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UTILIZING TELEMEDICINE FOR IMPROVED HEALTHCARE ACCESS IN GCC COUNTRIES: AN EXPLORATORY STUDY

BY

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Abstract

This study highlights the importance of the growing trend of telemedicine in the modern world, with particular attention to the GCC countries. The usability and effectiveness of telemedicine are the central focus of this study. Other focus areas include healthcare management, healthcare infrastructure, and health sector data. The health sector data will be useful in the process of assessing the successes and failures in the process of improving access to care. Also, the strengths and weaknesses of telemedicine deployment in GCC countries are illustrated in the study. The application and usability of telemedicine to track and monitor patients remotely is a modern trend that has not received a deserved level of applicability among the GCC nations. Additionally, the study explains the future of telemedicine, including the expectations of individuals and the advancement of healthcare management. This study evaluates the implications of the deployment and adoption of telemedicine in the GCC countries' healthcare system. The usability and effectiveness of mobile technology tools have brought tremendous advancement in the healthcare sector, especially in managing, maintaining, and utilizing health sector information. The main purpose of the usability of telemedicine for health monitoring and tracking is covered in this study, including the insights and patients and healthcare practitioners.

Keywords: Telemedicine, Technology, GCC, Applications, healthcare providers.

INTRODUCTION

Background

With the changing situation in the world, people have become busier to the extent of lacking time to visit hospitals to receive regular medical check-ups from healthcare providers. Luckily, technology has provided a solution to this kind of problem. The advancement in information technology is quickly revolutionizing the dimension of the healthcare sector, making it possible for patients to receive medical care remotely. Telemedicine is rapidly becoming an essential tool in healthcare management, and this study relies on a theoretical framework to analyze the implications of the deployment of telemedicine in GCC nations. Telemedicine results from the intersection between medical science and information technology since it involves using the internet and other related technology in healthcare. Telemedicine systems facilitate the dispersion of healthcare information between providers and patients for better access and improvement of healthcare operations.

Utilization of telemedicine in an accessible area has been made to certainty with effective coherence through the help of

technology and health professionals. It has significantly improved healthcare practices in general. Telemedicine, with its widest definition, refers to the form of healthcare delivery comprising technology to provide medical services to remote areas. The platform allows patients to consult with health practitioners such as physicians, nurses, doctors, and other specialists without visiting them in person. Also, the platform is built with a feature where health providers can diagnose, conduct treatment, and manage patients' health conditions from a distance. Telemedicine has a broad scope covering many concepts like mobile health, electronic health records, consumer health IT data, and big data in digital health systems (Al-Samarraie, 2020). Telemedicine has become vital in GCC countries experiencing great healthcare challenges, such as access to financial needs, limited facilities and resources, and healthcare professionals in general.

Although there are many benefits brought by telemedicine in the healthcare sector, the government should invest in the technology infrastructure to make this platform work more efficiently. The world is now controlled by information, communication, and technology. Besides telemedicine being used for diagnosing and treatment, it has also led to the

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growth of many health-related educational resources that help in the improvement of medical education around the world by providing professionals with essential knowledge and skills to implement their responsibilities more efficiently.

Significance of Study

The significance of this study is determined by a critical analysis of the current state of healthcare access in the GCC nations, including the strides made in adopting telemedicine. The research further analyzes how healthcare professionals in the GCC countries have bypassed geographical barriers to remotely deliver healthcare services to patients, increasing access to the same service. Also in the scope of the study is societal acceptance and resistance to telemedicine in the GCC nations where legislative restrictions, technological infrastructure, and cultural norms of the natives are concerned. Efficient Provision of Access to Telemedicine In many regions has led to decreased operational costs and support to healthcare providers, and a decrease in the commutation fee to seek healthcare services by patients has been observed. Telemedicine has been working quite well in most regions; according to the World Health Organization (Minniti & Siliquini, 2017). Europe is leading in this telemedicine service. The GCC countries have initiated the program, which is doing well in the region. Healthcare service is improving, and other measures are being implemented to equip fully.

Research Problem

The epicenter of this study endeavors to establish the implications of telemedicine deployment to improve healthcare access and quality in GCC nations. Poor healthcare infrastructure remains a major obstacle to access and quality of healthcare. Some difficulties, such as understaffed facilities, limited healthcare resources, and geographical limitations, still need to be addressed to increase access to quality and affordable healthcare. Bridging healthcare access gaps through telemedicine will flatten the barriers and enable underprivileged people living in GCC countries' rural areas to get fair healthcare access (Abu-Ras et al., 2022). The study also focuses on examining the use of telemedicine to improve monitoring of patients. Patients with diabetes, Hypertension, and Cancer assigned to home care need time-to-time check-ups, but the geographical gap remains a major impediment. Through telemedicine, patients with such conditions will be easily monitored. Specialized healthcare services do not exist in rural areas of GCC nations due to the low number of healthcare practitioners and poor transformation network. This study discusses the traditional system of healthcare services and the challenges faced by GCC countries in delivering healthcare services and measures that led to the creation of the GCC union to improve healthcare services. Secondly, this research aims to illustrate how GCC countries have prepared to ensure telemedicine is achieved and delivered effectively to their citizens. Some of the key topics highlighted in this study include advancing technology and infrastructure by GCC countries to create a suitable environment for telemedicine, for example, the availability of

electricity and quality internet connection to be accessible by all citizens.

The research has also illustrated how GCC countries have stated the regulations and legal frameworks. These rules shall ensure the data of the telemedicine platform's people are safe and secure. Hackers may attack and manipulate data that are transferred over the internet (Basuony and Mohamed, 2014). Therefore, the patient's data and privacy should not be disclosed. In addition, proper licensing of health care providers should have clear legal guidelines, which have also been discussed in detail.

Objective of Study

This research requires a thorough assessment of the GCC nations healthcare landscape and systems to establish the extent to which telemedicine has been implemented, its benefits, and the challenges incurred. The assessment will also provide a critical insight into the various success factors attributed to telemedicine to develop a list of practical recommendations for stakeholders. The findings of this study will add to the existing pool of knowledge in healthcare management since it will provide evidence to aid policymakers, practitioners, and healthcare admirations in decision-making.

Additionally, the study will lay the groundwork for further study on telemedicine applications in healthcare management.

The study further explains measures to be taken by GCC countries to ensure that their citizens can access healthcare in remote areas. The study has further provided the quality of healthcare service, and the consequences of the patients provided through telemedicine are more satisfied than traditional physical appearance to a health facility. Also, the research aims to explain how telemedicine will enable access to specialized medical expertise that might not be within the GCC local countries; these are the foreign specialists from other countries with more knowledge and skills required during an emergency. The economic benefits of telemedicine on potential cost and savings for patients, government, and health providers, which is are what the government will save from investing in telemedicine. The study attempts to provide ways in which GCC countries have taken measures to ensure that proper training and education are provided to all telemedicine users for effective use, especially people from rural areas, for effective usage. The study further discussed features of the telemedicine system, which allows patients to engage with healthcare providers and access their medical records and health information within the platform.

By providing answers, this study will generally improve the approach to healthcare management through telemedicine to eliminate the barrier of geographical distance between patients and healthcare providers. The key Objectives of the Study are as follows.

1. To give significant insights into telemedicine's viability and potential impact in improving healthcare access in GCC countries.
2. To understand critical factors for the implementation of Telemedicine in GCC countries.

LITERATURE REVIEW

In this era of advanced technology, the healthcare sector is rapidly transforming. Telemedicine allows patients to receive regular and timely medical treatments without physically traveling to see a doctor. This new trend has eliminated the problem of long waiting times, arrangement of doctor appointments, and the barrier of geographical differences between patients and healthcare practitioners. Telemedicine has enabled medical practitioners to provide better services in promptly diagnosing and treating patient's conditions (Vento et al., 2021). This tool creates more sustainability in the healthcare sector by increasing treatment efficiency and providing patients with instant healthcare advice. Telemedicine works best when combined with digital health informatics. Digital health informatics are in the form of a software-based tool used to manage patient data. Medical practitioners intending to use Telemedicine tend to require an accurate data source containing all the information required to advise and treat a patient.

The mortality rate from non-communicable diseases (NDCs) is the highest in the GCC region compared to other parts of the world. This rate has been attributed to the lifestyle of the people native to this region, characterized by a high-caloric diet, physical inactivity, and a deprived healthcare sector. Obesity in the GCC region is a disturbing 40 percent, with scientists predicting that the rate will likely increase in the coming years (Finkelstein et al., 2021). This indicator should be a wake-up call for the government to invest more in the digitalization of the health sector. The health sector with the health of Telemedicine would provide far-reaching benefits to the region through expanded access to healthcare. Conveniently enough, increasing digitalization of the healthcare sector was among the key initiatives the GCC governments proposed to address obesity in the Riyadh Healthcare Convention of 2008. Digitalization through Telemedicine will enable doctors to remotely monitor patient conditions through BMI monitoring devices. The Gulf Plan for Control of NDCs 2011- 2020 also echoed the digitalization of healthcare initiatives by directing health ministries of respective GCC countries to adopt technology to improve healthcare access. The directive also included increased community health education to prevent increased NDCs, such as obesity and diabetes, in the region.

Telemedicine presents a rare opportunity to improve healthcare by mitigating the challenges of geographical limitations. Specialized healthcare services do not exist in most rural areas due to a serious lack of human resources and finances to purchase medicine and equipment. The integration of ICT into healthcare through Telemedicine improves access to medical care services. Most developing nations lack the appropriate digital infrastructure and professionals to roll out a telemedicine program (Kaplan, 2006). The lack of professionals and infrastructure is because developing nations now realize that the rest of the world is embracing communication information technology and reaping big from this development. Adopting ICT in the health sector across developing nations will accelerate the speed and ease of

providing healthcare services. Despite this benefit, it is important to note that a few issues will slow the deployment and adoption of Telemedicine in GCC nations. First, the financial constraints involved in deploying and adopting Telemedicine may have a heavy financial bearing on developing countries. Secondly, there is the issue of cultural acceptance of new technology and whether citizens of GCC countries will embrace the new method.

Previous literature reported that some GCC member countries have invested substantially in healthcare. However, the innovation and progress in Telemedicine has not been properly gauged. Therefore, this study aims to analyze and evaluate Telemedicine with particular attention to advancements in the GCC region. Most of the GCC countries share the same cultural values and language; hence, the cultural aspect of the people plays a critical role in any healthcare advancement initiative. Despite the shared cultural values and perspectives, there are huge economic disparities between the member states of the GCC. GCC nations such as UAE, Qatar, Kuwait, and Saudi Arabia are doing well economically compared to neighboring Yemen, suffering from political instabilities that have crippled the healthcare system. Deployment of Telemedicine in the GCC region is key to creating a sustainable healthcare system for the member states and their neighbors. Most members of the GCC have heavily invested in healthcare infrastructure, including adopting telemedicine tools to improve access in remote areas (Fadhil et al., 2022). The decision of how Telemedicine is financed is crucial in adopting the tool. A country's financial capabilities directly affect the ability of a country to establish a sustainable healthcare system. Nations such as Yemen have poor healthcare systems due to unstable economic situations created by political instability. These countries will benefit from nations such as UAE, Qatar, and Kuwait, which are doing well economically and have better healthcare systems.

However, all is not lost for the smaller nation of the GCC in the quest to adopt Telemedicine. Nations can obtain IMF funding through the WHO to finance digital infrastructure for their healthcare systems. Healthcare digitalization funds can also be obtained from foreign investors and donors. A good casing point is that of Bahrain's. Bahrain invited foreign direct investment in the healthcare sector, and by the end of 2021, the digital health investment had increased by 25 percent (Abuzeyad, Al Qasim & Alqasem, 2020). The healthcare system of Bahrain has improved tremendously, with more hospitals equipped with medical devices to increase the overall healthcare service output. There is a need to address the existing healthcare challenges to meet the growing healthcare demands in the GCC nations. The influx of expatriates into the GCC countries increases the healthcare provision burden on the governments.

Most emigrants come to the GCC region searching for jobs, business, and investment opportunities. Nations such as the UAE and Qatar are major business hubs receiving millions of people from various parts of the world yearly. While some visit for a shorter duration, some stay for extended lengths of time, up to 10 years. Expatriates constitute about 48 percent of

the GCC region's total population, and the rate is not about to slow down, presenting a major challenge to the healthcare sector. The big influx of expatriates overburdens the healthcare systems, making it detrimental for hospitals to handle the large number of patients seeking healthcare. Societal and individual well-being is anchored in high-quality healthcare. Technology is presenting many new possibilities in the health and medicine sector by enabling new methods to improve healthcare access and quality. Scientists have developed new ways to overcome the challenges of demographic characteristics, poor healthcare infrastructure, and geographic dispersion. Telemedicine is among the most innovative methods to improve healthcare access in GCC (Gulf Cooperation Council) nations. Telemedicine is the application of telecommunication and digital communication technology to remotely attend to patients. Telemedicine improved access to healthcare significantly by eliminating the geographical dispersion between the patients and the healthcare providers. This study will look into the implications of telemedicine, including how it has and can be applied to improve access to healthcare in GCC nations.

Medicaid question of funding, bringing a considerable increase in privatization in the healthcare systems across the GCC nations. Webster (2019) postulates that privatization in healthcare enables non-government entities to become increasingly involved in the health sector. Governments worldwide are changing the healthcare supply chain by partially or fully withdrawing themselves from the provision and management of the respective healthcare systems. The healthcare sector in the GCC nations has traditionally been dominated by the government, with most hospitals under government funding. The ongoing attempt to digitalize healthcare through telemedicine adoption will be greatly hampered if governments are expected to be the only entities to facilitate the initiative. It is, therefore, crucial for governments to alter the supply chain by considering the idea of privatization. This move will enable the private sector to partner with governments to increase the decentralization of health. While this will decentralize control of the healthcare systems, the upside is that the healthcare system will become highly digitalized, improving access to healthcare for the people. Privatization will also present an ample opportunity for private players in the healthcare sector to thrive. For instance, Saudi Arabia, Saudi Arabia, in its Vision 2030, highlighted the intention to develop its healthcare sector through privatization (Sama'a et al., 2021). The advancements in Saudi Arabia's healthcare sector we see today partially result from the health sector's privatization. This indicator is good proof that privatization of healthcare is sustainable and attainable.

Regarding healthcare financing, the GCC financial allocation remains at a low of 3.8 percent of the GDP (MV Kumar et al., 2022). The GCC nations need to invest more in the healthcare sector than other countries in different regions. The healthcare demands, such as ICT infrastructure for E-health and Telemedicine, are expensive to implement. In as much as privatization may pose a solution, the government remains the

largest single investor in healthcare. The government ensures that citizens have access to quality and affordable healthcare by improving the utilization of available resources to strengthen public health. The private sector should only come in on a complimentary basis to strengthen primary care and increase access to healthcare alongside governments. Qatar initiated the upgrade of healthcare services through digitalization and the adoption of electronic medical records (EMR); Saudi Arabia and the UAE followed the trend. These nations have served as benchmarks for the neighboring nations since the likes of Bahrain and Oman, as well as members of GCC, have developed e-health systems that link identity cards to hospital records. These magnificent steps are sufficient implications that Telemedicine will serve to further improve the state of healthcare in the region. Advancements such as the deployment of Telemedicine will act as a catalyst for improving healthcare service outcomes. It also greatly benefits the GCC nations by reducing the unit cost of intervention in healthcare through patient surveillance and monitoring technology.

The benefits of Telemedicine are far-reaching, especially where sustainable healthcare outcome is the goal. Appropriate use of Telemedicine in the healthcare system can improve outcomes by promoting prevention, increasing life expectancy, and promising quality of life (Snoswell et al., 2020). Telemedicine provides a rich source of information for patients, giving them greater power to manage their health and dietary needs. Also, Telemedicine makes key information about the patients, such as immunization records, medical history, and exam results, more accessible. Increased accessibility to patient medical information is a key indicator of a sustainable healthcare system (Akhtar et al., 2023). The new trend in healthcare is heading towards more use of ICT to hand healthcare data, decision support software, and provision of healthcare services in remote areas. The application of remote devices is quickly gaining prominence, especially in monitoring blood sugar, blood pressure, and BMI.

Another important area of telemedicine adoption and deployment is the aspect of trust, especially where patient privacy and security are concerned. This concern heavily impacts patient insights and attitudes toward being tended to by health practitioners remotely since big patient data are electronically submitted. According to the World Health Organization (2021), the protection of patient privacy is a fundamental right of every individual; hence must be respected and protected. Patient data privacy and security, especially while using electronic health records, is among the emerging issues affecting patient trust. To address this problem, healthcare departments in the respective GCC countries must manage change in an organizational context through proper planning and management of ICT infrastructure. The healthcare system's structural design and culture must be aligned with the national culture in which the system operates.

Connolly et al. (2020) postulated that most people have a positive attitude toward using technology in health. It indicates that technology acceptance in the health sector is

quickly gaining prominence as patients and medical practitioners have seen the efficiency it brings. Nonetheless, it does not rule out that a whopping number of people are unfamiliar with some of the digital medicine devices and technologies. One of the nations advanced nations in the GCC is the United Arab Emirates. The UAE has made significant strides in healthcare because of its liberal policies that attract foreign investors and technology to improve the healthcare system. Within a very short time, the UAE has revolutionized its healthcare system from traditional medicine to now using advanced medical equipment. The Ministry of Health and Prevention (MOHAP) has launched a digital transformation to empower healthcare providers and patients to access healthcare services. The country emphasizes integrating digital and electronic monitoring devices (Zgallai et al., 2022). The implementation of Telemedicine is set to improve accessibility to healthcare since it brings the most valuable health benefits to people in every corner of the country.

Digitalizing healthcare is one of the corner pillars of creating a healthy society since it enhances how medical services are delivered to patients. The digital transformation journey encompasses integration and interactional issues across the stakeholder base. Digitalization of healthcare through the adoption of Telemedicine is all driven by patient expectations and attitudes. The aspects of Telemedicine, such as virtual care, still have not been widely accepted across the population. Being a new norm, it may take some time before the population understand how it functions. Despite the advantages of telemedicine adoption, there is expected resistance and mistrust in the system since it takes time for people to warm up to a new normal (Al-Samarraie et al., 2020).

Further analysis conducted by the WHO showed a higher prevalence of legal protection of patient privacy in high-income countries compared to low-income countries. This finding means that some of the member nations of the GCC will likely face data security issues. Besides financial constraints, patient data security and privacy will prevent or slow telemedicine adoption in some parts of the GCC region (Zgallai et al., 2022). Since developed nations of the GCC have progressed in building and setting up efficient national health information systems, adopting Telemedicine will be much simpler. Without the key ICT infrastructure in place, the key decision-makers will have little trust in the success of telemedicine implementation, limiting investment in the telemedicine initiative.

Access to healthcare in a population is crucial to community health and well-being. The easier it is for people to access healthcare, the healthier society, and vice versa is true. Therefore, to effectively access the state of healthcare in GCC countries, it is important to consider the extent to which the people of these countries can access healthcare. An explanatory study by Ali & Sayed (2020) posits that most Gulf nations are quickly modernizing their healthcare systems by adopting new technologies. By eliminating the barrier of geographical dispersion between patients and healthcare providers, Telemedicine is set to positively transform

healthcare. The study looks into providing an evidence-based assessment of benefits realizable with the deployment of Telemedicine. According to Al-Samarraie et al. (2020), policy suggestions, people's culture and norms, and development constraints are among the key factors interfering with the deployment of Telemedicine in GCC countries. The study further gives vital insights into Telemedicine's benefits, including the various ways that can be applied to overcome the hurdles that prevent its effective deployment. The Portuguese National Healthcare Service identified Telemedicine as one of the key axes to improving healthcare access. Telemedicine allows medical practitioners to provide patient-centered care to patients by eliminating the barrier of geographic difference (Ministério da Saúde, SNS). The adoption of Telemedicine requires careful consideration of various critical aspects.

In addition, most GCC countries share the same cultures, religions, and languages, but they experience wide differences in the education, quality of life, and accessibility of healthcare facilities. Some countries like Kuwait, Saudi Arabia United Emirates UAE are rich in oil and natural gas production. This difference in quality of life among GCC nations has created a margin that has restricted them from accessing proper health care uniformly.

The innovation of telemedicine is the best solution for equality for most who could not access medical services because of inaccessibility. GCC countries have implemented telemedicine services in their region to improve their health services, especially in remote areas. They bring professional doctors and platform experts from developed countries to help ensure that health services are rendered efficiently.

The embrace of innovation and technology is prevalent in the health sector. Over the last 10 years, the member states of the GCC have invested more to improve their digital infrastructure and subsequently transform the healthcare systems. Apart from the funds allocated from taxpayers, governments have also invited private investors such as Okadoc to fund digital healthcare initiatives in the Gulf countries. Digital healthcare's fruits are already enjoyed in developed member states of the GCC, such as Saudi Arabia and the UAE. Telemedicine is already being harnessed in these countries to provide key solutions and improve service delivery in healthcare. More than 50 percent of hospitals in the UAE already have a functional IoT-based system to effectively manage and monitor patient conditions (Zgallai et al., 2022).

Additionally, many medical practitioners have medical apps on their smartphones; they provide services to patients remotely, expanding access to healthcare across the country. The member countries of the GCC, such as Kuwait, Qatar, UAE, and Saudi Arabia, have taken innovation a notch higher with the adoption of robotic surgery, the world's latest innovation in the healthcare sector. For this reason, it is prudent to say with certainty that some of the GCC member states are on the right track regarding telemedicine adoption due to the existing headway made in creating ICT

infrastructure. Deployment and adoption of Telemedicine will not be a problem for these nations compared to other economically deprived member states. The suitability of the public health systems to initiate health campaigns, vaccine drives, or pandemic disease awareness or make any preventive measures via telemedicine is another important aspect. The study further describes the efficiency and usability of telemedicine applications on mobile applications and other gadgets (Correia and Al Mughamis, 2021). The study has also explained systems being integrated into affordable and easier-to-use devices, and government instruction to support needy citizens to acquire the gadget is also discussed. Finally, some of the weaknesses and limitations of telemedicine platforms in providing healthcare services are discussed in detail, on the other hand, the study has highlighted the advantages of the platform over the tradition method of healthcare service (Hjelm, 2017). The study has further highlighted some of the changes needed to be improved on the telemedicine system, security measures, and government guidelines to ensure better healthcare services are provided and efficient usage of the platform.

The lessons learned from literature publications on healthcare systems in the GCC countries depict a situation whereby Telemedicine will be instrumental in bringing the required change in the healthcare sector. The studies have all pointed out the need to expand access to healthcare in the region through digitalization. Also found by the studies is economic disparity among the member states in the GCC, with some members doing well and others lagging in the efforts to digitalize healthcare. Telemedicine is a solution to most of the health sector problems affecting the GCC region. Consequent to the major health issue facing the GCC nations, there is a need to improve care through promoting and supporting the role of primary health care (PHC). Clinicians and nurses are responsible for providing primary care to patients. Although their roles are well-defined, the problem of deficient human resource capacity still poses a big setback. Telemedicine can solve this problem since it enables a clinician or nurse to remotely tend to several patients without having to be physically in the same geographical location as the patient. The strategic directions that should be taken for the adoption and deployment of Telemedicine are well stipulated in the Gulf Plan for Control of NDCs 2011- 2020.

METHODOLOGY AND PHILOSOPHY

Introduction.

The research aims and objectives are fulfilled by reviewing the literature and analyzing the social insights around the deployment of Telemedicine in GCC countries. The readiness level is a key factor in the success of telemedicine initiatives. Readiness is measured by empirically assessing the barriers affecting the implementation and deployment of telemedicine by gathering data on the insights of healthcare professionals, patients, and policymakers. Secondly, the aim of determining whether technology acceptance across the GCC countries will accommodate telemedicine.

Research approach

This study applied a mixed-methods approach to appraise the application of telemedicine in GCC countries. The study applies a combination of qualitative and quantitative methodology to evaluate telemedicine deployment in GCC countries. Data collected from surveys sent to a sample of GCC patients, policymakers, and healthcare practitioners are statistically analyzed to inform the conclusion of the study. It will offer a quantitative insight into healthcare access from patients' perspective including the extent to which telemedicine has improved healthcare access. Focus groups and interviews provide are sourced from qualitative data since healthcare professionals, patients, and other stakeholders express their perceptions, experiences, and viewpoints on the deployment and application of telemedicine. The qualitative data is thematically analyzed to give an insight into stakeholders' perceptions of the deployment of telemedicine in GCC countries.

Research strategy

This study employed a robust research methodology that entails data triangulation to analyze the applicability of telemedicine in GCC countries. The target is to use the already available data on macro-economic scenarios, government regulations, technological advancements, patient and health practitioners' insights, challenges, and market drivers (Ekeland et al., 2012). The information gathered from external sources as well as those gathered from the interviews, surveys, and focus groups will be combined to provide policymakers with relevant information needed to deploy and expand telemedicine in the GCC nations. The surveys, interviews, and focus groups ensure that the unprecedented events that would otherwise be difficult to assess are captured.

On the other hand, secondary research involves data mining by gathering various technological trends, regional insights, challenges, government policies, and funding. Several studies have been done on the state of healthcare and technological advancements in the health sector across the GCC nations. These studies will provide a rich source through which secondary data can be obtained to aid this study. Considering outside sources in this study also adds a comprehensive iteration that guides the research process. Also akin to secondary research is the need for the application of triangulation to validate and estimate the market size for telemedicine across the GCC region. Triangulation will help identify the key players in the health and technology sectors that will take part in the deployment of telemedicine across GCC nations (Ammenwerth et al., 2003). Annual reports, white papers, and articles from recognized authors provide sources for macro-economic factors impacting the deployment of telemedicine in GCC countries. Any possible factors impacting the deployment of telemedicine are analyzed and evaluated in comprehensive detail to produce final qualitative insights into this explanatory study.

Methodological choice

Literature search and inclusion criteria are major aspects when conducting secondary research. Being an explanatory study, this paper will include empirical studies on the adoption and deployment of telemedicine in the Gulf countries. The review

of the selected articles will be guided by query filters to ensure the retrieved information will advance and validate the topic of study. The search for literature sources will not be limited by publication status, date of publication, or language. Among the keywords used in the literature search criteria included: (telemedicine, e-health, electronic health records, GCC (Gulf Cooperation Council), Bahrain, Qatar, UAE, Arab Countries, Gulf Countries, adoption, deployment, barriers, culture, utilize, and impact). The search process is designed to capture the variations and desired intersection through the application of Boolean operators for optimization. A total of 35 articles are selected for review.

Data Collection and Analysis

Surveys

Online surveys are conducted by administering questionnaires to a sampled group of patients, policymakers, and healthcare providers. Quantitative data collected from the survey is analyzed to provide insights on telemedicine. Key questions of the survey study will cover the areas of potential obstacles to telemedicine adoption, attitudes to telemedicine, telemedicine awareness, and healthcare access. A sample of 67 health practitioners, patients, and general stakeholders were selected to take part in the survey. Their insights are recorded and analyzed to aid in deriving conclusions.

Interviews

Semi-structured interviews are conducted with policymakers, patients, and healthcare practitioners in GCC countries. The interview intends to explore the aspects of telemedicine deployment and application, ideas on healthcare access, viewpoints, and experiences. Audio recordings of the interviews are transcribed to aid in the thematic analysis of the data collected. Medical health professionals are asked to independently participate in interviews where insights on telemedicine adoption and deployment are collected.

Arrangements for data collection

Focus Groups

Focus groups comprising various healthcare stakeholders from GCC countries are formed. The participants in these focus groups converse on the provided list of topics. The key topics of focus assigned to the groups include collective opinions on the adoption of telemedicine, improvement to healthcare access, and difficulties and constraints of deploying telemedicine (Pardede, 2019). The records of focus group discussions are taped and transcribed later during analysis.

Statistical analysis for data collection

Quantitative data from the survey are analyzed using applicable statistical techniques. Descriptive measures of central tendencies such as mean, and median are useful in describing the extent of healthcare access within GCC countries. Other forms of descriptive statistical measures applied in this study include percentages and frequencies used to summarize data and draw statistical conclusions about the data collected (Mishra et al., 2019).

The Qualitative data from focus groups and interviews are transcribed and analyzed thematically. Thematic analysis involves systematical organizing, classifying, and analyzing

qualitative data. The data is coded to establish qualitative associations useful for creating themes and trends. Results from qualitative analysis of data will provide insight into stakeholders’ perceptions, experiences, and viewpoints on the deployment and application of telemedicine.

The combination of qualitative and quantitative analysis collected data proved an all-round approach to the whole issue of telemedicine (Dzwigol, 2020). It gives a more nuanced and comprehensive picture of the implications of the deployment of telemedicine in GCC countries. By examining the present conditions of healthcare access, the experiences of patients and healthcare practitioners, and viewpoints on telemedicine using a mixed-methods approach, the results of this study will provide a holistic conclusion to the research topic. The application of more than one method makes it possible to assess the research topic effectively. The data gathered is used to inform the decision-making process that will guide resource allocation and policy formulation for Telemedicine initiatives in GCC countries. This study will join the other few studies that have scientifically analyzed the applicability of telemedicine in GCC countries.

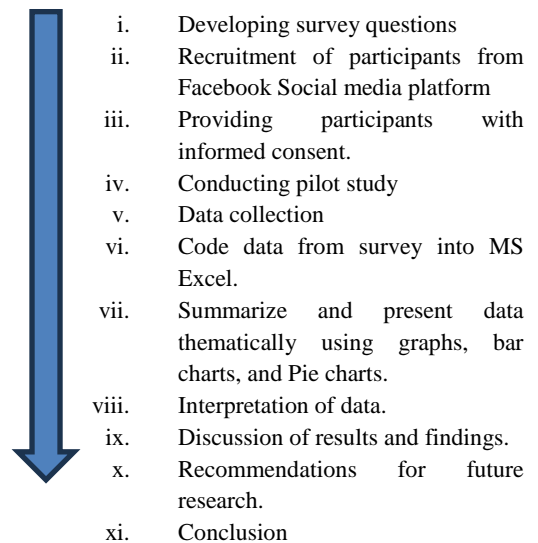
Limitations of Research Methodology

Obstacles and Barriers to Study

To further optimize the study, the barriers identified from various studies were coded. Items and dimensions of study that would prove difficult to derive heterogeneity of the research topic are excluded. The barriers are placed under organizational and technological dimensions affecting the deployment and adoption of telemedicine in GCC nations. The barriers related to traditional beliefs, culture, and social constraints are overturned by this study by collecting and analyzing the insights of people in the Gulf region (Al-Samarraie et al., 2020). Other barriers related to privacy, standards governing confidentiality, legislation, and other related policies surrounding the deployment and adoption of telemedicine.

RESEARCH AND METHODOLOGY

The Research methodology Flowchart is summarized as follows.



Data Collection, Analysis, and Findings

This study utilises both primary and secondary data. Primary data is collected through a combined administering of surveys, interviews, and focus groups aimed at collecting insights from medical practitioners and patients on the adoption of telemedicine across GCC nations. Secondary data is collected through the triangulation method. Already published titles provide a wealth of information used to support key sentiments found from the primary data. Most of the sources selected to provide secondary data for the study covered the areas of macroeconomic scenarios of GCC regions, government regulations, and technological advancement, health practitioners’ and patients’ insights, and market drivers in the GCC region. Both the primary data gathered from interviews, surveys, and focus groups are combined with secondary data collected from the sources to give an integrated picture of telemedicine implications in GCC nations.

The process of participant recruitment takes 4 weeks. During this period, the researcher carefully remotely chooses participants by fishing from Facebook platform which is commonly used social media app. To ensure the data collected is a true reflection of state of telemedicine in GCC countries, the participants are drawn from at least 5 out of 6 GCC countries. Finding a participant from Oman proved to be difficult but the omission of Oman in the study would have no heaving bearing since the rest 5 nations would effectively depict state of telemedicine in the region. Interested participants are instructed to give their pinions through an online survey directly posted into their Facebook Messenger platform. Data collected from the online surveys administered to a sample of 67 participants selected across a group of patients, policymakers, and healthcare practitioners is summarized in *Table 1* below.

Table 1.0.1 Gender Gap in Participants

| | | |
|---------|----|--------|
| MALES | 31 | 42.30% |
| FEMALES | 36 | 53.70% |

Out of the 7 participants selected to take part in the online survey, 36 (53.7%) of them were female while 31(42.3%) were male. The gender gap identified in the study is representative of the gender gap in real populations across GCC nations. The number of females is higher than that of women in each of the GCC nations where our study is focused on. Gender is a very important demographic variable in this study since it can be used to predict the future needs of society, especially on matters of healthcare.

Data Analysis

The collected data is manually coded using Microsoft Excel and participants are organized according to survey questions. Each of the participant (n=67) in the study is assigned a unique code using a coding methodology P1 to mean Participant 1 and P2 to subsequently refer to Participant 2. Owing to the bulk amount of data involved in the study, the information will be organized in MS. Excel worksheets.

Tables, graphs, and bar charts are the primary techniques used to display results of the online survey.

Table 1.1; Respondents' Satisfaction with Telemedicine.

| Column1 | Column2 |
|--|---------|
| No. Of Respondents Satisfied with Telemedicine | 43 |
| No. Of Respondents Unsatisfied with Telemedicine | 16 |
| No. Of Respondents who feel Indifferent About Telemedicine | 8 |
| Total Number of Respondents | 67 |

Figure 1.1 below shows that a majority 64% of the respondents in the online survey indicated they are satisfied with Telemedicine. Satisfaction is derived from confidence that access to healthcare has been improved and the same translates to overall improvement in the quality of care. 24% of the respondents are dissatisfied while 12% are indifferent on whether Telemedicine adoption has or will satisfy their medical needs. Generally, most patients, health practitioners, and policymakers have warmed up to the idea of telemedicine which is a good indicator that it can be utilized as a tool to improve healthcare in GCC countries.

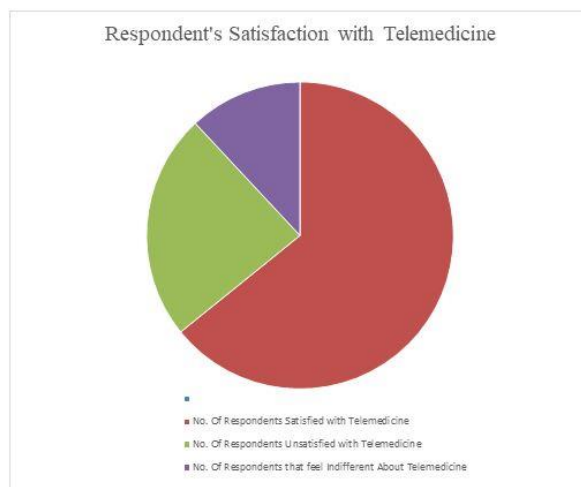


Table 1.2 summarizes the barriers to Telemedicine deployment and adoption in GCC Nations as identified by the respondents in the Survey.

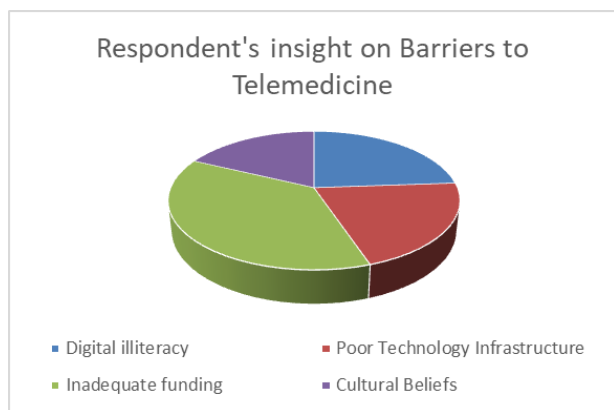
Table 1.2; Summary of Barriers to Telemedicine

| Barrier to Telemedicine | No of Respondents |
|--------------------------------|-------------------|
| Digital illiteracy | 16 |
| Poor Technology Infrastructure | 14 |
| Inadequate funding | 25 |
| Cultural Beliefs | 12 |

| Total | 67 | 6 | No | Fair | NO |
|--------------|-----------|----|-----|-----------|-----------|
| | | 7 | Yes | Fair | Yes |
| | | 8 | Yes | Excellent | Yes |
| | | 9 | Yes | Good | Yes |
| | | 10 | No | Poor | Undecided |
| | | 11 | Yes | Fair | Yes |
| | | 12 | No | Poor | No |
| | | 13 | Yes | Good | Yes |
| | | 14 | Yes | Excellent | Yes |
| | | 15 | Yes | Good | Yes |
| | | 16 | Yes | Excellent | Yes |
| | | 17 | Yes | Good | Yes |
| | | 18 | No | Fair | Yes |
| | | 19 | Yes | Excellent | Yes |
| | | 20 | Yes | Good | Yes |
| | | 21 | No | Poor | No |
| | | 22 | Yes | Excellent | Yes |
| | | 23 | No | Fair | No |
| Total | 23 | | | | |

The respondent’s insights ranked Inadequate funding, 37%, as the main barrier to Telemedicine deployment and adoption in GCC countries. In second place, is the barrier of digital illiteracy at 24% since senior community members are not fully conversant with digital communication methods. Poor technology infrastructure especially in rural corners of GCC countries is another eminent barrier as asserted by 21% of the respondents in the survey. Lastly, 18% of the respondents believe that cultural beliefs are a major hindrance to the deployment and adoption of telemedicine in most parts of GCC since they practice Arabic culture and too much technology is viewed as disruptive to the norms and traditions of the people.

Figure 1.2; Respondent's insight on Barriers to Telemedicine



The interviews comprised of semi-structured questions asked to a group of 23 participants comprising of patients, healthcare practitioners, and policymakers. The recordings of the interviews were analyzed and categorized across the aspects of insights, personal experiences, and ideas concerning telemedicine. This section applies a Likert-type questions with answer options varying as follows; Excellent-4, Good-3, Fair-2, and Poor-1. Likert-type questions will be effective the data from the interviews are summarized in Table 2 below;

Table 2; Summary of interviewee’s experience with Telemedicine as a tool to improve healthcare in GCC countries.

| Respondents | Whether Satisfied with telemedicine | Personal Experience with Telemedicine | Has Telemedicine Improved Access to Healthcare |
|-------------|-------------------------------------|---------------------------------------|--|
| 1 | Yes | Fair | Yes |
| 2 | Yes | Excellent | Yes |
| 3 | No | Poor | Undecided |
| 4 | Yes | Good | Yes |
| 5 | Yes | Good | Yes |

Table 2.1 below provides a summary of interviewees’ Personal Experiences with Telemedicine

| Interviewee Opinion | No. holding an Opinion |
|--------------------------|------------------------|
| Experience was Excellent | 4 |
| Experience was Good | 7 |
| Experience was Fair | 6 |
| Experience was Poor/ Bad | 4 |
| Total | 21 |

7(30%) healthcare practitioners who took part in the interview affirmed that they had a good experience accessing or administering healthcare services with Telemedicine while 4 felt the experience was “excellent”. 6 interviewees indicated that their interaction with Telemedicine was “fair”. Lastly, 4 other interviewees believe their interaction with telemedicine was "bad/poor" perhaps because of the high digital literacy required for patients and health practitioners to benefit from telemedicine.

Figure 2.1 below depicts a society that is fast embracing telemedicine and requiring a few touches of digital literacy to improve the experiences of patients and medical practitioners.

Figure 2.1; Interviewees’ Personal Experience with Telemedicine

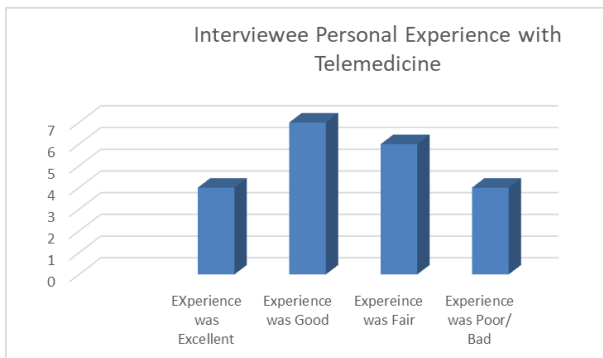
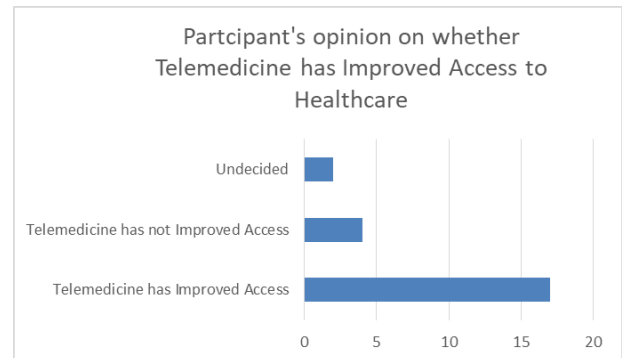


Table 2.2 below; summarizes participants' opinions on whether Telemedicine has Improved Access to Healthcare in GCC countries.

| Opinion | No. of Participants Holding Opinion |
|--------------------------------------|-------------------------------------|
| Telemedicine has Improved Access | 17 |
| Telemedicine has not Improved Access | 4 |
| Undecided | 2 |
| Total | 23 |

Figure 2.2 below depicts that a whopping number of participants hold the opinion that telemedicine has improved access to healthcare. Only 4 disagree with this opinion and believe that access to healthcare has not been impacted by GCC deployment of telemedicine. Last, the 2 participants who indicated “undecided” might owe it to the fact that they might not have interacted with the term “telemedicine” hence the need for more information on health education in communities.

Figure 2.2; Participant’s opinion on whether Telemedicine has Improved Access to Healthcare



The focus groups were mainly aimed at collecting the opinions of participants on matters; implications of telemedicine adoption, and constraints affecting the deployment of telemedicine. Key domains that will form themes of discussion include legal, cultural, individual, financial, technological, and organizational. The opinions of participants in focus groups are recorded in Table 3 below.

| Column1 | Column2 | Column3 | Column4 |
|--|--|--|----------|
| Question | 1. Domain 2. Theme | Statement | Research |
| What are the implications Of Telemedicine: | Implication of Telemedicine Impacts on Accessibility to Healthcare Knowledge of the Importance of Telemedicine | Improves accessibility to healthcare. No knowledge of what telemedicine does Never heard of the term “telemedicine” Telemedicine improves service delivery for medical practitioners. Telemedicine is expensive. Telemedicine reduces the time and cost of treatment. | |
| What are the constraints affecting the adoption and utilization of Telemedicine? | Constraints in the Adoption and Utilization of Telemedicine Barriers affecting full deployment and deployment of Telemedicine | Digital illiteracy prevents patients from benefiting from telemedicine. There is a lack of proper technology infrastructure in rural areas. The government lacked sufficient funds to fully roll out the Telemedicine program in all health facilities. | |
| Does Telemedicine minimize the travelling of patients? | Increased access to healthcare Minimized the necessity of patients travelling for hospital | A patient can receive medical attention from a doctor from the comfort of their home. | |

| | | |
|---|--|---|
| | appointments. | Telemedicine will save patients the cost of travelling to the hospital. Health practitioners will have more time hence able to attend to more patients. |
| Does Telemedicine Improve the quality of care | Efficiency of Telemedicine Improved quality of patient care | Don't know the benefits of telemedicine. Telemedicine offers benefits to patients and medical practitioners. Enables remote monitoring of patients with NCDs. Telemedicine is the solution to staff shortages in hospitals. Telemedicine enables good health practices. |

This study indicates that the utilization of telemedicine in the GCC region is improving owing to the positive experiences of the patients and the healthcare practitioners' perspectives collected during the survey study.

A sampling method was used to arrive at the sources used in this study. For a sampling method to be purposeful the research should exercise discretion in selecting the resources to be used. Purposive sampling ensures use of greatest quality of secondary sources to explore the problems posed the research questions. The triangulation method was used to create inclusion criteria for secondary data sources; it led to the identification of eligible 35 articles. All the selected articles are carefully read and evaluated to formulate a significant comparison of barriers impacting the utilization of telemedicine by dividing them into dimensions. The dimensions include legal, cultural, individual, financial, technological, and organizational. The barriers are further classified to respective nation members in the GCC. Barriers are coded using the item-focused approach where barriers are placed against the corresponding dimension.

The key criteria used to assess the quality of selected publications includes.

1. The ability of the selected publication to address the set objectives of the study by providing answers to the research questions/
2. The appropriateness of the publication in covering subject matter, particularly in the research region (The Gulf Council Countries).
3. The appropriateness of the publication in providing an empirical (qualitative and quantitative) outlook of the subject matter (Telemedicine Utilization)
4. The reliability of the results in terms of constituency to focus of the research.

The article-searching process is summarized in **Figure 3.1** below.

Kuwait was among the earliest GCC member countries to adopt and deploy telemedicine across its healthcare sector in 1998. The telemedicine initiative was at first hampered by technological infrastructure coupled with challenging policy standards that existed (Waqas et al., 2021). The government, through setting up steadfast policies and initiatives, attained full utilization of telemedicine in the health sector. Other

nations of the GCC have followed Kuwait's example and have rolled out telemedicine programs in their health sector o increase access to healthcare and improve the quality of care provided to patients. In its first attempt to utilize telemedicine, Bahrain rolled out a telemedicine pilot program for patients suffering from diabetic retinopathy in 2003 (Abuzeyad et al., 2020). The aim was to improve the detection, control, management, and treatment of NCDs which were becoming a major disease affecting the population (Finkelstein et al., 2021). After succeeding in deploying the pilot project Bahrain launched a full-scale telemedicine program to improve its healthcare sector in 2018. The Ministry of Health has since made significant strides, especially in the detection, early management, and treatment of NCDs.

UAE joined the race to improve healthcare through telemedicine in 2013. Since 2013 most hospitals across the UAE have adopted Telemedicine as the key tool used by practitioners to render healthcare services to patients in a more efficient way (Zgallai et al., 2022). The Abu Dhabi Healthcare Authority introduced the Telemedicine project through a joint venture with Switzerland which had already advanced in the application and adoption of telemedicine. The Kingdom of Dubai is the latest to use adopt telemedicine to enhance efficiency in its healthcare system. 2011 was the year Oman developed its first telehealth program before going ahead to deploy telemedicine projects across its health sector. The Al-Shifa Hospital was the pioneer hospital to receive a functional telemedicine program fully equipped with national electronic health records (Fadhil et al., 2022; Webster, 2019). The program was soon deployed to other hospitals to increase access to healthcare services across the breadth of the country. This thematic analysis of the stage of deployment of telemedicine in GCC countries reveals the various barriers and upheavals that various GCC countries have had to overcome in the quest to fully adopt and deploy telemedicine.

Partnerships are seen as one of the main aspects of the successful adoption and deployment of telemedicine in GCC countries. Due to a lack of adequate expertise, most nations choose to partner with nations that have already advanced in the telemedicine sector. A good casing point is that Saudi Arabia partnering with Canada to guide its telemedicine adoption journey (Sama'a et al., 2021). Another example of collaboration is described UAE's journey in the adoption of telemedicine which was characterized by a signed partnership

with Switzerland. Hjelm (2016), The main barriers affecting the adoption and adoption and deployment of telemedicine remain to be poor technology infrastructure, low digital literacy, cultural beliefs, and (Snoswell, 2020) high cost of deploying telemedicine (Ali & Sayed, 2020) across GCC region as depicted in **Figure 4** below.

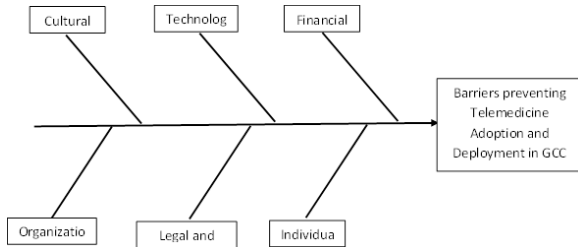


Figure 4: Fishbone diagram depicting barriers impacting deployment and adoption of telemedicine in GCC countries.

Despite the government having set up policies and procedures to guide the adoption of telemedicine Kingdom of Saudi Arabia, barriers remain pertinent. Although funding is a critical issue, other barriers arise from ethical approval; telemedicine being a new technology still has to ensure it maintains patients’ privacy through meeting the ethical obligations required for any healthcare system. User acceptance is still a major problem in Saudi Arabia as most patients are reluctant to fully utilize telemedicine (Alaboudi et al., 2016). The patient being the consumer must be ready and willing to be treated using telemedicine; failure to which the program becomes under-utilized. Digital literacy across the Saudi Arabia population is still below average hence the government inability to find adequate experts to implement, operate, and maintaining the telemedicine program in hospitals once introduced. Another major problem is that of competing interests; the Saudi Arabian government has health among many other sectors that demand attention. Over-emphasis on one sector would mean decline on the other hence the government has to balance or juggle between sectors to ensure the whole system works. Ensuring conformity in mission, vision, and needs each of the sector is the only way to ensure Saudi Arabia overcomes the barriers to utilize telemedicine to full potential.

Healthcare practitioners’ attitudes is an important aspect to be considered when rolling out telemedicine programs (Connolly et al., 2020). Unfavorable attitudes constitute individual barriers. Practitioners’ insight affects the overall success of telemedicine programs since practitioners are the epicenter of healthcare service delivery. MV, Moonesar & Rao (2022) postulate that digital literacy training is a necessity for all healthcare service providers to ensure they’re well conversant with telemedicine among other digital tools needed to effectively attend to patients. Resistance to telemedicine also emanates from cultural beliefs (Akhtar, Haleem, & Javaid, 2023; Baatwah et al., 2023) and legal regulations stipulated by a country’s law (Al-Rawajfah & Tubaishat, 2017). It affected acceptance, especially in a GCC region where the majority

remain strictly loyal to the Arabic culture and Islamic doctrines.

The issue of funding has proven to be a serious factor in the adoption of telemedicine in GCC countries. 67% of participants are inclined towards the expense of telemedicine being the major setback to utilization of telemedicine. Per capita income is one of the most effective determining factors for level of healthcare expenditure. Qatar with the highest per capita in the region is investing more into telehealth programs. Good financial position of Qatari governments makes it easier to roll out telemedicine programs and maintain it through state-of-the-art equipment. Telemedicine program through the Qatari government in partnership with HMC and PHCC continue to increase patients access to clinicians. Technology applied plays a major role in minimizing the strain in healthcare facilities across the country since care has shifted from hospitals to being provided to patients remotely at home. For this reason, there has been a significant improvement in overall state of healthcare in Qatar due increased convenience for both doctor and patient. A study conducted by Elhakeem et al., (2022) posited that more than 80% patients in Qatar were agreeable to the fact that telemedicine had helped meet their health needs. The perception goes a long way in improving confidence in the healthcare system. The same study also showed that around 89% of Qatari patients interviewed could effectively communicate and understand instructions communicated by physicians via telemedicine. Whereas 68% of the interviewed patients inclined their preference towards face-to-face interaction with health practitioners, 90% remained willing to take part in teleconsultations in the future.

CONCLUSION

This study aimed at collecting and analyzing insights from various healthcare stakeholders to rate the state of telemedicine utilization in GCC countries. The findings of this study target to offer insightful information that can be used to formulate policies around the field of telemedicine. It applied a comprehensive approach to gather and analyze data on the state of utilization of telemedicine in GCC nations. Primary data used to derive conclusions for this study was gathered through one-on-one interviews, surveys, and focus groups. The participants chosen to take part in the study comprised patients, healthcare policymakers, and patients all from across five GCC countries namely, United Arab Emirates, Qatar, Saudi Arabia, Bahrain, and Kuwait. On the other hand, secondary data utilized in this study was obtained from 35 published articles.

The process of recruiting participants took four weeks and was streamlined to eliminate outliers through a stratified sampling method. The gender distribution for the participants reflected the regional demographics across the five GCC nations. Analysis of the participants pool showed a relatively higher number of female participants compared to their male counterparts. Gender is an important factor in this study since it is one of the demographic variables relevant to healthcare investigations. The process of data analyses and

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interpretation of findings began with manual coding of collected primary data into Microsoft Excel. Microsoft Excel is an effective data analytics tool and enables the survey and interview responses to be systematically examined and presented. Data was then presented using bar charts, graphs, and tables making it easy to derive findings from the study.

The findings from the survey and interview results revealed that a larger part (64%) of the participants is satisfied with telemedicine utilization to deliver healthcare. This finding points to the high potential of telemedicine as a tool to increase access to healthcare and improve the quality of healthcare across GCC countries. An above-average satisfaction index is a positive indicator for governments and private investors to mainstream the adoption of telemedicine since the population is receiving telemedical advancements quite exceptionally. The findings further show how partnerships between governments and private investors have the potential to advance the adoption and utilization of telemedicine not only in the GCC region but across the globe. Thematic analysis also revealed various barriers derailing the adoption and utilization of telemedicine across GCC nations. The main barriers affecting telemedicine adoption are inadequate funding, cultural beliefs, low digital literacy, and legal regulations. While some of the nations like Qatar and UAE had significantly progressed in telemedicine adoption and utilization, others were still behind mainly due to a lack of necessary infrastructure. Generally, the findings pointed out the current state of GCC nations in the adoption and utilization of telemedicine. The findings intend to inform healthcare policymakers across the world mainly on opportunities and challenges expected to come along with the adoption of telemedicine. This study effectively evidenced the opportunities and challenges around telemedicine utilization in healthcare hence the findings can be leveraged to drive a positive change in the state of telemedicine across the world. It will also pave the way for further and deeper research into the state of telemedicine utilization in other regions as a measure to increase the quality of care and access to healthcare.

In summary, the findings of this study strongly propose telemedicine as the next big step to improve the state of healthcare in GCC nations once the program has been 100% utilized by hospitals. With the right fine-tuning through the right strategies and policies, telemedicine can significantly improve quality and access to healthcare, hence benefitting both patients and health practitioners. Telemedicine utilization in the GCC region can generally be categorized as above average hence the need for policymakers of various nations in the region to borrow more expertise from nations that advanced in the field.

RECOMMENDATIONS

Based on the findings derived from our study, some key recommendations can be settled on to further improve the adoption and utilization of telemedicine. The recommendations will apply to not only member nations of

GCC but also serve as a pilot to many other regions across the globe. Key recommendations are summarized as follows.

Further investment in technology infrastructure: The study identified the lack of technological infrastructure as the biggest barrier to the adoption and effective utilization of telemedicine. Therefore, it remains imperative for governments to invest heavily in creating technological capacity through state-of-the-art infrastructure. In as many cities and major areas might experience this problem, internet and tele-network systems are much needed in the rural areas which remain underdeveloped. A robust technology infrastructure will smoothen the adoption and utilization of telemedicine hence improving quality and access to healthcare.

Increasing funding allocation to healthcare: Inadequate funding of healthcare remains a major setback to the adoption and utilization of telemedicine according to the study findings. That and the fact that programs such as telemedicine require serious financial backing only makes it mandatory for governments to increase allocation to Health Departments. Therefore, governments across the GCC nations must allocate more resources towards the deployment and maintenance of telemedicine programs. The technological infrastructure also requires more personnel to help keep the systems working through routine maintenance, which is also costly to facilitate under the current tight budgets.

Formulation of obligatory ethical standards and policy reforms: The study also identified the issue of patient privacy and patient data security as major concerns affecting the acceptance of telemedicine among patients. For this reason, policymakers in the health sector across GCC nations need to formulate a comprehensive set of ethical standards and policies to regulate the utilization of telemedicine. Until the said policies and standards are developed, there will always be skepticism which derails the process of adoption and utilization of telemedicine.

Launch Cultural Sensitization Campaigns: This study established the aspects of cultural beliefs of GCC nations native as a massive factor hampering telemedicine initiatives. True to that point it would only be smart to acknowledge the influence of cultural beliefs in shaping the future of telemedicine in this Islamic region. Governments should therefore roll out cultural sensitization campaigns across rural communities to boost trust thereby enhancing acceptance of telemedicine utilization in the provision of healthcare. The campaigns will majorly be used to educate the local populations on the functionalities and benefits of telemedicine if they agree to utilize it.

Launch digital literacy programs: Given the study findings, a significant number of patients and healthcare practitioners view telemedicine as complex and difficult to use due to a lack of necessary digital skills. Lack of digital skills is a major setback to the full utilization of telemedicine hence the need for governments to start digital literacy programs to prepare patients for the new age of technology and equip health practitioners with the necessary skills to effectively utilize

telemedicine to provide care to patients. It will help foster a better understanding of the benefits and functionalities of telemedicine.

Training of healthcare practitioners: Healthcare professionals require fresh training to be fully conversant with telemedicine systems. Coupled with digital literacy drills the training exercise targets to familiarize healthcare programs with telemedicine systems thus improving the overall adoption and utilization of healthcare.

Forge inter-governmental and private investor partnerships: GCC member nations would strengthen partnerships with developed nations and private investors to facilitate a speedy adoption of telemedicine. Partnerships not only come with financial support but also expertise, all of which are benefits of collaborations. Collaborative efforts help overcome imminent challenges involved in the adoption and utilization of telemedicine.

Implementing the above-identified recommendations can effectively improve the utilization of telemedicine across GCC nations. They are derived from barriers identified by the study and hence can be useful in eliminating the challenges that derail the process of deployment and utilization of telemedicine, thereby enhancing the quality of care and improving access to healthcare.

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