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Family Medicine

Assessment of Telemedicine Consultations Role in Improving Health Outcomes and Patient Adherence in Saudi Arabia: A Review Article

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Abstract **Review Article**

***Background*:** COVID-19 has potentiated the growth of Telemedicine, offering easier access to care, convenience and cost effectiveness. Nevertheless, Telemedicine is not without risk, with the potential to impact healthcare outcomes, as with any other healthcare delivery model. ***Aim*:** This Review Paper aims to examine the literature in order to evaluate Telemedicine consultations in Saudi Arabia, based on reported health outcomes and patient adherence. ***Method*:** A total of 11 relevant scientific articles were selected from various databases (such as Google Scholar, PubMed, and Science Direct) for this review, based on keywords such as "Telemedicine", "Telemedicine Consultations", "Telemedicine Health Outcomes", "Telemedicine in Saudi Arabia". ***Results*:** The utilisation of Telemedicine in its collective modes of telephone calls, messages and video calls has yielded positive Health outcomes in Family Medicine. ***Conclusion*:** The benefits of Telemedicine on health outcomes are numerous, however, limitations and potential risks inhibit full implementation in Saudi Arabia. Furthermore, studies of variable design methodologies are required. Standardised Telemedicine policies within the Family Medicine service provision, ensuring the availability of appropriate technology, in addition to utilisation of appropriately qualified and highly trained professionals, as well as combining virtual care with in-person visits, are essential in the optimisation of Telemedicine service provision.

Keywords: "Telemedicine", "Telemedicine Consultations", "Telemedicine Health Outcomes", "Telemedicine in Saudi Arabia".

INTRODUCTION

Telemedicine is the process of delivering clinical care or knowledge using digital technologies [1]. Initially, Telemedicine referred to virtual interactions between healthcare providers and patients, but today it refers to a range of healthcare applications and services that supports patient information and health self-management [2]. Family doctors and other primary care providers have primarily acted as gateways to the healthcare system, offering ongoing care that reduces overall healthcare expenses [5]. Through Telemedicine all primary, secondary, and tertiary care settings may potentially be linked, providing opportunity for a remote, highly experienced, expert consultancy structure which can elevate patient care through high-quality provision [3]. With the development of innovative communication and information technology, Telemedicine provides solutions for populations with diverse healthcare needs [4]. Healthcare systems will increasingly rely on Telemedicine to improve health outcomes and enhance patient experiences as technology continues to develop.

In Saudi Arabia, the 2030 vision of the government was to improve healthcare accessibility, elevate care quality, and utilise technology for making healthcare more affordable, effective, and efficient has resulted in substantial advancements in Telemedicine in recent years. From the COVID-19 pandemic, Saudi began increasing utilisation of Telemedicine in multiple major healthcare areas across the country. Initially, Saudi Arabia introduced such activities through the Medical Consultation Call Center 937, the Seha Mobile Application, and the Anat platform for Electronic Prescribing [2]. Among Saudi Arabia's health sectors, Telemedicine was most used in Family Medicine consulting, which constituted 20.42 percent of consultations between January 2021 and June 2022 [6]. Family Medicine practitioners also reported the highest e-prescription rate in 2020 through Saudi Anat e-prescription system, with these prescriptions constituting 56% of the 25,000 total e-prescriptions, followed by General Practitioners; Cardiologists and Radiologists prescribed the least number [2]. Whilst data on utilisation was collated, studies evaluating the impact of Telemedicine on health outcomes in the wake of the

country's rapid development pace are still scarce. The purpose of this Review paper is to assess the efficiency Telehealth based on the health outcomes based on the patient adherence to treatment, and clinical effectiveness and positive health outcomes for patients in Saudi Arabia.

METHODOLOGY

The aim of this review paper was to evaluate the impact of Telemedicine use in Saudi Arabia on patient health outcomes following the country's launch of Vision 2030, and the country's plans to improve healthcare sectors and digital services, including Telemedicine consultations. Online medical databases like Pubmed, Scopus, and Medline were reviewed by utilizing specific keywords like "Telemedicine", "Telemedicine Consultations", "Telemedicine Health Outcomes", and Telemedicine in Saudi Arabia". The search and data extraction were limited to papers published within five years, papers that assessed the impact of Telemedicine in Family Medicine, and papers that included measurement of health outcomes and patient adherence. Studies that were published more than five years ago and discussed medical specialities other than Family Medicine were excluded.

RESULTS

Nearly all studies reviewed were conducted between 2019-2024. The majority of studies purported Telemedicine as effective in improving patient health outcomes, adherence and reducing hospital admissions in Saudi Arabia. One study determined 49.5% of its participants had a clearer understanding of their health issues following telephone medical consultations, whilst over a third (36.7%) improved their own health management significantly and 17.5% effectively received and implemented preventative care [7]. Another study reported 77% of inpatient admissions were avoided as a direct result of Telemedicine Family Medicine, resulting in an average reduction of 4.4 days in the hospital at an estimated cost saving of $3400 per patient [8]. The effectiveness of Telemedicine interventions in managing chronic diseases was overall demonstrated through data on the reduction of hospitalisations and an improvement in medication compliance [9]. During the pandemic 97% of patients in Diabetes Telemedicine Clinic 'agreed' or 'strongly agreed' that Telemedicine was critical in the continuation of community glycaemic control [10]. The protocols employed simple tools accessible to patients and healthcare providers which reportedly aided the delivery of high-quality care significantly [10]. Another study reported total of 30 patients with Type 2 Diabetes encountered in virtual integrated care clinic at a chronic illness centre were studied prospectively pre- and post-Telemedicine care intervention [11]. A significant reduction in HbA1c from 9.98 ± 1.33 pre-intervention to 8.32 ± 1.31 post-intervention, over a 4-month period was reported [11]. Another study evaluated the effectiveness of remote breastfeeding support consultations via telephone, WhatsApp and email communication. The study revealed positive outcomes and patient satisfaction, having provided remote access to education, support, counselling, clinical management and breastfeeding interventions [12]. Even though virtual breastfeeding counselling had a positive effect on breastfeeding indicators, it was acknowledged Telemedicine has yet to be fully explored within this context [12]. Despite the widespread use of Telemedicine in Saudi Arabia, the proportion of cases served varied among regions. One study examined the impact of Telemonitoring and Telehealth Coaching on stress, depression and anxiety [13]. In comparison with the control group, participants from the intervention group showed a significant decrease in anxiety questionnaire scores after 3 months, in addition to a reduction in depression and stress scores after 6 months [13]. However, Telemedicine provision of mental health services in the Kingdom is in its early stages, and a holistic approach is required to support initiatives aimed at enhancing access to Telemedicine in mental care, as well as improving quality of care and enhancing confidentiality [14]. The results supported strong potential benefits of Telemedicine in mental health, with patients suffering from anxiety benefitting from the lack of face-to-face interaction. However, the risk remained of patient disconnect due to the virtual consultation, in addition to further challenges for the practitioner, where non-verbal social and behavioural cues were indeterminable in comparison to in-person consultations [15]. Thus, Saudi Health policy makers must consider service provision which combines both online and face to face consultation, in addition to achieving high quality care, addressing reimbursement concerns and safeguarding patient confidentiality. A comprehensive Telemedicine guideline is imperative in ensuring safe, effective, and ethical Telemedicine services in Saudi Arabia [16]. Therefore, qualified healthcare professionals and appropriate technologies should be used for Telemedicine services [16].

Conversely, low compliance of e-prescriptions was reported, with almost two out of five of primary medication adherence in e-prescriptions i.e. 65.5% of e-prescriptions, not being filled [2]. The greatest adherence was determined in patients with respiratory conditions, whereas the least was seen in those with neurological conditions [2]. In another study that assessed the impact of Telemedicine on patient's outcomes in cardiac care, the data suggested that blood pressure, heart rate, readmission rate, and medication adherence were not statistically significantly different between the Telemedicine and control groups ($P = 0.72$, $P = 0.65$, and $P = 0.48$, respectively) [17]. While Telemedicine patients were slightly more satisfied with their medical care, the difference was not statistically significant (3.01 vs. 2.83, $P = 0.41$), indicating that Telemedicine consultation

yielded comparable results to face to face consultations [17].

Strength and Limitations

The majority of papers conducted were during COVID-19 pandemic, with isolation policies increasing reliance and expansion of Telemedicine. Most data evaluated was qualitative and focussed on patient satisfaction and perceptions and were of differing quality and research methodologies, with limited number of studies and sample size. Selection bias may also have impacted the analysis. Systematic reviews related to Telemedicine and their impact on patient health are recommended. More research is required featuring high-quality research designs systematic reviews and experimental studies.

CONCLUSION

Telemedicine in Saudi Arabia has been rapidly evolving and facing rapid developments in the healthcare sector, and as part of assessing compliance with the goals of Vision 2030 has committed to modernizing its healthcare system and enhancing access to medical services, especially in remote areas. The current review suggested positive impact of Telemedicine on patients' health outcomes in Family Medicine care, including chronic diseases, mental health, and breastfeeding counselling. Nevertheless, the studies available, especially after COVID-19 are scarce, and does not fully address the impact of Telemedicine on health outcomes. Additionally, patients receiving Family Medicine care do not always adhere fully to prescriptions and recommendations. More studies must be conducted to determine the potential health benefits of telemedicine, as well as the level of patients' adherence to medical counselling.

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