INFECTIONOUS DISEASES | RESEARCH ARTICLE

eConsultation perception among health professionals in response to the COVID-19 pandemic in University of Gondar referral hospital, Ethiopia

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Abstract: Electronic consultation is a means of communication with clients using different types of electronic devices at distance. However, health professionals’ perception towards the e-consultation is not well addressed. This study aimed to explore health workers’ perception on e-consultation to combat the coronavirus disease 2019 pandemic at the University of Gondar specialized hospital. A qualitative study was undertaken to explore health workers’ perception on e-consultation to tackle COVID-19 pandemic. Eight health-care workers were purposively selected from the University of Gondar specialized hospital. Medical doctors, nurses, medical laboratory professionals and public health officers were selected as key informants for in-depth interview. A thematic analysis was carried out. The analysis was performed with four identified themes, namely e-consultation benefit, technical skill, barriers of e-consultation and facilitators of e-consultation. All the respondents were aware of e-consultation service as a solution in the healthcare system to tackle the spread of pandemic. Some had the experience of reminding their clients to take drugs by using their mobile phone. They also expressed their feelings that using e-consultation would have an impact on health professional and client satisfaction by reducing the fear of transmission of the

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PUBLIC INTEREST STATEMENT

“Electronic consultation” is crucial to exchange information between patient and health professionals and between health professionals for better health outcome during pandemic. This article tried to describe the health professional’s perception towards electronic consultation at the University of Gondar in Amhara Region, Ethiopia. Having positive perception towards e-consultation and basic computer skills is important to implement e-consultation services at all levels. Organizational setup to implement e-consultation services, technical skills, such as basic computer skills and basic skills on managing and operating different types of electronic devices serving as a medium for e-consultation service, and awareness on e-consultation services are major contributing factors for adopting or implementing the service.
pandemic. Health workers believe that e-consultation solutions can reduce the spread of the pandemic at the point of service delivery. Technical skills, organizational setup and information technology-related factors were major contributing ones. Health professionals’ perception could not be a problem in implementing e-consultation service to tackle the spread of the pandemic.

**Subjects:** Health & Society; Health Conditions; Public Health Policy and Practice

**Keywords:** E-consultation; benefits; barriers; perception; Ethiopia

1. **Introduction**

Coronavirus disease is a highly contagious disease. For this and other reasons, e-consultation can reduce the transmission of the disease by reducing the contact between care providers and clients (Greenhalgh et al., 2020; Ohannessian et al., 2020).

Electronic consultation is a provision of consultation by using different information communication technologies to the clients (Gamst-Jensen et al., 2017; Marziniak et al., 2018). E-consultation can be short message reminders, direct phone call, video call, telemedicine and web site-based interaction between health professionals and clients (Angstman, Adamson et al., 2009; Angstman, Rohrer et al., 2009). The integration of e-consultation service in the health system improve the efficiency, competency and quality of service delivered. It can also be a means to deliver timely, correct and accurate information for the patients at distance (Gray et al., 2011; Straus et al., 2011).

E-health solutions are implemented in developed countries as a solution for different service in the health system (Vaona et al., 2017). They can also be used as means to reach clients in remote areas to address specialty service (Caltri et al., 2015).

Developed countries use telemedicine service and video consultation for monitoring their client’s health status and to tackle the spread of the pandemic (Access, 2020). Developing countries have to learn from the nations that had implemented different e-consultation service to monitor their clients and reduce the burden of the disease (Bokolo, 2020; Jnr, 2020).

In Ethiopia health system context, the use of e-health applications is at infancy stage and health professional’s perception towards e-consultation service is unknown Table 1. Therefore, this

| Variables               | Frequency |
|-------------------------|-----------|
| Sex                     |           |
| Male                    | 6         |
| Female                  | 2         |
| Age                     |           |
| Below 30                | 4         |
| Above 30                | 4         |
| Educational status      |           |
| Degree                  | 3         |
| Masters and above       | 5         |
| Experience              |           |
| Less than 5 years       | 3         |
| Above 5 years           | 5         |
research will serve as baseline for government, non-government organizations to adopt the service and for researchers to explore additional evidence in the field.

This study aimed to examine health workers’ perception towards e-consultation service to tackle the pandemic at the point of service delivery. This study believes e-consultation could serve as solution for the enhancement of service, management and reducing spread of the disease in the community.

2. Methods

2.1. Study design and setting
A qualitative study was conducted at the University of Gondar specialized hospital from 25 April to 15 June 2020. The study was conducted at the University of Gondar, North Ethiopia.

2.2. Study participants
In this study, health professionals working at medical, surgical, pediatrics and gynecology/obstetrics department were purposively selected for the study. Medical doctors, nurses, medical laboratory professionals and public health officers were selected as key informants, considering their important role in providing endless contribution in consultation service for the pandemic. Eight key informants were involved in the study. The number of study participants were decided based on the point of information saturation.

2.3. Data collection
A semi-structured open-ended questionnaire was used for data collection. An in-depth interview was undertaken to identify health workers’ perception on e-consultation service to tackle the transmission of the pandemic in the community. Key informants were selected from the hospital. The interviews with eight health professionals at the University of Gondar specialized hospital were held between 25 April and 15 June 2020. An ethics approval has been sought from the University of Gondar, Institutional Review Board.

An interview guide was designed to manage the discussion with the health professionals. The interview questions contained neutral and open-ended questions to avoid eliciting socially desirable responses. New questions were permitted to arise as a result of the discussion. Potential participants were approached at their workplace to get their agreement to participate in the interview. They were given a brief explanation about the study and the interview. Once they agreed to participate, in-depth interview was conducted at the participants’ workplace on a date and time that were convenient for them. A mix of both English and Amharic languages were used throughout the interview. The interview questions consist of neutral and open-ended questions. The interview sessions were audio-recorded. Each interview session took around 30–45 min.

2.4. Data analysis
The recorded audio data and handwritten notes from the interviews were transcribed and translated verbatim for analysis based on scientific evidences (Castleberry & Nolen, 2018). First, the first author (HAG) transcribed and translated the audio records. Second, all authors transcribed and translated the audio record. Then, all authors evaluated, discussed and approved the translation and transcription based on audio recorded data. Then, the interview transcripts were organized into sections for easy retrieval. Subsequently, the transcribed interviews were then coded using the qualitative data analysis software. It was analyzed using open code software version 4.03 (ICT Services and System Development and Division of Epidemiology and Global Health, 2015). The investigator read the documents containing participants’ responses repeatedly to detect the areas of similarity and overlap between codes, similar codes were grouped together under theme or category to form a major idea. All overlapping and redundant codes were removed. Diverse ideas were picked during the analysis, and these ideas were used to label comparable beliefs and practices, and develop interpretations. Data were summarized under the identified themes.
2.5. Ethics approval and consent to participate
The study was approved by the institutional ethical review board, University of Gondar Ref. No: VPRCS/05/1720/2020. Study participants were given information about the objectives of the study and informed. The participants were assured that no harm would occur if they decided to participate in this study. Their participation in the study was voluntary, and they were free to leave the study at any point of time without repercussions. They were also assured that their responses would be both anonymous and confidential. Their agreement to participate was considered as consent. They were willing the study findings to be published and distributed to the scientific community.

3. Results
Out of the eight key informants, two of them were females. All were directly involved in handling patients in different wards. Two of them were internists engaged in delivering internal medicine service in medical ward. Three others were pharmacy professional, laboratory technologist and public health officers. Two of the others were nurses and the remaining others were general practitioners.

Four major themes emerged from the in-depth interviews

3.1. Theme –1: -E-consultation benefit to tackle the pandemic
Most of the participants agreed that different types of electronic consultation services will help to facilitate the services provided to tackle the spread of coronavirus epidemic. Electronic consultation service can minimize face to face contact between patients and the provider, and this may decrease the spread of the disease and minimize the hospital visit rate of patients per day.

A 27-year-old physician said that: “… I think all experts know that e-consultation could be a solution for reducing the spread of the pandemic by enabling distance-based help via different types of electronic means of communication”

A 30-year-old nurse said that: “… the provider will get benefits like avoiding fear of transmission of the disease from patient or suspected one, so it can help to provide routine medical service with confidence.”

3.2. Theme –2: -technological skill
All respondents reported that they have an exposure with different kinds of information communication technologies that will facilitate the provision of e-consultation service to their clients. This in turn had an impact on the implementation and adoption of e-consultation service for the pandemic.

A 30-year-old physician said that: “… I think health professionals may have technical skills to manage or consult their clients by using different electronic consultation means like phone call, short message reminder, and some high-level video calls.”

A 31-year-old public health officer said that: “… it will be easy for me to use e-consultation for communicating with my clients since I have basic computer skill and I use my phone as primary communication tool for call and texting.”

3.3. Theme –3: -barriers for e-consultation
In fact, most of the participants have information technology-related skills to deliver e-consultation services. But they claimed that there is no adequate organization infrastructure for e-consultation service provision.

A 28-year-old physician said that: “… I think there is no set up for e-consultation service that means e-consultation needs adequate information communication technology infrastructure.”
A 27-year-old physician said that: “... it is important to create awareness on community about e-consultation by using different means for the community to get benefit from the solutions the service had.”

3.4. Theme -4: -facilitators for e-consultation
Respondents reported that there are facilitators for adopting e-consultation service in the hospital by using available human and other resources. Human resources are primary input for adopting different services including e-consultation for coronavirus disease.

A 28-year-old Nurse said that: “... I think there is opportunity for starting e-consultation service in our setting, like professional’s commitment to combat the disease and to protect their community.”

A 29-year-old laboratory technologist said that: “... it saves time, that means e-consultation service can avoid time spent for travel and stay at health facilities.”

4. Discussion
This study demonstrated that e-consultation service solutions were well appreciated by health professionals to combat the spread of the coronavirus disease.

In this study, key informants from different wards of the University of Gondar specialized hospital mentioned that e-consultation service can be used for different types of service in health system including for tackling the spread of pandemics like coronavirus disease, management of chronic disease, for home care, and to deliver other health related education to the community.

A 27-year-old Physician said that: “... I think all health professionals know that consultation service via electronic means are a life saver specifically for pandemic.”

A 31-year-old Public health officer said that: “… e-consultation solutions can serve as a channel for minimizing patent to provider contact, this in turn reduces spread of the pandemic.”

This study tried to identify barriers for e-consultation service in the health system to combat disease transmission and to reduce the burden of the public health-related emergencies. Based on the finding, many respondents witnessed that e-consultation solutions can reduce the impact of public health emergencies by providing timely information and increase the efficiency of the service.

A 30-year-old Nurse reported: “... I believe that accurate and timely information could be transmitted by using different electronic devices.”

A 27-year-old Physician said: “... in terms of controlling the spread of the disease we need different mechanisms like e-consultation to provide and give updated information on the symptoms, prevention methods and transmission modalities for our community.”

Looking into the results of other studies, it is clear that many health professionals use text reminders and phone call consultation for different service (Bali & Singh, 2007; Gamst-Jensen et al., 2017; Hafeez-baig et al., 2017), this study also suggests that similarly health professionals use informal type of consultation by using their private phone.

This study demonstrated that health workers’ technical skill affects the adoption of e-consultation services in the health care. Respondents stressed that user’s basic computer skill and digital literacy are basic ones for e-consultation services.

A 28-year-old Nurse: “The most important thing for e-consultation service is health professional’s information communication technology related skills like operating or managing systems.”
This study explored that e-consultation service can save the time of health professionals and clients, this is result is similar with other findings (McKinstry et al., 2002). Special emphasis has to be given to health professionals who work in close contact with confirmed patients of coronavirus disease. Studies suggest that the risk of transmission is high fields of medical practice, and hence the need for special emphasis to those with higher risk of transmission of the diseases in general by using e-health solutions. This study didn't include health workers in private health facilities and the study is conducted in one health facility.

4.1. Strengths and limitations of the study
This study has the following strengths and limitations. The study included a diverse sample of participants. To increase the transparency of the interpretation, coding categories are illustrated with quotations in the presentation of the results subsequently. Self-reported data are subject to social desirability bias and thus participants may have exaggerated their response. The researcher also acknowledges that data saturation is a disputable concept and novel themes may have emerged from further interviews. Also, this study didn't include health workers from private health facilities.

5. Conclusion
In conclusion, the perception of health professionals towards e-consultation service to combat the pandemic was good. Organizational setup to implement e-consultation services, technical skills, such as basic computer skill and basic skills on managing and operating different types of electronic devices serving as medium for e-consultation service, and awareness on e-consultation services are major contributing factors for adopting or implementing the service.

Prior to the implementation of e-consultation services, providing training for health professionals on e-consultation modalities is very vital to implement the service. Health-care institutions should also be equipped with adequate infrastructure to set up and start the service.

5.1. Implication of the research
Positive perception of health professionals for e-consultation for managing the pandemic could be valuable for the implementation of the service. Such information on perception could incorporate health professionals’ perspective and thereby gaining more information on organization barriers and facilitators towards e-consultation.

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Data availability statement
Data will be available upon request from the corresponding author.

Authors' contributions
All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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