

Narratives of Clinicians on Telemedicine and Delivery of Quality Healthcare in Ghana

Lily Yarney^{1*}, Nana Abban Mintah², Emmanuel Kofi Ayisi¹, Francis Anderson Adzei¹

¹Department of Public Administration and Health Services Management, University of Ghana Business School, Accra, Ghana

²University of Ghana Medical Centre, University of Ghana, Accra, Ghana

Email: *lyarney@ug.edu.gh, nmintah@ugmc.ug.edu.gh, ekayisi@ug.edu.gh, FAdzei@ug.edu.gh

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Abstract

Background: Telemedicine as a mode of healthcare delivery has improved the quality and coverage of healthcare in many countries. As the health delivery system of Ghana continues to struggle, the adoption of telemedicine can be a possible means of improving healthcare coverage and quality to the Ghanaian populace. **Purpose:** This study explored the perspectives of clinicians on the utilization of telemedicine as a viable mode of delivering quality healthcare in Ghana, assessed the perception of clinicians on the adoption and utilization of telemedicine for quality care delivery, the influence of telemedicine on the Institute of Medicine's (IOM) six dimensions of quality healthcare, and factors that influence the use of telemedicine in Ghana. **Methods:** A qualitative study involving eighteen medical doctors was conducted through purposive sampling of participants and in-depth interviews with a semi-structured interview guide via the Zoom App. Phenomenological data analysis procedures were employed, and NVivo 10 software was used to generate themes. **Results:** The findings indicated that telemedicine is a viable mode of improving healthcare coverage and quality in Ghana. Clinician competencies such as basic Information Technology skills, excellent clinical judgement, and good communication skills are essential to the delivery of healthcare via telemedicine. Most clinicians believed that the adoption of telemedicine will ensure the promotion of timeliness, efficiency, and patient-centeredness. However, some feared that telemedicine may be detrimental to ensuring safety, and effectiveness in the healthcare delivery process. Whilst equity of care was seen as an important quality dimension which telemedicine may promote, lack of logistics and resources in under-served areas may act as barriers against realizing equity as a quality parameter. **Conclusion:** Development of telemedicine systems is essential to the realisation of the much-craved universal quality healthcare delivery in Ghana. Clinician

training, and patient awareness of telemedicine systems are essential facilitators, additionally, establishment of protocols to regulate and standardize telemedicine for optimal care is necessary. Ensuring accessibility to logistics and resources in under-served areas is equally important to facilitate the adoption of telemedicine and promote equity of care in Ghana.

Keywords

Clinician, Ghana, Quality Healthcare, Telemedicine

1. Introduction

The advancements made in the application of technology have had myriad of positive impacts on the lives of people. The advent of technology and telecommunication has revolutionized healthcare delivery (Hurst, 2016). The process involving patient assessment, to the institution of treatment protocols has seen great strides in this era of advanced technology and telecommunication (Jones & Katzis, 2018). Since its inception about some 60 years ago, telemedicine, which is seen as the remote delivery of health care services using technology and telecommunication, continues to reform healthcare delivery in areas where it is being practiced (VSee, 2020). Quality healthcare has been made accessible to a larger population through the application of telemedicine (Boxer & Ellimoottil, 2019).

Even though the healthcare system of Ghana is making efforts to ensure the delivery of quality healthcare, there is still a wide gulf between it and that of other countries (Escribano-Ferrer et al., 2016). The issue of poor health infrastructure, and lack of availability of health services, coupled with poverty and high cost of care have contributed to the poor healthcare delivery in Ghana (Agyemang-Duah et al., 2020). These factors contributing to the lack of quality healthcare delivery have resulted in unmet health needs of people in both rural and urban areas (Enuameh et al., 2016; Ampaw et al., 2020). Unnecessary delays in receiving appropriate care which sometimes result in preventable hospitalizations continue to be the norm in most developing countries globally.

The health impact of the COVID 19 pandemic has led to most people seeking other modes of health delivery (Roy et al., 2021). A recent study showed a whopping 41% - 42% of United States adults reported to have delayed or avoided seeking in-person healthcare due to the COVID-19 pandemic (Koonin et al., 2020). This was however marked with a sharp increase in the number of people seeking healthcare via the application and utilization of telemedicine (Koonin et al., 2020). Further studies done show a predilection of the youth for the use of telemedicine, with research in the United States suggesting approximately 74% of millennials preferring telemedicine to the traditional in-person doctor exams (Smith et al., 2019). This clearly shows a gradual shift in the healthcare delivery system to one that is powered by technology and telecom-

munication.

The availability and accessibility of quality healthcare is very essential, and hence the need for all healthcare delivery systems to ensure its possibility (World Health Organization (WHO), 2020). The application of telemedicine in patient care has been a breakthrough in making quality healthcare available and accessible in countries that have adopted it (Mitchell & Kan, 2019). Telemedicine has received significant recognition since its inception, with a recent Harvard public health study revealing an increase in telemedicine consultations from 0.02 per 1000 members in 2005 to 6.57 per 1000 in 2017 in the United States (Barnett et al., 2018). This indicates the growing acceptance of telemedicine. The case has been similar in other Western countries, with telemedicine gaining a global acceptance at a very fast pace (WHO, 2011). The patient satisfaction during the utilization of telemedicine can be positively related to an improvement of quality in healthcare delivery (Kruse et al., 2020).

However, the situation seems to be different in Ghana. The availability and accessibility of universal quality healthcare is still a major issue (Escribano-Ferrer et al., 2016). The high cost of receiving quality healthcare in both rural and urban areas, coupled with other obstacles such as the lack of high-quality health facilities, contribute to the reduced standards of healthcare quality (Enuameh et al., 2016). The limited number of skilled healthcare personnel in remote areas also impacts the healthcare delivery system negatively (Enuameh et al., 2016). Moreover, people in urban areas who have access to relative quality healthcare facilities and skilled personnel also spend more time waiting to be attended to (Ampaw et al., 2020). The Ghanaian healthcare system has seen some stagnation in the innovation of quality healthcare delivery (Escribano-Ferrer et al., 2016).

Significant observations from a pilot project in 2016 pioneered by Novartis, a global pharmaceutical company, and the Ghana Health Service showed improvement in quality healthcare delivery through telemedicine (Novartis, 2018). It depicted that, more than half of the teleconsultations were resolved directly over the phone. There was a reduction in the referral rate by 31%. The project also improved quality of care, and reduced transport time and cost for patients (Novartis, 2018). The application of technology and telecommunication may be pivotal in solving issues related to increased health costs, limited number of healthcare personnel, inequitable distribution of healthcare resources, the untimely delivery of health care, and poor accessibility to quality care, hence the need for a study of this nature among clinicians with interest in telemedicine to highlight its advantages and the possibility of making telemedicine popular in Ghana. Thus, this study was carried out to explore the views and experiences of clinicians on using telemedicine, to find out (if any) the influence of telemedicine on the Institute of Medicine's (IOM) six dimensions of quality healthcare, to determine the facilitators and barriers of telemedicine, and to solicit suggestions for the effective implementation and utilization of telemedicine for delivery of quality care in Ghana from study participants.

Conceptual Framework of Telemedicine in the Delivery of Quality Healthcare

The study explored the viability of delivering quality healthcare in Ghana through the adoption and utilization of telemedicine. Hence, an essential part of the study was based on the Institute of Medicine's framework for assessing quality care. This framework enlists dimensions such as safety, timeliness, efficiency, effectiveness, equity, and patient-centeredness during care delivery as vital parameters to the achievement of quality care.

The implementation and utilization of telemedicine may lead to delivery of quality care. Thus, implementing, and utilising telemedicine can be affected either positively or negatively by some facilitators, barriers, and competencies of clinicians. Assessment of quality care can be done by tracking such parameters as safety, timeliness, efficiency, effectiveness, equity, and patient-centeredness, during care delivery (IOM, 2001b). The right application of telemedicine is likely to have a positive impact on these six dimensions of quality care (Figure 1).

2. Methodology

2.1. Study Design, Context and Population

The study has its pivot on the qualitative approach to research (Creswell, 2009) with phenomenology (Osborn & Smith, 2008) as the principal research method. These methods were vital for the study because valuable verbal data (Leedy & Ormrod, 2010) on Telemedicine implementation in Ghana were needed to answer the research questions for the study. Lengthy interactions with the study participants (Fraenkel et al., 2012) were necessary in understanding their views and experiences with Telemedicine, its influence on the Institute of Medicine's (IOM) six dimensions of quality healthcare, and the facilitators and barriers of telemedicine, that might influence their recommendation or otherwise to the widespread implementation of Telemedicine in Ghana.

The study was conducted amongst medical doctors who deliver care through telemedicine in Ghana. Thus, the study population consisted of all clinicians in

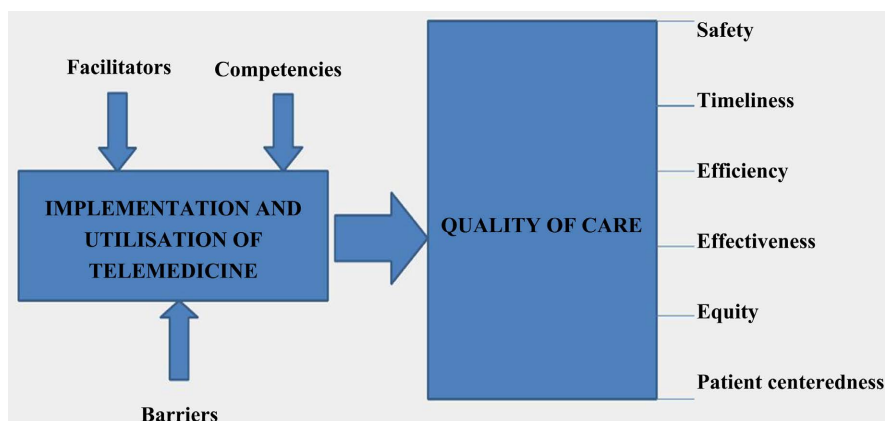


Figure 1. Conceptual framework of telemedicine in the delivery of quality healthcare. Source: Authors' Construct.

Ghana with knowledge and interest in telemedicine. Ghana is a country in the western part of Africa. The orthodox healthcare sector of Ghana is organized at three major levels: National, Regional and District. These levels are under the management of the Ministry of Health (MOH), Ghana Health Service (GHS), the Christian Health Association of Ghana (CHAG) or the Private Health Facilities Association of Ghana (PHFAG) (Dawson, 2017). The number of medical doctors in good standing according to an official with the Medical and Dental Council (MDC) at the time of the study in 2021 was 6117.

2.2. Sampling Method and Sample Size

A purposive sampling technique was employed to recruit clinicians with an in-depth knowledge and interest in telemedicine who deliver care through Telemedicine in Ghana. These individuals were identified with assistance from the Medical and Dental Council. Initially, twenty of such clinicians were contacted for the study (Shetty, 2020), however during the interviews, data saturation was realized with 18 participants. Hence, the sample size for the study was eighteen (18).

2.3. Data Collection Method and Instrument

Qualitative data were collected with a semi-structured in-depth interview guide developed with the research questions as a guide. Data were collected with a laptop via virtual interviews using the Zoom App. Virtual approach of data collection was adopted to prevent direct contact with study participants amidst the COVID-19 pandemic at the time. The Zoom App was used for the study because of its relative strong penetrance amongst the study population. Participants were allowed to express their views to the fullest during the interview process. All the participants were sent a courtesy reminder three days prior to the scheduled interview date, and a phone call a day to the interview.

2.4. Ethical Consideration

Prior to commencement of the study, ethical clearance was sought approval with the research protocol from the Ghana Health Service Ethics Review Committee (ERC). Informed Consent of all participants was sought before their inclusion in the study. Confidentiality of data collected was ensured by using identifiers rather than names and titles of participants, and data obtained were safely guarded on a personal computer with a password. Participants were made to understand that participation in the study was voluntary, and hence they reserved the right to either be part of the study or not, as well as having the freedom to withdraw from the study at any time without any untoward consequence. Permission was also sought from the participants to publish the findings of the study with anonymous quotes from them.

2.5. Data Management and Analysis

All the interviews were recorded, and handwritten notes taken in addition. In analysing the data generated from the interviews with the eighteen participants,

we employed phenomenological data analysis (Osborn & Smith, 2008). The voice recordings were thoroughly listened to and transcribed in English Language into a word document via Microsoft Word. We ensured the trustworthiness of the transcribed data by conducting member-checking with ten randomly selected participants (Birt et al., 2016). Important statements in the transcribed data regarded as offering answers to the research questions were teased out (Hycner, 1999). To assist in the generation of themes for the study, the NVivo 10 software was used by employing its keyword search and word frequency properties (Castleberry, 2014). The themes of the research were illustrated to represent the views and experiences of the clinicians with telemedicine through the quoting of the key ideas (Hycner, 1999). Utilizing the Spiral Time Theory, the themes were interpreted and scholarly discussed.

3. Findings

3.1. The Demographic Characteristics of Participants

The participants for the study were young clinicians aged between 28 to 36 years. Fifteen (83.3%) were male, the remaining three (16.7%) were female. The participants consisted of twelve (66.7%) medical officers, and six (33.3%) resident clinicians of various specialties. Study participants were from various health facilities in Ghana. Ten (55.6%) of the participants work in Teaching hospitals, four (22.2%) work in Regional and District hospitals, three (16.7%) work in Private health facilities, and one (5.5%) participant works in a Christian based health facility (see Table 1).

Table 1. Demographic characteristics of participants.

Respondent	Age	Gender	Level of practice	Place of Practice
Clinician 01	35	M	Resident	Tema General Hospital, Tema
Clinician 02	30	M	Medical Officer	Ussher Polyclinic, Accra
Clinician 03	31	M	Medical Officer	Eastern Regional Hospital, Koforidua
Clinician 04	30	M	Medical Officer	UGMC, Legon
Clinician 05	29	M	Medical Officer	St. John's Hospital, Tantra Hill- Accra
Clinician 06	29	F	Medical Officer	UGMC, Legon
Clinician 07	31	M	Medical Officer	St. Patrick's Hospital, Offinso
Clinician 08	31	M	Resident	KBTH, Korle Bu- Accra
Clinician 09	31	M	Medical Officer	Sandeama Gov't Hospital, Sandeama
Clinician 10	33	M	Resident	KBTH, Korle Bu- Accra
Clinician 11	28	F	Medical Officer	UGMC, Legon
Clinician 12	29	F	Medical Officer	UGMC, Legon
Clinician 13	31	M	Resident	KBTH, Accra
Clinician 14	31	M	Medical Officer	Frontier Healthcare, Accra
Clinician 15	32	M	Medical Officer	Euracare Advance Diagnostics & Heart Centre, Accra
Clinician 16	31	M	Resident	KBTH, Korle Bu- Accra
Clinician 17	32	M	Medical Officer	KBTH, Korle Bu- Accra
Clinician 18	36	M	Resident	KATH, Kumasi

3.2. The Views and Experiences of Clinicians on Telemedicine

Meaning of telemedicine per clinicians' perspectives

Various viewpoints were obtained from the study participants what Telemedicine meant to them. These included:

“Making healthcare accessible to everyone through technology and using Information Technology to enhance healthcare delivery.” (Clinician 04)

“Using technology to make access to healthcare more convenient.” (Clinician 05)

“Communication of medicine over social platforms, or discussion and management of patients via technology.” (Clinician 07)

“Means of patient having remote access to the healthcare personnel without having to come to the consulting room.” (Clinician 10)

“A form of delivering support for healthcare system using expert feedback for remote areas, through the use of internet.” (Clinician 17)

3.3. Competencies Required for Telemedicine

The competencies needed for successful Telemedicine as indicated by the study participants are: basic Information Technology (IT) skill; excellent clinical judgement; and good communication skills.

Basic Information Technology (IT) skills

Most of the participant stated that basic IT skills are essential for performing consults via telemedicine.

“Yes, certain competencies are needed. To start off, the clinician needs to be IT-savvy. Ideally, all clinicians need to be IT-savvy because of the frequent use of computers in the health facilities currently” (Clinician 04)

Excellent clinical judgement

An excellent clinical judgement was mentioned by participants as key to the delivery of care via telemedicine. They highlighted its essence because of challenges with physical examination during tele-consults, to prevent possible issues of misdiagnosis.

“Being well-versed, or more skilled, or knowledgeable in the field of medicine will be a strong competency. This is because not being able to perform a physical examination, and operating with only the symptoms and signs that patient tells you, requires that you should be armed with a good clinical judgement to push the diagnosis in the right direction.” (Clinician 01)

Good communication skills

Good communication skills during a tele-consult were stated by some study participants. Developing good communication skills was said to be essential to engage patients and get all the necessary information needed to enhance decision making during a tele-consult.

“I think communication skills are very important. This is something that isn't taught in medical school but is very important in-patient care. Even with in-person care, patients sometimes fail to follow instructions due to poor com-

munication by the clinician. Communication over the phone can be a bit more challenging than in-person. Hence, developing communication skills is vital for telemedicine. (Clinician 13)

“You must be very thorough when taking patient history. This is because you don’t have the luxury of performing a complete physical examination in telemedicine. For instance, a simple symptom like abdominal pain has myriad of diagnoses. You should be able to communicate properly to distinguish a medical cause of abdominal pain from a surgical cause.” (Clinician 04)

3.4. Use of Telemedicine by Participants

All clinicians interviewed had used a form telemedicine (formal/structured, informal/unstructured, or both) in their practice, and appeared to be satisfied in one way or the other with telemedicine as an approach to healthcare delivery. The use of informal/unstructured telemedicine was more common among the study participants.

Some clinicians adopted telemedicine to facilitate healthcare delivery during the COVID-19 pandemic. Others adopted telemedicine because of the convenience it offers for managing their patients, and some saw telemedicine as a way of easily addressing the medical issues of ill relatives and friends.

“...so, after the onset of COVID-19, we were forced to be more efficient in taking care of our patients without physically being in contact with them to prevent spread of infection to the patients, or from patients to us.” (Clinician 01)

“It is easier to communicate with my colleagues and my superiors through the use of technology. A plan can easily be put together for patient management even in the absence of specialists whose input are essential but aren’t physically present at the hospital.” (Clinician 07)

“I mean, the first thing that prompted me, and I’m sure for most clinicians to use telemedicine was to address health issues of family and friends who usually call to seek an opinion concerning their health.” (Clinician 10)

3.5. Merits of Telemedicine

Regarding the advantages of Telemedicine, participants mentioned improvement of healthcare accessibility; convenience of healthcare delivery; reduction in patient traffic at out-patient departments; promotion of infection prevention; initial source of decision-making; privacy and confidentiality; research and training opportunities; cost effectiveness; improvement in doctor-to-patient ratio; equitable distribution of healthcare; and avoidance of unnecessary referrals as the merits of Telemedicine.

Improvement of healthcare accessibility

“I will say accessibility. The health infrastructure in Ghana does not match population need. Telemedicine provides a solution for addressing this problem by improving accessibility to all.” (Clinician 14)

“Telemedicine provides a viable route of care delivery for the chronically ill

but stable patient. Through telemedicine, patients can honour their appointments, even when they are nowhere close to their health facility” (Clinician 05)

Convenience of healthcare delivery

Study participants stressed on the convenience that telemedicine provides during the health delivery process both for the clinician and the patient.

“It’s a very convenient way of delivering healthcare. Ideally, I would have had to meet you in-person for this interview, however we are now able to have it virtually. That is an example of the convenience telemedicine provides for myself and my patients.” (Clinician 10)

Reduction in patient traffic

Regulating out-patient numbers and reducing patient traffic at the out-patient department according to some clinicians make their work relatively less stressful.

“Telemedicine is efficient in providing an avenue for reducing queues and waiting times in the hospital making my work less stressful. It also provides some form of first aid for patients and ensures immediate intervention without visiting the health facility.” (Clinician 11)

“Telemedicine reduces patient queues and patient numbers at the out-patient department. Not all patients require in-person care. So, with telemedicine, they can be seen remotely without having to clog out-patient departments.” (Clinician 01)

Promotion of infection prevention

Some Clinicians explained that Telemedicine provides a means of limiting the direct doctor-to-patient contact, a purpose that was seen by many of the participants as very appealing amid the COVID-19 pandemic and facilitated its use.

“Telemedicine is set up to reduce the contact between persons in the midst of the pandemic.” (Clinician 03)

“I think infection prevention (e.g., screening and initial management of suspected cases of COVID-19 online) and reducing the contact between patient and the healthcare provider must be a major advantage of telemedicine.” (Clinician 02)

“By decreasing overcrowding and patient overload at health facilities, telemedicine promotes infection prevention.” (Clinician 16)

Initial source of decision making

The study participants saw telemedicine as providing an initial source for decision-making in the care delivery process. They were of the view that Telemedicine provides a starting point of contact for making decisions on how a patient seeking healthcare should be managed.

“Telemedicine helps people figure out where to go, and who to see in terms of receiving healthcare” (Clinician 01)

“Telemedicine also allows a decision to be made on whether patients really need to come to the hospital or not.” (Clinician 12)

Privacy and confidentiality

The privacy that telemedicine provides during a tele-consult was seen as one of reasons some patients will subscribe to the service. The participants acknowledged that some patients would like to remain anonymous for one reason or the other, and telemedicine provides them with this opportunity.

“Well, some patients may be shy in terms of seeking healthcare because of the medical condition they have. For instance, some young patients with sexually transmitted infections feel more comfortable now discussing their condition over a virtual platform than going directly to the hospital.” (Clinician 03)

“I think because of the privacy and confidentiality it provides; telemedicine can really benefit the field of mental health.” (Clinician 14)

“Telemedicine promotes privacy and anonymity. It provides an avenue for people who prefer to remain unknown and unseen at health facilities to access health care easily.” (Clinician 07)

Research and training opportunities

According to the Clinicians involved in the study, clinical research and training can be improved through Telemedicine. They believed that the adoption of telemedicine will improve data collection and data availability for enhanced research, training, and healthcare management opportunities.

“Telemedicine provides opportunity for data collection on conditions specific to certain areas in Ghana. This will bring to light problems in such areas and allow for strategic policy development and implementation.” (Clinician 03)

“Collection of health information and data is poor in Ghana. With telemedicine, I think there is an effective way to collect data, and store through electronic system which allows easy access to information for research and training” (Clinician 02)

“Telemedicine improves global collaboration and development of quality healthcare. It also improves research, saves time and promotes convenience during clinical and laboratory training by allowing training to be organized remotely.” (Clinician 17)

Cost effectiveness

The utilization of telemedicine was seen by participants as a means of cutting down patient expenditure in terms of money and time. For instance, the adoption of telemedicine was seen to cut down transportation costs and traffic times to health facilities. In effect, making patients' lives more productive.

“Well, it helps reduce patient costs in terms of transportation. Because not all patients can afford to move from very far locations to seek for care in other areas, and still have some money left for consultation and other health-care-related charges.” (Clinician 01)

“I think with telemedicine, care comes at a relatively lower cost for clinicians and patients. This is because it promotes efficiency for both clinicians and patients.” (Clinician 18)

“Patients with chronic diseases spend too much time at least once every month in the hospital premises. Most of these patients are usually stable and

could have saved some time and cost via virtual reviews and remote refill of medications.” (Clinician 07)

Improvement in doctor-to-patient ratio

A few study participants saw telemedicine as a way of improving the poor doctor-to-patient ratio situation by seeing more patients than they normally do.

“Telemedicine will also solve the situation of the poor doctor-to-patient ratio in some parts of the country, by allowing these people to virtually consult other clinicians’ who are physically not present in their community.” (Clinician 10)

Equitable distribution of healthcare

Study participants saw telemedicine as a gateway to bridging the gap between well-served and under-served communities.

“Telemedicine will bridge the gap of the lack of equity in the health care system of Ghana. It will allow clinicians in lower care settings to easily discuss cases with other clinicians and specialists for guidance on patient management.” (Clinician 08)

“Telemedicine will address the situation of inequity of quality care. People in remote, rural and underserved areas will be allowed access to quality care by communicating with clinicians in well served areas.” (Clinician 15)

Avoidance of unnecessary patient referrals

Some participants believed that telemedicine provides a way of promoting specialist inputs without having to move patients physically.

“Telemedicine will help improve our referral system. I mean if a patient needs to be referred to a health facility where very little will change by management plan, the clinician referring the case can have a discussion via telemedicine with the expert he intends to refer the case to. The expert can then direct the clinician at the periphery on what to do next in terms of patient management.” (Clinician 10)

“Telemedicine will provide access to highly specialized personnel or senior personnel in geographical areas where these persons are lacking. Eventually, their services reduce unnecessary referrals to major centres, and saves cost” (Clinician 03)

3.6. Demerits of Telemedicine

Participants mentioned two main disadvantages of Telemedicine. These are challenges with physical examination, and the abuse of Telemedicine systems.

Challenges with physical examination

All the clinicians stated that they tend to be restricted to only the inspection aspect of clinical examination. In cases where the consult is only audio based without visual features, inspection is also lost. This challenge may possibly lead to misdiagnosis.

“..., the biggest disadvantage being physical examination. In medicine, our diagnostic practices are based on what you see and what the patient tells you. If a patient gives you an incoherent or an incomplete history, you can fill in the

blanks with your examination processes. However, telemedicine may not allow for complete physical examination at the time of tele-consults, making diagnosis a bit difficult.” (Clinician 07)

“The main problem will be with diagnosing. You can never replace the direct human contact of decision making completely. Challenges with picking up non-verbal cues during a tele-consult might affect diagnosis. Also, it might be a bit difficult directing a non-medical person to perform a self-examination during tele-consult. These issues may affect the ability of making a very good diagnosis.” (Clinician 10)

Abuse of telemedicine

According to the participants, various forms of abuse such as patients logging in for multiple consultations with different clinicians when they are not ill, just to get access to certain medications to feed their addictions, and very ill patients logging in for a tele-consult whilst they need an in-person emergency care, are possible with Telemedicine.

“Our clinical judgement may be clouded because sometimes you need to see the patient to ascertain the real problem. You might not really appreciate the magnitude of the patient’s issues. You might underestimate or overestimate the severity of patient’s symptoms. With this, a patient needing emergent care might be missed during a tele-consult, which will lead to mismanagement.” (Clinician 12)

3.7. Facilitators of Telemedicine Implementation and Utilization

In addition to promoting infection prevention, the factors that facilitate the adoption of telemedicine as a mode of care delivery, according to study participants are Information Technology (IT) and social media interest, ease of access to laboratory, pharmaceutical, referral and ancillary services, and privacy and confidentiality.

Information Technology (IT) and social media interest

Close to three-quarters of the study participants acknowledged that an interest in IT and social media was vital to trigger the adoption and utilisation of telemedicine. Participants see IT and social media interest as an important avenue for creating awareness of telemedicine.

“With the growing interest in technology, and so many people on social media now, I think many people will seek care via technology. Patients are also becoming more interested in their disease conditions now. Because social media is also creating the awareness of health care, it enlightens people to seek care via the use of technology in various ways.” (Clinician 15)

“Reaching out through social media via advertisements will facilitate the spread of telemedicine. It will make more people aware of telemedicine services and build up an interest for seeking care through such means” (Clinician 05)

Ease of access to additional services

Some study participants also highlighted the importance of ease of access to

additional services during a tele-consult. They believed that having easy access to services such as laboratory and pharmaceuticals after a tele-consult will make telemedicine appealing to patients.

“So, I think having easy access to allied services, the pharmacy, and even ambulance service when a patient needs to be referred is important in the care delivery process. Having all these services linked to telemedicine will make it more appealing to the patient population.” (Clinician 18)

“Effective mobile laboratory and pharmaceutical services, and an effective emergency response system will facilitate the adoption and success of telemedicine. With these, people are assured of convenience, as well as prompt emergency care when needed” (Clinician 16)

3.8. Barriers to Adoption of Telemedicine

Barriers to the adoption and utilization of telemedicine as mentioned by participants include telecommunication issues; limited knowledge on telemedicine; lack of logistics; and poor human resource.

Telecommunication issues

Almost all the study participants stated telecommunication challenges as one of the major barriers to the adoption of telemedicine. Various issues ranging from high cost of data, unreliable network services, and poor network coverage in most remote communities were raised and discussed.

“Well, I will say network challenges. At the peak of the pandemic, a facility I used to work adopted formal telemedicine sessions for care delivery. During a tele-consult, a drop in call due to poor network connectivity will usually mean you get to continue your consult with another doctor the next time you connect. I know this doesn't help the continuity of patient care.” (Clinician 16)

“Data is too expensive in Ghana. Some people in the lower class of society, and those in remote areas who may benefit more from telemedicine cannot afford the service due to data charges.” (Clinician 02)

Limited knowledge on telemedicine

Clinicians indicated that most patients were not aware of telemedicine as a mode of healthcare delivery.

“I think poor education and limited knowledge on telemedicine among some patient groups, especially those in underserved areas are major barriers for the adoption of and utilisation telemedicine.” (Clinician 05)

Lack of logistics

Participants stated that the lack of technological equipment and electricity to deliver telemedicine especially in rural areas pose a major barrier to the adoption of telemedicine.

“Also, I think the lack of access to items needed for a telemedicine system especially in remote areas, hinder the universal adoption of telemedicine in Ghana.” (Clinician 08)

“The lack of logistics in Ghana especially in rural areas, and the unstable elec-

tric power supply in both rural and urban areas will surely impact the implementation of telemedicine negatively. You need electricity for powering telecommunication gadgets” (Clinician 17)

Poor human resource

A few of the study participants saw the limited number of healthcare personnel in the country as a barrier to delivering care via telemedicine. Participants were concerned about stress and burn-out amongst the limited healthcare personnel who are expected to deliver care both in-person and via telemedicine.

“The fact that same clinicians delivering in-person care at a crowded out-patient department are expected to deliver care via telemedicine at the same time makes the adoption of telemedicine by some clinicians very challenging.” (Clinician 04)

3.9. Telemedicine and the Institute of Medicine’s (IOM) Six Dimensions of Quality Healthcare

Participants’ views on the effects of Telemedicine on the quality parameters developed by the Institute of Medicine were as follows:

Safety

Whilst most of the study participants explained that telemedicine has a positive impact on safety, some of the participants also indicated that safety may either be positively or negatively impacted by telemedicine.

“Looking at the pandemic, a person boarding a vehicle to seek healthcare puts himself and other passengers at risk of contracting COVID-19. Also, there is risk of contracting the COVID-19 infection during hospital visit. Telemedicine provides the opportunity of seeking care without being exposed.” (Clinician 04)

“Safety may be affected positively or negatively. This will depend on how skilled the clinician is, patient understanding and willingness to comply with therapy.” (Clinician 06)

“Well, I think telemedicine may not promote safety. There is an increased risk of misdiagnosis. This may also generate medico-legal issues for the clinician. In the end, safety for patient and clinician will become compromised.” (Clinician 11)

Timeliness

About 75% of the participants opined that telemedicine positively impacts timeliness as a quality dimension. They explained that adopting telemedicine may provide a solution for delivering timely care. One participant was however of the opinion that telemedicine utilization was detrimental to timeliness of care, and a few of the participants were not sure if telemedicine was categorically beneficial or detrimental to timeliness as a quality dimension.

“I think telemedicine will improve timeliness of care. For example, prior to referring a patient, telemedicine allows the receiving facility to fully prepare for the patient before arrival. This cuts down unnecessary delays at the receiving facility.” (Clinician 08)

“Timeliness will be promoted via telemedicine. Care can be timely in terms of when to intervene, what to administer, and when to refer. For instance, telemedicine may be time saving in the management of acute stroke cases because direct specialist counsel for such cases can be received remotely before referral.” (Clinician 15)

“Telemedicine may lead to delays in the management of emergency cases. The time needed for in-person patient assessment and management may be wasted on trying to perform a virtual consult. Performing laboratory and imaging investigations, and provision of medications will also be delayed during telemedicine-unless there is a one-stop shop for receiving all these services.” (Clinician 14)

“Telemedicine will promote timeliness in care delivery in most situations. However, some patients may miss out on early diagnosis of a serious illness due to the lack of examination in telemedicine.” (Clinician 06)

Efficiency

About 75% of the participants indicated that telemedicine positively promotes efficiency as a quality dimension. Participants explained that adopting telemedicine would provide a way for cutting down unnecessary wastes and improving productivity. However, a few believed that the effect of telemedicine on efficiency could either be positive or detrimental.

“Telemedicine will promote efficiency. More patients will be seen within a short period of time, and the financial stress on patients will be reduced. For instance, there will be no need for transportation charges.” (Clinician 02)

“Telemedicine will promote efficiency. It will help in deciding which patients will benefit from just tele-consults, and which patients should be managed in the healthcare facilities.

“Telemedicine may promote efficiency. However, in the case where the patient will need to eventually see the clinician in-person, there arises the issue of initial waste of resources on telemedicine.” (Clinician 14)

Effectiveness

With the effect of telemedicine on effectiveness as a quality dimension, only about 25% of study participants acknowledged this fact. Most participants did not see how telemedicine stands to promote effectiveness as a quality dimension. These study participants believed that adopting telemedicine will negatively impact effectiveness. However, about 50% of the participants believed that the effect of telemedicine on effectiveness could either be positive, or detrimental.

“Telemedicine will promote the concept of effectiveness. The global standards accept fast and innovative ways of delivering healthcare. Since the WHO approves telemedicine, accepting and ensuring that standards are adhered to in Ghana will promote effectiveness of healthcare.” (Clinician 16)

“Telemedicine will strengthen the delivery of care and make healthcare effective. Through the support of global experts, the level of care will meet the global accepted standards, and hence, ensure effectiveness.” (Clinician 17)

“Telemedicine when used alone, without in-person consult at a point, will compromise the concept of effectiveness. There is the possibility of breaching globally accepted standards of care when consulting solely via telemedicine because this tends to be unregulated.” (Clinician 08)

“Telemedicine may promote effectiveness in only some medical instances. For instance, it will be effective with patient follow-ups, and management of chronic conditions. However, telemedicine may fall short of effectiveness in some cases. Mostly in surgical disciplines, the challenge with physical examination may compromise the globally accepted standard needed for diagnosis and management.” (Clinician 04)

Equity

About 50% of participants believed that Telemedicine impacts positively on equity as a quality dimension by promoting universal quality healthcare, and about 25% of participants indicated that telemedicine was detrimental to equity in healthcare. These participants explained that telemedicine might only benefit a selected few because of the lack of technological advancements amongst certain populations. A few of the participants believed that telemedicine may either impact positively or negatively equity.

“Telemedicine will improve equity of care. Patients can have access to specialist care via telemedicine in areas where they lack such specialists. Initial management can be started via telemedicine and patient later referred if the need be to see the specialist in-person.” (Clinician 01)

“Telemedicine will promote equity. Under-served areas should however be supplied with appropriate logistics to ensure its success. For example, it can be simplified using non-smart phones by supplying patients with analogue phones. Simple forms of telemedicine like the “call-to-remind systems” can be adopted in these areas for patient care, example, during ante-natal care.” (Clinician 03)

“Telemedicine will not improve equity of care. Telemedicine will only benefit the upper and middle class of society because of the cost involved in purchasing data for telecommunication services. People in the lower class may not benefit because they may not be able to afford data.” (Clinician 02)

“Telemedicine should ideally promote equity, however, the situation of inequitable distribution of care may not improve due to issues such as high cost of telecommunication data, unavailability of smart devices amongst people in remote areas, and risk of price hikes for services by providers.” (Clinician 10)

Patient-centeredness

Most participants indicated that telemedicine improved patient centeredness as a healthcare quality dimension with a few indicating that telemedicine may either positively or negatively impact patient-centeredness.

“Telemedicine will ensure patient-centeredness. Patient can have an in-depth discussion of their health issues with their clinicians. Telemedicine gives them the opportunity for multiple consults within a day if issues weren't completely resolved during the initial consult.” (Clinician 12)

“Patients call or schedule appointment at their convenience. Patients also tend to have direct access, and extended time with their clinician, compared to an in-person consult.” (Clinician 04)

“Telemedicine will affect patient-centeredness positively. Clinicians tend to focus on their patients more because of the one-on-one experience it provides. It also allows care to be patient specific.” (Clinician 08)

“Telemedicine may or may not promote patient-centeredness. When patients are allowed to choose their appointment times and consults are delivered according to patients’ schedules, we can say we are being patient centred. However, it may also be detrimental to patient-centeredness in a way because the human aspect such as empathy that is palpable during in-person communication can be lost during virtual consults” (Clinician 10)

3.10. Suggestions for the Improvement of Telemedicine in Ghana

Study participants when given the opportunity to provide suggestions for the improvement of telemedicine came up with myriads of ideas including availability of logistics and resources; clinician training on telemedicine; patient awareness creation of telemedicine; government and private sector interventions; and policy creation for standardization and regulation.

Availability of logistics and resources

More than 50% of the study participants stated that the availability of logistics and resources for delivering telemedicine was essential to facilitate an effective implementation and utilisation of telemedicine.

“Health facilities performing telemedicine should have logistics and resources needed to be able to deliver effective care. For instance, there should be availability of ambulance service when the expert suggests that a patient needs to be referred after assessment via telemedicine. There should also be around-the-clock availability of expert support.” (Clinician 17)

“The internet needs to be stable to ensure an effective telemedicine system. This means the availability of ultra-modern technology is necessary. Gadgets are needed, and stable electricity is also essential” (Clinician 08)

Clinician training on telemedicine

Participants saw formal clinician training as essential to the success of telemedicine in Ghana.

“There should be a course on telemedicine in medical schools, and refresher courses for doctors. The providers must be trained so that they are able to optimize the availability of telemedicine and give care that is close to the required standards.” (Clinician 14)

“We find ourselves in a world where everything is about IT. Courses to develop clinicians during their training to be able to use telemedicine are vital. Also, we need to train retired clinicians to be able to deliver care through telemedicine. This will improve human resource as well. IT training should be a general part of our education system at every level”. (Clinician 04)

Awareness among patients

Creation of awareness through mass education, and advertisement of telemedicine as a viable mode of care delivery was discussed as a way of facilitating the adoption of telemedicine in Ghana.

“If we can create awareness of telemedicine, and if we can teach our patients simple home physical examination skills, I think this will help a lot.” (Clinician 10)

“We need to improve advertisement and publicity of the available telemedicine systems. We can do it through several ways. I think using social media will really help.” (Clinician 02)

Government and private sector interventions

Some study participants acknowledged that for telemedicine to be very successful and universal in Ghana, major stakeholders must be involved. They saw strong interest and involvement of government, and telecommunication, and information technology companies as essential to the implementation and sustainability of telemedicine.

“Government intervention is also very important. With the help of the government, more pilot projects for telemedicine can be instituted to ascertain diverse problems that may arise on full scale implementation based on different population characteristics.” (Clinician 03)

“I think getting all stakeholders involved will ensure a successful adoption of telemedicine. As a national project, involving telecommunication companies directly in setting up telemedicine systems will ensure that appropriate structures are created based on the community’s characteristics to ensure sustainability of the project.” (Clinician 13)

Policy creation for regulation and standardization

Creating policies to regulate and standardize telemedicine systems was seen as a way of improving telemedicine and facilitating its adoption in Ghana.

“One way of improving telemedicine in Ghana is to standardize it, and make sure the quality of health people receive through telemedicine is optimal. This will ensure that effectiveness is achieved.” (Clinician 01)

“I think it is essential for telemedicine to be regulated. Policies should be made and measures should be taken to protect patient privacy.” (Clinician 18)

4. Discussion

With the expanding interest in information technology and social media, many people are becoming aware of other modes of seeking healthcare. Information technology has improved the accessibility and convenience of healthcare. Continuously, the internet is being used to create awareness of healthy living. Hence, the opportunity for the adoption of telemedicine is as a viable mode for delivering and accessing healthcare. The ease of accessing additional services such as laboratory investigations, pharmaceuticals, and diagnostic imaging, during a tele-consult promotes the adoption and utilization of telemedicine. This creates

the convenience that both patients and clinicians crave for in healthcare delivery (Almathami et al., 2020). The remote delivery of care by clinicians, and access to care by patients without any form of physical contact has been very beneficial, especially during the peak of the COVID-19 pandemic. With the idea of telemedicine favouring infection prevention, most people are now likely to adopt this as a mode of accessing and delivering healthcare.

Telemedicine as seen by the clinicians involved in the study is the use of information communication technology to make healthcare accessible and involves the remote delivery of healthcare via internet through telecommunication systems and social media platforms. The similarity of this definition and that of the World Health Organization (WHO) implies a good understanding of telemedicine by study participants. Study participants saw telemedicine to improve accessibility of health care, promote infection prevention, provide an initial point for decision making in the healthcare delivery process, regulate patient numbers at healthcare facilities, and promote research and training through better data management. Some of these findings are consistent with those of some previous studies (Boxer & Ellimoottil, 2019; Koonin et al., 2020).

All the study participants had used telemedicine in their practice and expressed satisfaction with telemedicine. This satisfaction may possibly be due to the myriad of advantages indicated by them. Most of these advantages are consistent with those of previous studies (Mubaraki et al., 2021; Hjelm, 2005; Indria et al., 2020). Thus, it appears that the adoption and utilization of telemedicine will develop major aspects of the Ghanaian healthcare system, especially in terms of accessibility and convenience of care. The advantage of reducing health cost may also be very appealing as many Ghanaians are low- and middle-income earners.

Basic IT skills, excellent clinical judgement, and good communication skills were discussed as essential clinician competencies needed for delivering quality healthcare via telemedicine. Thus, as most study participants suggested, formal training for clinicians is necessary for effective adoption of telemedicine (Gustin, 2021; Meher, Tyagi, & Chaudhry, 2009; Brebner et al., 2003).

The risk of misdiagnosis due to the inability to fully perform physical examinations was of grave concern to study participants (Mubaraki et al., 2021). With a clinician's ability for making excellent diagnosis dependent on both history and physical examination, the deficiency telemedicine produces with respect to the latter cannot be ignored. However, key competencies such as excellent clinical judgement, and good communication skills by clinicians as highlighted by the study participants may provide a solution for compensating for the limited opportunity of physical examinations that are associated with tele-consults. This may likely provide a resolution to the issues of misdiagnosis during tele-consult.

The issue of patients and clinicians abusing telemedicine is worrisome, it was clear from the study that telemedicine cannot be completely used in the management of all medical conditions. With some conditions being emergencies and needing urgent in-person assessment, attempting to totally use telemedicine in

the management of such patients may have detrimental effects on patient care. Clinicians' expression of the competencies highlighted by the study participants may be very essential in distinguishing between ailments that can be handled effectively via telemedicine, and those that need urgent in-person care.

Telecommunication issues, limited patient knowledge, lack of logistics, and poor human resource were found to be major barriers to the effective implementation and utilization of telemedicine (Almathami et al., 2020; Uscher-Pines & Kahn, 2014; Afarikumah & Kwankam, 2013). Issues pertaining to poor network connectivity, and high cost of data affect smooth delivery of telemedicine (Tchao et al., 2019). These telecommunication challenges may create a start-stop pattern during telemedicine adoption which may be very unappealing to some patients, thus threatening the sustainability of telemedicine. Without proper education and awareness of telemedicine as a viable route of healthcare delivery, patients will remain ignorant of such an approach to receiving care. The few patients aware of telemedicine may also be sceptical on using it as a mode of receiving healthcare if not properly enlightened on its benefits.

The lack of technology and gadgets needed for telemedicine continues to negatively impact its adoption in remote areas. Clearly, without computers and other basic gadgets such as mobile phones to run an effective telemedicine system, its adoption and utilization will fail. Currently, some clinicians are technophobic, whilst others are not prepared to change or adapt to the current trends. These are likely to affect the human resource needed to operate and deliver telemedicine successfully in the country.

Regarding telemedicine and the Institute of Medicine's (IOM) six dimensions of quality healthcare (IOM, 2001a), the mixed perspectives on the impact of telemedicine on safe care illustrates the conflicting views clinicians have with telemedicine. Infection prevention through the utilisation of telemedicine as highlighted by study participants promotes safety in patient care, an advantage that has led to the acceptance of telemedicine globally. However, the issue of limited diagnoses due to lack of physical examination during a tele-consult was seen as detrimental to the safety of patient care. The conflicting views of clinicians illustrate concerns on the ability of telemedicine to deliver safe care. This may negatively impact a universal acceptance and utilisation of telemedicine in Ghana. Thus, appropriate measures are needed to reduce the issues of misdiagnosis and to improve safety of care via telemedicine.

Adopting telemedicine is seen as an approach to improve the accessibility to healthcare (Mohr et al., 2018; Fox et al., 2017). Telemedicine promotes timeliness in the care delivery process; however, this cannot be applied in all situations of illnesses. Some medical situations deserve an immediate in-person consult. The complete use of tele-consult might delay access to this emergency in-person management and lead to poor patient outcomes. The need to develop good clinical judgement is thus, essential.

Adopting telemedicine was suggested by participants as a solution to ensure

prevention of unnecessary waste that is observed in our current healthcare delivery system (Rademacher et al., 2019; Mullen-Fortino et al., 2019). It is therefore, likely that adopting telemedicine will provide an avenue to solving inefficiencies related to cost and time.

With telemedicine unstructured now in Ghana, clinicians believe that delivering care that is of sub-optimal standards is possible. Hence the need to consider standardization and regulation regarding telemedicine if it is to be adopted and utilized effectively. Also, ensuring the availability of essentials needed for effective implementation of telemedicine in rural areas is vital to promote the equity of care that is expected from the adoption of telemedicine.

Privacy and confidentiality are also improved with telemedicine per clinicians' perspective. Telemedicine strongly promotes patient-centeredness (Record et al., 2021; Marcolino et al., 2019). Creating an avenue to easily access allied health and other care services such as laboratory investigations, pharmaceuticals, and ambulance service were seen by participants to improve patient-centeredness via telemedicine. Thus, making telemedicine very appealing provides a one stop shop, and an avenue for holistic care.

5. Conclusion

Awareness creation among patients and clinicians on the possibilities and benefits of telemedicine as suggested by the study clinicians cannot be overemphasised. This would whip interest in patients and clinicians towards the adoption of telemedicine (Kissi et al., 2020). Also, with government interest and involvement, various policies that facilitate the implementation and adoption of telemedicine may be developed and sustained (Nittari et al., 2020; Bali, 2018).

The Ghanaian healthcare system has seen some stagnation in the innovation of quality healthcare delivery (Escribano-Ferrer et al., 2016; Enuameh et al., 2016; Agyemang-Duah et al., 2020; Escribano-Ferrer et al., 2016). Adopting telemedicine may provide a solution for preventing unnecessary patient referrals, a perspective supported by the findings from the Amansie West telemedicine project set up by Novartis and the Ghana Health Service in 2016. Therefore, putting solid measures in place to ensure adoption and utilisation of telemedicine may contribute towards the achievement of universal quality healthcare in Ghana.

Declarations

Data collected from Clinicians were done in accordance with Helsinki Ethical Principles. Thus, ethical approval for the research was obtained from the Ghana Health Service Ethics Review Committee (ERC).

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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