

## “The Role of Virtual Clinics in Facilitating the Health Services Provided To Patients: A Review Article”

### Researchers:

Jasser Hussein Salem Al-Yahyawi

Sami Jaber ALmalki

mohammed yahya alkhaldi

Ramzi Ibrahim Jaber Mobarki

Raed Ahmed alhazmi

ZIYAD MOHAMMED ALREHAILI



## Abstract:

Virtual healthcare is the umbrella term for all non-physical elements of the healthcare and medical process. Virtual clinics represent a promising future for the healthcare sector worldwide. However, the accelerated development of technology have led many healthcare systems around the world to recognize the suitability of virtual clinics service provision as a solution to the chronic shortages of doctors and as a means of promoting more equitable access to healthcare. To the best of our knowledge, there is a lack of studies comprehensively evaluating the role of virtual clinics in facilitating the health services provided to the patients. This review study gathered the contemporary information throughout PubMed, Scopus, and Science Direct databases regarding the role of virtual clinics in facilitating the health services provided to patients. Therefore, this review study comprehensively highlighted the main advantages of virtual clinics in facilitating the health services provided to the patients in healthcare settings. We conclude that the virtual clinics can shorter waiting times, saving staff time and efforts and serving more patients. It can improving access to good, safe and cost-effective health services for patients. In addition, it can bring added value to those living in remote areas, vulnerable groups, and elderly people with chronic diseases. Virtual clinics can also facilitate communication between members of the care team, and improving the coordination of patient care, and reduced risk of disease transmission. Moreover, the virtual clinics services is expected to be positive not only in terms of improving patients' access to healthcare, but also in terms of reducing their need to travel which, by reducing the use of transport, helps bring down pollution, thus yielding indirect environmental benefits. In contrary, delayed emergency care, patient assessment problems, inability to conduct diagnostic tests, and privacy issue, are among the most significant challenges we found when using virtual clinics in healthcare services.

**Keywords:** Health, Patients, Review article, Role, Services, Virtual clinics.

## Introduction:

The virtual clinics is defined as the provision of health services by health professionals, where distance is a critical factor, using information and communication technologies to exchange valid information for the purposes of diagnosis, treatment and prevention of disease and injury, research and evaluation, and to facilitate the continuing education of health professionals, with the aim of safeguarding the health of individuals and communities (Campbell et al., 2023). Virtual healthcare is the umbrella term for all non-physical elements of the healthcare and medical process. Inclusive of virtual clinics, virtual consultations, and remote patient monitoring, virtual healthcare is an all-encompassing term (Stanley et al., 2021).

Virtual clinics allow patients to connect remotely with healthcare professionals, eliminating the need for an in-person visit. In addition, virtual care is defined as any interaction between patients and members of their circle of care, occurring remotely, using any forms of communication or information technologies, with the aim of facilitating or maximizing the quality and effectiveness of patient care (James et al., 2020). The virtual clinics includes the totality of medical services provided remotely, in a secure manner, by means of information technology and electronic means of communication without the simultaneous physical presence of the medical staff and the patient, that aim to establish the diagnosis, indicate the treatment, monitor certain diseases or indicate disease prevention methods (Ahmed and Teoh, 2020).

The accelerated development of information and communication technology have led many healthcare systems around the world to recognize the suitability of virtual clinics service provision as a solution to the chronic shortages of doctors and as a means of promoting more equitable access to healthcare (Gilbert et al., 2020). Furthermore, technologies to deliver health care virtually have been around for decades. Work has also been underway for at least three decades to implement virtual clinics, but most of this work has been undertaken at the provincial/territorial level in the absence of a national framework. While the majority of physicians' worldwide offices and health care facilities now use some form of digital record keeping, and a majority of households have Internet access, there is a long way to go in terms of the use of digital technology to provide publicly insured, virtual care (Duncan et al., 2020).

Moreover, there has been an explosion of interest in pursuing virtual clinics. The main drivers of this interest are the ongoing challenge of timely and convenient access to health care and patient demand. Pressures to improve access, make care more equitable and reduce costs have added to the focus on virtual clinics (Donaghy et al., 2019). Improving access, making care more equitable, the democratization of health information and the promise of reducing costs have added to the focus on virtual care. Additionally, a fundamental aim of the healthcare providers in the virtual clinics is to make sure that patient, family and caregiver expectations, experience and equity as well as patient safety are a priority in the development of an environment that supports the delivery of virtual care (McKinstry et al., 2019).

**Research problem:**

As the global population continues to grow, pressure on health care systems is increasingly evident. This is apparent in developed countries, where an increasing proportion of gross domestic product is spent on health care costs, and in the developing world as noncommunicable disease costs escalate (Barsom et al., 2021). Just as financial costs associated with health care provision are on the rise, so is the time commitment by physicians looking after increasingly complex patients with multiple comorbidities. To address these issues, technological advances are one possible component of a solution to the challenges faced by health care systems worldwide. Although the use of technology is only one part of a larger policy response to ongoing health care provision issues, it represents an area in which significant improvement of services may be made (Metzger et al., 2021).

Virtual clinics are at the forefront of this technological health care innovation. To the best of our knowledge, there is a lack of studies comprehensively evaluating the role of virtual clinics in facilitating the health services provided to the patients. Therefore, this review study aims to highlight comprehensively the main advantages of virtual clinics in facilitating the health services provided to the patients in healthcare settings.

**Research hypothesis:**

The virtual clinics has a positive role in facilitating the health services provided to patients.

**Aim of the study:**

To determine the role of virtual clinics in facilitating the health services provided to patients.

**Methodology:**

This review study gathered the contemporary information throughout PubMed, Scopus, and Science Direct databases regarding the role of virtual clinics in facilitating the health services provided to the patients.

**Literature Review:****Demand for virtual clinics:**

Rising healthcare costs and a need for better treatment are motivating more hospitals to investigate the benefits of virtual clinics. They want improved contact between physicians and far-off patients and better usage of healthcare facilities. Here virtual clinics also promotes better connectivity, which has resulted in fewer hospital re-admissions and patients entirely adhering to their prescription care plans. Virtual clinics increased contact advantage extends to doctor-to-doctor communication as well. Doctors may use virtual clinics to build support networks to exchange their skills and provide better healthcare services. Virtual clinics are a way of delivering medical treatment over the internet, usually through video chat. This technology has several advantages for both patients and healthcare providers (Chunara et al., 2021).

**Advantages of Virtual Clinics:****Time and money savings:**

Attending an appointment from a location of patient preference (e.g., home, work) can save their time and money from the reduced need to travel and take time off from work or other responsibilities. When compared to conventional ways of healthcare administration, virtual clinics is a more cost-effective approach. This is valid since physicians and patients do not need to travel each time; they need to see a doctor or patient. In addition, video consultations are typically less expensive than in-person consultations, saving money on travel and hospital setup costs. Furthermore, making the online booking as well as video conferencing included in healthcare solution saves money. This is particularly useful in areas where patients may find it challenging to get to a hospital for medical care. Another thing that virtual clinic is doing is expanding the medical industry's frontiers (Kaspar et al., 2023).

**Facilitate service to disabled patients:**

Virtual clinics facilitates access to services for a patient having disabilities. It also increases access for other groups, such as the elderly, the culturally isolated, and the incarcerated. Virtual clinics can aid in the treatment of a variety of medical conditions. It is effective when an individual receives medical attention from a competent provider who gives detailed information about their symptoms. According to some reports, patients who use virtual clinics spend less time in the hospital, saving money. Additionally, less travel time could imply lesser secondary expenditures such as petrol (Rockwell and Gilroy, 2020).

**Enhanced patient engagement and empowerment:**

Virtual clinics empowers patients to take an active role in managing their health. Through virtual consultations, patients have increased access to medical information, educational resources, and personalized treatment plans. They can engage in shared decision-making with their healthcare providers, leading to better health outcomes (Funderskov et al., 2019).

**Increased access to care and remote treatment:**

Virtual clinics allow patients to interact with health care providers that might have been inaccessible in the past due to distance or availability. In addition, remote treatment can be done virtually, which have been found a successful way to keep people out of the hospital. Patients who wish to see a provider with highly specialised experience of a specific illness will do so without driving long distances and video visits. Each specialist's knowledge and skills can be used to the best use. Healthcare can be a competitive sport at times, with primary care and specialist physicians collaborating to ensure the best possible health result for the patient. Virtual clinics facilitates this by allowing all clinicians to communicate with the patient and each other through a safe remote link (Weinstein et al., 2014).

**Presence of family:**

Virtual clinics make it easier for patients to have support from their family or other important people (e.g., home care staff, social worker), as less travel is required on their part, and they can join the appointment from wherever is most convenient (Parimbelli et al., 2018).

**Effective for disorders not requiring lab examination:**

Virtual clinics are effective for any disorder that does not necessitate laboratory examinations or a physical exam. This technology also provides continuing treatment, such as psychotherapy. During the COVID-19 pandemic, a patient who lives long distances away from a primary care center can also achieve better treatment. The patient who is unable to transport themselves, providers can broaden the list of conditions they are willing to handle (Kadir, 2020).

**More convenient and improve patient coordination:**

Meeting with patient health care provider virtually can improve support and convenience, especially if they have a chronic condition. In addition, virtual clinics has the potential to improve patient coordination and better healthcare services. Treatment shortages, overuse of medical care, inadequate drug use, and unnecessary or overlapping care may also result from fragmented care. The patient can quickly pay the nominal charges of virtual clinics services. This service can be provided to patient comfortably, which improve patient's coordination with the doctor (Wang et al., 2019).

**Shorter waiting times:**

When comparing the differences between waiting times in hospitals that used telemedicine services and those that do not. Waiting time was less in hospitals that use telemedicine service by at least six minutes. This in return will allow the treatment of patients more rapidly (Albahri et al., 2021).

**Serving more patients:**

More patients will be seen with implementation of virtual clinics and telemedicine services. The reasons are reduced times of transitions between patients, easy access from different locations thus not only serving patients in a particular geographical

location, and reduction of the need to travel to hospital or office settings. This in return will provide easy triage and observation access to many patients, saving the needed observation beds in emergency departments (Manchanda, 2020).

#### **Minimise travelling of patients, saving staffs' time and effort:**

Creating a platform that enables access to on-call virtual physicians and nurses will limit unnecessary visits to hospitals and clinics. Virtual clinics would drastically decrease the amount of time available for appointments. Patients will no longer have to waste hours travelling to or waiting in a hospital. Now, they will be able to make an appointment online and then navigate to their meeting with the app. Furthermore, healthcare can be more affordable than ever before. A patient can be able to meet with a doctor from the safety of their own homes. It may also help those who need emergency medical attention. Doctors who can view on-demand necessitate the use of an internal database of built-in queries. Fast and straightforward access can also be provided by a variety of application programming interfaces and facilities (Chau and Hu, 2002).

#### **Reduced risk of disease transmission and falls risk:**

Seeing a health care provider virtually can protect you from being exposed to potential viruses or other illnesses found in hospitals and clinics. As a result of the decreased hospital and clinic visits, there will be significant reduction in hospital acquired infections. This in return will reduce the burden of these infections on the hospital, healthcare system, and reduce the efforts and time required for managing it. This also applies to falls; no patient visits mean less falls. Virtual clinics helps everyone live in a safe world. For example, patients suffering from the flu or a cold should consult with their doctor without taking germs into the workplace. When providing guidance and tracking patient success, providers are well secured from infectious diseases. This encompassing solution incorporates robust network security capabilities as well as managed access rights management. This can help to secure patient information shared over virtual clinics devices. It is also a way to reduce the number of emergency department visits (Ayatollahi et al., 2018).

#### **Reduced costs on the patient:**

In general, virtual clinics are much cheaper than actual hospital visits. In addition to that, other costs such as travel costs and accommodation costs will be minimized. This will attract more patients to seek virtual medical attention, as these financial setbacks are a big obstacle facing many individuals in the society (Larsen et al., 2016).

#### **Enhance overall healthcare system performance:**

Virtual clinics refers to a wide variety of technology and facilities used to provide patient care and enhance the overall performance of the healthcare system. Virtual clinics encompasses a greater range of online healthcare facilities. In addition to healthcare care, it is applied to remote non-clinical services such as provider recruitment, administrative meetings, and continuing medical education. Virtual clinics uses mobile messaging and assistive tools to deliver health care to people who cannot see a doctor physically. This technology is also suitable for follow up appointments, chronic illness treatment, expert consultation, drug management, and various other health resources that can be accessed remotely through secure video and audio connections (DeSilva and Vaidya, 2021).

#### **Better service for clinician and patient:**

Virtual clinics provides rapid growth, which offers many benefits to both clinicians and patients. The paramount need for any healthcare provider is to have better patient services, which virtual clinics systems will achieve while still assisting physicians to refine and improve their private practice. As a result, developing medical video conferencing applications in some kind of medical institution is critical in order to make better medicine (Chandra, 2020).

#### **Drawbacks of Virtual Clinics:**

Virtual clinics when compared to conventional treatment approaches, has many possible drawbacks includes:

##### **Hacking patient's medical data:**

There is a serious issue of hacking patient's medical data, especially if the patient connects to virtual clinics from a public network or an unencrypted channel (He et al., 2020).

### **Delayed emergency care:**

When a person requires emergency care, the virtual clinics can cause the medication to be delayed, mainly because a doctor cannot deliver life-saving care or laboratory tests remotely (Goh and Sandars, 2020).

### **State rules differ:**

State rules differ, and physicians will be unable to practice medicine across state boundaries based on the state in which they are licensed and the state in which the patient resides (Weber et al., 2021).

### **Privacy issue:**

Clinicians must also ensure that the virtual clinics service they use is safe and secure and compliant with privacy laws (Gachanja et al., 2021).

### **Patients' assessment problems:**

During virtual clinics sessions, providers must focus on patient self-reports and necessitate physicians asking further questions to get a complete patient history. If a patient fails to report an important symptom that should have been detected during in-person care, medication could be jeopardized (Succar et al., 2013).

### **Lack of availability and affordability:**

It can be costly for the supplier to set up and manage. However, a valuable and worthwhile facility, virtual clinics can be prohibitively expensive for smaller healthcare facilities. Poor communication will also make it impossible to provide reliable care (Wood et al., 2016).

### **Inability to conduct diagnostic tests:**

One of the most frequently reported limitations of virtual clinics is the inability to conduct diagnostic tests. Most clinicians stated that they had postponed tests such as blood tests and X-rays. For patients where an updated blood test was essential, many clinicians have been arranging blood tests with general practitioners on a case-by-case basis. This, and the chasing of results, has been described as time consuming to set up. While clinicians felt that, overall, general practitioners have been accommodating to conducting these tests some had refused citing a lack of commissioning agreements. Some services also require specialist tests that are only offered on-site requiring these patients to come in (Katz et al., 2018).

### **Conclusion**

The virtual clinics can shorten waiting times, saving staff time and efforts and serving more patients. It can improve access to good, safe and cost-effective health services for patients. In addition, it can bring added value to those living in remote areas, vulnerable groups, and elderly people with chronic diseases. Virtual clinics can also facilitate communication between members of the care team, and improve the coordination of patient care, and reduce the risk of disease transmission. Moreover, the virtual clinics service is expected to be positive not only in terms of improving patients' access to healthcare, but also in terms of reducing their need to travel which, by reducing the use of transport, helps bring down pollution, thus yielding indirect environmental benefits. In contrast, delayed emergency care, patient assessment problems, inability to conduct diagnostic tests, and privacy issue, are among the most significant challenges we found when using virtual clinics in healthcare services.

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## "دور العيادات الافتراضية في تسهيل الخدمات الصحية المقدمة للمرضى: مقالة مراجعة"

اعداد الباحثين:

جاسر حسين سالم اليحيوي

سامي جابر المالكي

محمد يحيى الخالدي

رمزي ابراهيم جابر مباركي

رائد احمد الحازمي

زياد محمد الرحيلي

### الملخص:

الرعاية الصحية الافتراضية هي المصطلح الشامل لجميع العناصر غير المادية للرعاية الصحية والعملية الطبية. تمثل العيادات الافتراضية مستقبلاً واعدًا لقطاع الرعاية الصحية في جميع أنحاء العالم. ومع ذلك، أدى التطور المتسارع للتكنولوجيا إلى دفع العديد من أنظمة الرعاية الصحية في جميع أنحاء العالم إلى الاعتراف بملاءمة تقديم خدمات العيادات الافتراضية كحل للنقص المزمن في الأطباء وكوسيلة لتعزيز الوصول الأكثر عدالة إلى الرعاية الصحية.

على حد علمنا، هناك نقص في الدراسات التي تقيم بشكل شامل دور العيادات الافتراضية في تسهيل الخدمات الصحية المقدمة للمرضى. جمعت دراسة المراجعة هذه المعلومات المعاصرة في ثلاثة قواعد بيانات PubMed و Scopus و Science Direct فيما يتعلق بدور العيادات الافتراضية في تسهيل الخدمات الصحية المقدمة للمرضى. لذلك، سلطت دراسة المراجعة هذه الضوء بشكل شامل على المزايا الرئيسية للعيادات الافتراضية في تسهيل الخدمات الصحية المقدمة للمرضى في بيئات الرعاية الصحية.

نستنتج أن العيادات الافتراضية يمكن أن تقلل من أوقات الانتظار، مما يوفر وقت الموظفين وجهودهم وتخدم المزيد من المرضى. العيادات الافتراضية يمكنها تحسين الوصول إلى خدمات صحية جيدة وآمنة وفعالة من حيث التكلفة للمرضى. بالإضافة إلى ذلك، يمكن أن تجلب قيمة مضافة لأولئك الذين يعيشون في المناطق النائية والمجموعات الضعيفة وكبار السن المصابين بأمراض مزمنة. يمكن للعيادات الافتراضية أيضًا تسهيل التواصل بين أعضاء فريق الرعاية، وتحسين تنسيق رعاية المرضى، وتقليل مخاطر انتقال المرض. علاوة على ذلك، من المتوقع أن تكون خدمات العيادات الافتراضية إيجابية ليس فقط من حيث تحسين وصول المرضى إلى الرعاية الصحية، ولكن أيضًا من حيث تقليل حاجتهم إلى التنقل، مما يساعد من خلال تقليل استخدام وسائل النقل على تقليل التلوث، وبالتالي تحقيق فوائد بيئية غير مباشرة. على العكس من ذلك، فإن تأخر الرعاية الطارئة، ومشاكل تقييم المرضى، وعدم القدرة على إجراء الاختبارات التشخيصية، وقضية الخصوصية، من بين التحديات الأكثر أهمية التي وجدناها عند استخدام العيادات الافتراضية في خدمات الرعاية الصحية.

**الكلمات المفتاحية:** الصحة، المرضى، مقالة مراجعة، دور، الخدمات، العيادات الافتراضية