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A QUALITATIVE REVIEW OF USER PERSPECTIVES AND EXPERIENCES ON EHEALTH DURING COVID-19 PANDEMIC IN BANGLADESH

Md Ali Ashraf and *Noushin Laila Ansari

Lecturer, Army Institute of Business Administration, Jalalabad Cantonment, Sylhet-3104, Bangladesh.

*Corresponding Author: Noushin Laila Ansari

Lecturer, Army Institute of Business Administration, Jalalabad Cantonment, Sylhet-3104, Bangladesh.

ABSTRACT

The current pandemic caused by COVID-19 has significantly increased the number of users of eHealth service, as eHealth services minimize the risk of spreading the disease. While in the pre-pandemic era, studies regarding eHealth or telemedicine in Bangladesh focused mostly on application of such services in remote locations. This paper, in contrast, focuses on investigating the evolution of such services in Bangladesh and the perspectives of its users in an urban setting. Rather than describing all the eHealth services available in the country, users of such services were interviewed and their responses were analyzed and reported in this paper in an attempt to understand their perspective and experiences. The enquiry revealed that although people mostly understood the concept of eHealth and users of eHealth generally had a positive view towards it, often they were unaware of the availability of such services. It was because of the ongoing pandemic for which prospective patients actively looked for alternatives to going to the hospital or doctor's chamber. While the participants did not mention any trust issues regarding the doctor, they were in general plagued by network connectivity issue and uncertainty of the wait time.

KEYWORDS: eHealth, Telemedicine, Pandemic, COVID-19, Bangladesh.

1. INTRODUCTION

The current outbreak of Coronavirus disease, also known as COVID-19, has affected the whole world including Bangladesh. The entire world is struggling with COVID-19, and the healthcare systems and physicians have been facing tremendous pressure as well. Bangladesh has also been suffering its share of COVID-19 outbreak. It was evident on March 8, 2020 that COVID-19 has started to spread in Bangladesh with the news of the first three confirmed cases of COVID-19 infection (Kamrul Hasan, 2020). After a year, Bangladesh is still struggling with COVID-19 infections and deaths. Although in the beginning of 2021, the number of new cases went down, in the month of March, however, it started to increase rapidly again (WHO, 2021). The fight with COVID-19 has influenced a lot of change within the global healthcare system. A lot of eHealth initiatives worldwide have been taken including telemedicine/telehealth services to prevent and minimize the spread of COVID-19, and also to protect people who are more vulnerable. (Alonso, et al., 2021). Bangladesh has attempted to implement digital solutions and digital policies regarding healthcare with tremendous agility (Khan N. N., 2021). As COVID-19 is severely contagious, social distancing is preferred and in case of health care services, telemedicine/telehealth is preferred where physical examination is not mandatory (Fahad, 2020).

At this point, it is essential to look at the concept of telemedicine or eHealth. The World Health Organization, also known as WHO has described eHealth as "the use of information and communication technologies (ICT) for health" (WHO, n.d.). Telemedicine and telehealth are two terms used interchangeably and falls under eHealth. Telemedicine refers to the use of information and communication technology to provide information regarding diagnosis, treatment and prevention of health-related ailments (Akhtar, Alam, & Siddiquee, 2019).

Telemedicine is not a novel concept in Bangladesh. It was first introduced in 1999, by Swinfen Charitable (Vassallo, et al., 2001) and after that there has been multiple services introduced by both government and non-government entities, including businesses. The goal of such expansion was to provide health services to underserved communities in remote areas (Ahmed, et al., 2014).

Moreover, the pandemic created such challenging situation that people from urban areas with easy access to healthcare facilities also considered and used telemedicine and other eHealth services as a safer alternative to their regular physical visits to healthcare facilities. There are a significant number of literatures that shed light on the importance, challenges and

hindrances that affect implementation of eHealth services and facilities in Bangladesh. However, these studies generally lack the perspective of users of telemedicine. Hence, this paper focuses on understanding the experience of the users of such services amidst this COVID-19 pandemic.

2. LITERATURE REVIEW
2.1. eHealth
eHealth is an umbrella term which is widely used in Europe, and generally refers to multiple components of health information technology including telehealth and electronic medical records (Ćwiklicki, 2020). eHealth, can also be termed as the delivery or enhancement of health services and information through internet and similar technologies. It is a contemporary field in the discipline of medical informatics and the healthcare industry (Eysenbach, 2001). The building blocks of eHealth includes health, commerce and technology. In terms of these three building blocks, eHealth is thought to be the use of internet and cellular technologies to improve the quality of health for those who need medical assistance (Oh, Rizo, & Enkin, 2005). World Health Organization (2003) defines eHealth as "being the leveraging of the information and communication technology (ICT) to connect providers and patients and governments; to educate and inform healthcare professionals, managers and consumers; to stimulate innovation in care delivery and health system management; and, to improve our healthcare system". In a similar fashion, The Directorate General of Health Services (DGHS) defines eHealth as a method to deliver health services to mass people using information and communication technology (Hoque, Mazmum, & Bao, 2014).

As discussed already, one of the many blessing of information and communication technology (ICT) is eHealth. A significant number of countries around the globe are using such technologies to deliver health services to those who need it. The global health care community, especially the experts of the fields are very optimistic about eHealth, as it facilitates fast and easy access to health-related information and skilled healthcare consultants (Hardey, 2001).

2.2. COVID-19 Pandemic
Coronavirus disease 2019, simply known as COVID-19, is a contagious disease caused by the novel coronavirus. The first case was believed to occur in Wuhan, China, in December 2019 (WHO, 2020). Since then, the disease has swiftly spread around the entire globe, resulting the ongoing pandemic. As of March 28, 2021, more than 12.6 million cases of the diseases were reported by the World Health Organization (WHO), with a death toll of more than 2.7 million, and rising (WHO, 2021). In Bangladesh, the number of cases reported has reached about 600,000, of which almost 9,000 lead to death (WHO, 2021).

2.3. Bangladesh and eHealth
In Bangladesh, conventional health services were dominant compared to the electronic health care system. The situation however, had changed with the occurance of COVID 19 (Khan, Rahman, & AnjumIslam, 2021). Bangladesh reported its first case of COVID-19 disease on 8 march, 2020. Subsequently, healthcare professionals stopped practicing and access to healthcare facilities was restricted, and the use of eHealth realized rapid growth. Directorate General of Health Services (DGHS), reports that there are 94 establishments in Bangladesh which can offer such services through videoconferencing, including 9 government specialized and medical college hospitals, 11 district hospitals, and more than 50 Upazila level hospitals (Rahman, et al., 2020).

The existing healthcare system in Bangladesh is based around multiple hubs and spokes. This system neither has any formal telemedicine framework, nor does it have adequate technological infrastructure. In addition, the users of the system are not satisfied with a quality of treatment they receive. At most, trainings and consultations are provided from these hubs and spokes through video conferencing with tools like skype. Even during the ongoing pandemic of COVID 19, the efforts to boost telemedicine capacity were negligible. Hence, there is a scope for conducting gap analysis to identify and fulfill gaps in various aspects of telemedicine, ranging from infrastructure to privacy (Bhaskar, et al., 2020a).

Back in 2005, Grameen Telecom (GTC) and Diabetic Association of Bangladesh (DAB) jointly established a telemedicine system. Through this system, patients from Faridpur General Hospital were able to take consultations from specialist physicians practicing in Dhaka. Afterwards, several organizations initiated telemedicine facilities in Bangladesh. Among them were organizations like Grameenphone and Dhaka University, and tools like Sebaghar, DaaktarBhai, e-Hospital etc. (Khan, Rahman, & AnjumIslam, 2021).

2.4. Increased interest in telehealth
An investigation of the popular search engine trends revealed that the 50 countries most affected by COVID-19 had shown increased interest and demand for availing healthcare services through telecommunication network. Such findings clearly emphasize the need to enhance and strengthen telehealth services, during the ongoing pandemic and perhaps, beyond the pandemic (Wong, et al., 2021). In another related study, researchers found that India and Bangladesh have greater relative search volume for telehealth in Google searches from January 21, 2020 to July 21, 2020(using Google Trends data). The search terms or keywords included for that study were "telehealth", "mHealth", "telemedicine" and "eHealth" (Arshad Ali, et al., 2020). Such trend in search definitely implies greater interest in "eHealth" and "telehealth" among Bangladeshi citizens. Not only the citizens, the governments of developing countries

showed increased interest in telehealth technologies even with existing limitations like absence of proper regulations, infrastructure and resources (Chakraborty, Ilavarasan, & Edirippulige, 2021). However, it is unfortunate that most of the developing countries do not have the ICT infrastructure to provide hassle free telehealth services (Bali, 2018). On the other hand, there has been tremendous growth in technology and the number of people owning computers and smartphones have increased significantly. Additionally the expansion of mobile network across the country has created greater access to high speed internet, and thus has increased the possibility for people to avail telehealth services (Ahmed, et al., 2020).

Although the usage of telemedicine varies from country to country, more and more evidences indicated that there is positive correlation among telemedicine and improved health system performances (Rao & & Lombardi 2nd, 2009). This notion is reinforced even more during COVID-19, as telemedicine was able to deliver treatment with high quality while at the same time being less expensive (Mullick, Rayhan, Koly, Nahar, & Hossain, 2020). As a result, telemedicine efforts have seen a strong boost, especially in developing countries, as governments and other partnerships of these countries are keen to support and accelerate the growth of telemedicine (Bhaskar, et al., 2020a).

There are several benefits of telemedicine. Firstly, telemedicine system can be set up as a focused response to pandemic cases. Focused telemedicine efforts reduce the spread of the disease by reducing patient visits to healthcare facilities (Khan, Rahman, & AnjumIslam, 2021). Secondly, telemedicine makes the life of patients with chronic diseases easier, as routine visits to healthcare providers can be reduced, which reduces the risk of infection (Bhaskar, et al., 2020). Another benefit of telemedicine is that it limits the exposure of health sector workers to contagious diseases (Okereafor, Adebola, & Djehaiche, 2020). This advantage is even more welcomed as it is essential to ensure the safety of health sector workers, as without this workforce any healthcare system would be unable to sustain itself. Moreover, telemedicine increases the availability of healthcare services, especially for patients in remote areas (Ashraf, Ansari, Malik, & Rashid, 2010). Apart from such patients, telemedicine also works as a blessing for single parents, immunocompromised patients and patients who need help from others for transportation (Bhaskar, et al., 2020b).

3. METHODOLOGY
This study is designed to be qualitative in nature and uses thematic analysis in an open-ended way. The goal is to investigate and understand how telehealth or eHealth services has created impact on the participants and what they experienced during the COVID-19 pandemic. Purposive sampling strategy was used to select 10 individuals from a pool of participants that have used or availed any kind of telehealth services from an urban environment. All of the participants received details of the study and informed consent was collected. Participants were also informed that their interviews would be audio recorded and be stored on a password protected secure cloud storage. The in-depth interviews were performed at the convenient time of the participants through voice calls using telephone and instant messengers, such as – WhatsApp and Facebook Messengers. The researchers used semi-structured interviews with the main question being, "what was your experience regarding use of telehealth/telemedicine services during this COVID-19 pandemic?". The interviews were conducted from February 10, 2021 to March 1, 2021. The study couldn't accommodate participants from semi-urban and rural communities due to limitations of finding suitable participants.

Purposive sampling is used to effectively draw out relevant information from participants who are information-rich when resources are also limited (Patton, 2002). All the participants in this study were adults (18 years or older). The respondents didn't receive any kind of incentives for participation. The interviews generally lasted for 20 to 25 minutes for each participant. As the focus of the study was to gain in-depth understanding of the experience of telemedicine users, demographic details (such as- age, gender etc.) are not presented.

For data analysis, this study has used thematic analysis. The audio recordings of the interview were transcribed and coded. The authors iteratively read and re-read transcripts to unearth potential themes and those themes then have been reviewed with the codes. In the final stage, critical quotes from the interviews were identified and highlighted and themes were finalized.

4. RESULTS
The analysis produced the following themes:
Theme 01: Awareness level is low even during the Pandemic
Participants were not very much aware of the available telemedicine services. It was only when they needed to avail a medical service and didn't want to expose themselves to COVID-19, they looked for telemedicine options. One participant stated, "I just used Google to see what options were available to me and was delighted that Evercare Hospital was providing doctor consultation over video conferencing." [Case: 01; Age: 35 years]. When asked about Government Health Helplines, participants were mostly unaware. All of the participants were aware of the Corona Helpline provided by the Government, however, since they didn't have issues related to Corona, they just looked for regular doctors in hospitals.

Theme 02: Greater trust issues over voice call than video conferencing
Participants showed a lot of concern over calling a health helpline using phones. Interestingly, the trust issues are

present for both patients and doctors. A Grameen Phone Tonic doctor stated, "We get a lot of spam calls as well as people who lie about their condition. It is hard to provide proper treatment over the phone without physically seeing the patient and then when the patient does not share enough information, we get suspicious. On the other hand, patients also state suspicion about whether the person receiving the call is a real doctor or not. To remedy this situation, Grameen Phone Tonic sends text messages containing the prescription and the doctor's name with their BMDC registration number. The registration number can be checked on the Bangladesh Medical and Dental Council's (BMDC) website." [Case: 03; Age: 29 years]

Theme 03: Dissatisfaction over telehealth services were mostly due to connection issues

Connectivity issues was the most common and top most complain about the services. In the words of our study participant, "I tried connecting to Praava's service using the URL they provided me. It didn't work. So, I tried their helpline and they offered to call me on WhatsApp, but before they called on WhatsApp the link started working. I was happy it was working, but the video conference froze again. I had to call the helpline again and they gave me the same reply that they will call me on WhatsApp. Then the video conference link started to work again and finally I could talk to the doctor. I was happy with the medical advice, but definitely highly dissatisfied with the connectivity problems" [Case: 05; Age: 42 years].

Theme 04: Confusion over wait time and waiting protocol

In general, after connectivity issues, the biggest complaint was wait time.

"I got my doctor's appointment, and they sent me a link to video conference with the doctor. On time I clicked on it and then the video conference started, but the doctor was not there. While I understand that the doctor might be with another patient, it was awkward for me to sit in front of the camera and wait. Also, there was no one I could ask about how long it would take. For a while I was wondering whether they forgot about me." [Case: 10; Age: 32 years].

"If the doctor was running late, it was easy for the administration to just send a message to the patient letting them know of the delay. I would have really appreciated it." [Case: 08; Age: 38 years].

Theme 05: Satisfied participants were likely to use the services again even after Pandemic

Some of the participants were optimistic about the telemedicine and hoped the services would get better with time. Majority of the participants felt they would use some form of telemedicine in the future even after pandemic for not so serious cases. As one respondent stated, "As a very busy person, it was hard for me to make time to go do some routine bloodwork. But because now there are services that if you book them, they will come to your house and collect sample and send the report by email; I finally got my bloodwork done. I was delaying it because of COVID-19, but since it was doable from home, I went for it. I would definitely use this service, even after Pandemic if it's still available then." [Case: 02; Age: 34 years].

Theme 06: Satisfaction over promptness and hassle-free registration of COVID-19 vaccination program

The eHealth service of COVID-19 vaccine registration was positively reviewed by participants. The study participants praised the ease of the whole process. One participant shared her positive experience by saying, "I had the most amazing experience using the 'Surokkha' website to register my father for the COVID-19 vaccine. It was easy and user friendly. I got the registration done and printed out the vaccination card within minutes." [Case: 07; Age: 25 years]. Other study participants also added: "One of the best parts for me was the security measures. The website asked for the National ID number as well as One Time Password to continue with the registration process." [Case: 01; Age: 35 years] and "I was particularly happy to be able to select the hospital. It helped me to choose the nearest one and avoid a lot of unnecessary commute." [Case: 09; Age: 44 years].

Theme 07: Telemedicine is not for serious cases, but it could provide guidance

The study participants all agreed that telemedicine cannot replace traditional face to face to consultations or diagnosis. However, they felt it's more convenient and appropriate to use when the patient's case is not serious. This sentiment is reflected in one of the participant's words, "I definitely appreciate the fact that I have the option to consult a doctor or book an appointment without going to the medical facility. I will definitely prefer a video consultation with a doctor over ailments that does not require close physical inspection by the doctor." [Case: 06; Age: 21 years]. To add to this sentiment in words of another participant, "Of course I know if it's an emergency I need to go to the hospital. But, sometimes it is hard to understand as a non-medical person whether to take the patient to the hospital or not. In those situations, talking to a doctor would be tremendously helpful." [Case: 08; Age: 38 years].

5. DISCUSSION, LIMITATIONS AND FURTHER RESEARCH

In this study, it was found that even though participants understood what eHealth and telemedicine are, they were not so aware of the offerings available in Bangladesh. All the respondents showed positive reaction towards their experience with getting appointment online, creating patient file on the website and uploading pictures and reports there before the doctor's consultation and overall experience with the doctor. However, in some of the previous studies there were mentions of skepticism towards medical advice received through telemedicine (Rahman, et al., 2020). This is in

contrast to the findings of our study and a possible reason could be the participants of this study opted for telemedicine services that provided them the option to look at doctor's profiles and choose a doctor according to their needs and book an appointment with them, whereas in the call center models of telemedicine the callers do not get to pick the doctor or see the credentials of the doctor involved. Communication issues were not present as all the participants and the telemedicine service providers were from urban setting. According to another study, doctors have trouble understanding local accents (Rahman, et al., 2020) and this issue can be further investigated with a study run in semi-urban and rural setting. The issue of network connection quality, however, has come up and aligns with findings of earlier studies (Khan, Rahman, & AnjumIslam, 2021). Another interesting finding that contrasted with previous studies is that none of the respondents actually expected to get medical diagnostic services done through telemedicine (except for blood work). In previous studies, some of the respondents showed negative feeling towards telemedicine as they deemed not getting diagnostic services through telemedicine actually makes it ineffective (Rahman, et al., 2020). As our study has focused on a smaller sample for in-depth interviews, this difference in opinion can be further investigated with a larger sample in future studies. It can also be checked if there is a difference of expectations from eHealth services between urban and rural population.

6. CONCLUSION

eHealth services come in many forms and the healthcare industry has tried to adapt to the demands of changes caused by the COVID-19 Pandemic by adopting as much as Information and Communication Technology based solutions. The findings of this study reveals an overall positive mindset and experience towards eHealth services, as all the participants agreed that using technology to support propagation of health services is a good idea. Even though, there were some complains all of the participants agreed that there should be more eHealth services including telemedicine-based doctor consultation, and the services should be easily accessible and reliable.

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