websites, perceived information quality and trust has been made. There after the theoretical framework used in this study is explained. Subsequently, the methodology has been explained. The results and discussion are given in a classified manner. Further, managerial implications, limitations, and future research directions are also presented in this paper.

II.   REVIEW OF LITERATURE

   On online trust, professional layouts, images, advertisements, physical addresses, and navigation menu in a healthcare website will have influence. Within the Technology Acceptance Model the Ease-of-use is one of the important constructs. A website viewed as easily operable will be accepted and used by participants in the long run. On the other hand, lack of ease-of-use definitely indicate that users have difficulty in navigating the website due to poor organization of the site, poor design or information overload, making it likely for users to abandon the website (Kim, 2016)**.** Similarly**,** the Quality of user interface relates to factors such as usability, adaptability, functionality, and flexibility. The interface aspect is considered to be a critical component in the online environment. And also, the system quality has emerged to contain dimensions with respect to download delay, navigation, response time, and error-free interaction. It is quite obvious, that the knowledge about a health topic is an important antecedent to the credibility of the website. Data regarding diseases and outbreaks are disseminated not only through online announcements issued by government agencies, but also through informal channels, including press reports, blogs, chat rooms and analyses of web searches. According to Brownstein et al. (2008) collectively, these sources provide a view of global health that is fundamentally different from that yielded by disease reporting done via the traditional public health infrastructure.

Infectious disease surveillance is an important epidemiological practice by which the incidence, prevalence and spread of infectious diseases are monitored in order to establish patterns of progression and activate measures of management and control. The main role of such infectious disease surveillance is to predict, observe, and minimize the harm caused by outbreaks, epidemics, and pandemic situations, as well as increase knowledge of both practitioners and the public about which factors contribute to such circumstances (Choffnes et al. 2007).

One of the most important elements of health care success is trust between the health care providers and those who seek health care. The trust can be significantly explained by perceptions of credibility, ease of use, and risk. Perceived ease-of-use (PEOU) is a direct predictor of trust and an indirect predictor through credibility. For a majority of researcher's, credibility is both a direct predictor of trust and an indirect predictor through risk (Corritore, Wiedenbeck, Kracher, & Marble, 2007). The above study is evaluated using Structural Equation Model (SEM). In this study, low PEOU has been hypothesized to be associated with high risk. And this prediction is based on the premise that poor website ease of use would make the website more risky. However, the results did not support a direct relationship between PEOU and risk. Also, poor ease of use did not directly affect users' beliefs about the website's risk. Nevertheless, PEOU does have an indirect relationship with risk through credibility. Moreover, low PEOU is associated with low credibility, and low credibility is associated with high risk. Thus, the effect of PEOU on risk is mediated by credibility.

Website structure expresses the relationship among various parts of the website and also classifies the functions of different parts of the website. A website structure mainly includes Navigation design, Visual design, Information Architecture, Page layout, Aesthetic and Visual aesthetic balance in the general graphical view of a website, Placement of page elements, Content presentation, images, and utilizing the media and furthermore, the appearance of website has a significant impact on attracting the users' attention (Haghi, Moghaddasi, Rabiei, & Asadi, 2017). The role of guidelines in health websites design is important and however, there is no comprehensive international guideline for health websites' design. In addition, these guidelines mainly focus on related organizational goals and the needs of the users. Thus, according to Wicks et al. (2010) developing a comprehensive guideline for designing health websites can be useful for users, designers and organizations involved in health care services. A number of online communities have been developed by patient organizations, providers, and non-profit organizations. Such online communities are virtual forums where patients can discuss their health concerns and exchange information. Participation in online communities heightens levels of emotional wellbeing, perceived control over disease, overall personal empowerment, and level of public awareness and medical knowledge.

The use of social media in infectious disease epidemiology is, however, a new method of surveillance that is emerging. However, with advances in its use, it has the potential of providing an accurate and rapid estimation of the progression of diseases within communities. In addition, social media can be a valuable tool in providing values in distinct climatic and socio-economic context (Gluskin et al. 2014). Health website evaluation is aimed at empowering and educating both the health consumer and web author in relation to various tools and techniques that can be used as resources and a possible reference point for evaluating the reliability of health information found online. The common eight reliability criteria for evaluating the reliability of health websites are Authority, Accuracy, Objectivity, Currency, Intended Audience, Coverage, Confidentiality, and Justifiability (Usher & Skinner, 2008). In assessing the reliability of a health website, it is more important to assess the trustworthiness and authority of the person, organization, or company responsible for the information at the site and their intentions for the information dissemination. Further, active online health information seekers should become increasingly proactive in developing their own critical appraisal skills when it comes to evaluating web based information.

Real-time reporting tools are of paramount importance to alert relevant public health surveillance systems and authorities about taking the right and necessary actions to control and minimize the potential harmful effects of viral infectious diseases. Social media and Internet-based data can play a major role in real-time reporting to empower active public health surveillance systems for controlling and fighting infectious diseases (Al-Surimi, Khalifa, Bahkali, EL-Metwally, & Househ, 2016). Social media has the unique advantage of being rapid and can be updated frequently and if used in a proper manner, social media can provide a sensitive and user friendly tool to monitor the distribution and determinants of epidemics both locally and at a global level. On the other hand, most of the information provided on social media and the internet is not moderated by professionals before it gets disseminated online. Reliability of the data is also questionable as the source of information could be from trusted health specialists or from unofficial sources. Protection and privacy of data should be kept in mind by public

health authorities before utilization. This is becoming more critical, particularly when the surveillance tools that processes internet or social media data are within governmental institutions. (Thompson et al. 2011).

III.   METHODOLOGY

By keeping in mind the aim of the study that there is a need to describe the awareness and attitude of the people towards COVID19INDIA website usage, a simple methodology has been designed. The study area limited to Chennai city, the capital of Tamil Nadu. A total of 25 respondents are selected (15 male and 10 female) to examine their view points. A semi-structured interview schedule has been employed to obtain the information and data. By adopting an inductive reasoning approach, thick descriptions are extracted during the interview sessions. Furthermore, this research demonstrates the suitability of interpretive research to inductively generate knowledge in the health information technology sector.

IV.   ANALYSIS OF DATA AND INTERPRETATION

Individual interviews are conducted and the excerpts are given under the following sequence:

Respondent 1 is an environmental engineer. He opined that the, "COVID19INDIA website helps to track communicable diseases and community based diseases; Artificial Intelligence (AI) in healthcare should be explored and I believe, AI is about to transform the future of healthcare industry".

Respondent 2 is a drawing artist. He feels, ".This website gives us basic information about corona virus outbreak; similarly, risk stratification database aids can be created for major diseases like cancer and HIV".

Respondent 3 is a documentary filmmaker. He insisted that the, "Patient database has been included in this website and that's a very good initiative; travel history of the patients (both national and international) should be mandatorily included in this database".

Respondent 4 is a teaching assistant. According to him, "This health website would be the first step to creating awareness; just like identity database, a comprehensive patient database of every usual resident in India should be created and linked to the Aadhaar card".

An Assistant Professor in the Department of Biotechnology, in a leading college Respondent 5, observed, "This website is indeed useful to the general public; in order to stop the spread of corona virus, health kiosks should be installed in public locations and proper testing should be done for novel corona virus".

Respondent 6 is an accountant in a leading private company. His thinking is, "This health website has released the district wise numbers; robust information about zone-wise corona virus infection rate must also be included in this website database".

Respondent 7 is a research scholar in the department of Physics. He states "This website is a good step by the Indian government; however, homeopathic perspectives in COVID-19 treatment can also be shared in this website".

Respondent 8, a pharmaceutical engineer wanted a comprehensive website. According to him the details of testing for COVID-19, time taken by the patients for recovery, medicines given, vaccines in the childhood, Adolescent Immunization Schedules and similar information should also be included in the patient database.

Respondent 9 is a media student and her point is: "This website is immensely useful during this corona virus disease outbreak situation; similarly, drug utilization and drug consumption databases - building a database driven website: such an initiative by the Indian government will be very useful to the general public".

Respondent 10 is a commerce graduate. She feels, "This is a resourceful health website created by the government; a website about basic first aid procedures should also be maintained by the government so that it should be useful to the people in times of emergency".

Respondent 11 is a medical student. She says, "Factually, this corona virus related website is very useful to the people of India; in addition, if the government can add regional language based video and audio content in this health website, it would be more useful to create awareness about corona virus outbreak among the general public".

Respondent 12 is a visual communication graduate. Her opinion is; "To make the patient database more elaborate, Frequently Asked Questions (FAQs) can also be added to it; other than that, this is indeed a great utility health website".

Respondent 13 is a bank manager and he observes; "Covid hospitals and non-covid hospitals in the jurisdiction or vicinity must be clearly mentioned in this website; moreover, in the future, an efficient online blood bank management system should be created and promoted by the government so that it would be useful during emergency situations".

Respondent 14 is a tailor but he gave a valid point: "Nutrition advice for adults during the COVID-19 outbreak should be added in this health website; in the near future, physician profile information should be collected and reviewed in a government website and such a website can be used by the people to locate specialized medical doctors in the country".

Respondent 15 is a Uber cab driver. He asserts, "There are certain minor glitches in this website. Self-quarantine instructions for asymptomatic or mild symptoms Covid-19 patients must be clearly highlighted in this health website; Online Doctor Appointment Platforms, especially for government hospitals should be developed by the government of India in the future days".

For respondent 16, who is lady Doctor, "This website is of a great utility at health education; besides, COVID-19 Worldwide Dashboard showing the latest statistics and information can also be uploaded in this Indian website just to raise awareness among the masses".

Respondent 17 is a head nurse. She says, "This website is just the beginning; in the near future the medical records of general citizens in India should be stored in an unified patient database and this database should be shared with all the prominent public and private hospitals".

Respondent 18 is a Visual communication graduate. She felt that: "Statements concerning the official government programs about corona virus crisis should be uploaded directly onto this website and this would appear to be a step forward toward qualitatively improving the reliability of the website".

Respondent 19 is another Uber cab driver who says, "The respective state governments should constitute a task force to deal with the corona virus outbreak, they should setup helpline numbers to advise those who are unwell or are showing symptoms of corona virus – this website is expected to give complete information about all these contents in a simple and user friendly manner".

Respondent 20 is a former hospital manager and a managing partner of a leading wind farm. He feels, "The government should make sure that language switching options are included in this health website; only by optimizing this website the content can be provided to the users in different regional languages".

Respondent 21 is a housewife and she felt that, this incredibly useful website debunks the myths about corona virus; hereafter, the government should consider creating a powerful and exhaustive database for homeopathic medicines because this is the time to bring homeopathy in the fight against corona virus.

Respondent 22 is a housewife. She feels, "Just like this novel corona virus information website, the government should develop a secured web-based healthcare portal for obesity management to fight obesity, overweight and other related chronic diseases; this initiative can help reduce the risk of chronic diseases by directly influencing the obese patients".

Respondent 23 is a graphic designer. He says, "This health website is indeed a life-saving tool for the general public; in order to get essential information on costs of important medical procedures and learn about insurance claims, the government should create a database so that people can be financially prepared to deal with critical illness".

Respondent 24 is a B.Sc. Cardiac Perfusion student. She feels, "Doctors and patients should turn to telemedicine during this corona virus outbreak; virtual doctor visit services should be encouraged and such telehealth services should be added in this website".

Respondent 25 is an event photographer. He says, "This is government's dedicated website to raise awareness about the novel corona virus; disabled and special needs child parenting websites should be created by the government in the coming days and moreover, this government website should give practical tips and life lessons to parents on how to deal with children with special needs".

V.   DISCUSSION

Internet is the ideal medium for sharing medical expertise. It can serve to save precious human life; help treatment in the time of corona virus by seeking expert opinion on the net and overall, facilitates an exchange of ideas. This could lead to valuable innovations and discoveries. Interactions in the cyberspace will also help the doctors in Chennai, Tamil Nadu, India, to keep in touch with potential corona virus patients, especially those residing in

suburbs, localities and places close to Chennai and who therefore, often feel isolated. Increasingly, the internet can be used to convey more 'real-time' information. A patient in a remote area should be able to consult a physician sitting at any distance by providing him/her information on the signs and symptoms of corona virus disease, thus eliminating the risk involved in catching corona virus. This feature should be added in the COVID19INDIA website. This health site should become more interactive. Virtual Check Up feature should be added in this website and this feature can assess individual risks for corona virus. Further, doctors should be in a position to key their patients' symptoms into a computer and receive live statistics on the corona virus pandemic for every area in Chennai. If this feature is efficiently added in this website, it can become the next biggest shake-up in the corona virus response and containment measures undertaken by the Tamil Nadu government. The resources available on the internet can be deployed as a very useful tool bridging the information gap and reducing the number of accidents and risks due to misuse or improper use of drugs during the corona virus crisis. Misuse of prescription medications is a serious problem largely due to lack of information. Moreover, this health website can be effectively deployed to fill in this gap in appropriate and safe use of prescription drugs in the era of the corona virus pandemic. This website has the power to improve access to healthcare services in and around Chennai, especially for people with mobility problems. This has to be recognized by the state government, but there are concerns about inequality of access to the technology due to the cost and differences in broadband speeds. There are also challenges due to the lack of smartphone penetration in the suburban areas outside the Chennai Metropolitan Area and this mainly hampers the techno-centric responses made by the state government to COVID-19. Remote monitoring (also known as home-telehealth) uses technology to monitor changes in patients' health status outside of conventional clinical settings. Usually, the monitoring process happens through fixed broadband technology and it allows a patient to use a device to perform a routine full-body health check up and send the test data to the physicians through videoconferencing links. The videoconferencing feature will increase the potential for larger-scale remote monitoring and this feature must be added in this health website by the state government to fight the corona eruption in Chennai.

VI.   CONCLUSION

With upcoming advances in information and communication technology, the applications of computers in medicine have increased rapidly, and have the potential to revolutionize the structure and the mode of healthcare services. The internet, with its powerful penetration and scalability, has become an increasingly popular medical information resource. By restructuring the workplace culture around computer-based technology, doctors, researchers, and other healthcare providers are creating a new vision of work in areas such as patient care, medical environmental technologies, health education, and research. Modern information technology systems not only affect the delivery of healthcare, but also can significantly influence the doctor-patient relationship. This research paper analyzed the opportunities and barriers to the adoption of health websites based on extensive literature review and discussions with general public in Chennai, Tamil Nadu. It focused on the COVID-19 situation in Chennai and the existing state government machinery for public health in Tamil Nadu is expected to influence the people in the adoption of COVID19INDIA website. This research work explores the barriers to adoption, shifting dynamics between patients and healthcare workers, and how technology can help providers to work differently. The intention of this research paper is to provoke further informed discussion and offer readers scope to find solutions that may fit future corona virus-like situation. The task at hand is for the state government healthcare providers across Tamil Nadu to adopt new medical technologies on a larger scale and envision a better future for the people of Tamil Nadu.

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