

Online Medical Consultations: A Paradigm Shift in Healthcare

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Abstract

Online medical consultations (OMC) are becoming increasingly popular among patients seeking information for diagnosis and treatment. The mandatory quarantine measures enforced during the COVID-19 pandemic increased the use of OMCs for different healthcare conditions among different patient groups. Telemedicine effectuates benefits for both physicians and patients and, thus, has a growing potential for use. OMC is an effective healthcare innovation since it provides potential benefits to patients and physicians through improved delivery of patient-centered healthcare services at reduced costs.

OMCs offer benefits to all stakeholders in the healthcare systems. The purpose of this article is to discuss the benefits of OMCs to the patients, healthcare systems, and individual physicians. Firstly, OMC reduces the time gap to gain consultation through a high physician response rate and consultation dialogue intensity. Second, OMCs reduce patients' discomfort from positive physician-patient relationships over traditional, powerful-powerless hierarchical relationships. Third, OMCs reduce the overall costs of the systems by reducing administrative costs. Fourth, OMCs increase the ease for physicians through increased convenience, service flexibility, and strong physician-patient relationships. Healthcare systems and individual physicians look forward to integrating state-of-the-art technology, including artificial intelligence, to leverage OMC benefits.

Keywords: Online Medical Consultations (OMC); Paradigm Shift; Healthcare

Introduction

As remote access technologies are becoming more sophisticated, online consultation platforms offer an innovative use of Internet technology to interact with patients [1]. The healthcare sector has rapidly embraced digital transformation and innovation. Recent developments in e-health technologies are continuously changing how health services are being delivered. Online medical consultation has emerged as an integral component of Internet-based medical care [2]. The increasing popularity of digital doctor-patient communication represents a real-value influence on patients' expectations and satisfaction. Internet-based medical consultations have reshaped how individuals access and engage with healthcare professionals. Virtual medical consultations allow patients to establish remote communication with a physician using digital health applications and online tools. These tools and platforms can, in addition, direct patients toward self-care resources, provide healthcare advice on their mobile phones, allow them to schedule an online appointment, book a video or in-person face-to-face consultation, and access their health records [3].

Online medical consultations offer significant benefits for both patients and physicians. Indeed, the patients have increased access to healthcare services and reduced discomfort. Many healthcare systems have adopted increased use of telemedicine since the pandemic [4]. This mode of healthcare delivery not only provides patients with an easier and cost-effective means of access but also addresses the critical concern of reducing the spread of infectious diseases by minimizing hospital visitation rates. For organizations, OMCs increase efficiency and enhance the distribution of healthcare services within remote areas. Highly professional physicians, credible and trustworthy, attract a large group of patients and have sustained flexibility in the delivery of healthcare services. Although healthcare systems face key challenges in adopting the OMCs, the expansion is necessary. The most significant outcome of adopting OMCs is reduction of disparity in providing healthcare services and improving the services' efficiency.

The Good-Doctor Online Medical Platform and Medical Valley Online Platform are two well-known digital healthcare tools that have gained recognition for their contributions to accessible and affordable healthcare services [5]. These platforms offer online clinical consultations through video calls, chat, or phone calls, providing convenient health management services for their users [6]. Both of these platforms were built following an internationally recognized UK model and international guidelines regarding online consultation. Patients with limited access to face-to-face encounters used these platforms and exhibited high satisfaction with video and telephone consultations on both platforms.

Advantages of online medical consultations

Rapid access and reduced waiting times for patients

Response time is a critical component that affects patients' satisfaction within primary care settings. Patients can experience physical and emotional burdens due to prolonged waiting times for a primary healthcare appointment. Protracted waiting times and delays in care can also lead to negative outcomes for patients suffering from critical health conditions [7]. An open-access scheduling system has been deemed an efficient as well as an economical approach to enhance access to primary care physicians' appointments. In contrast with traditional scheduling, online appointment scheduling minimizes delays while offering flexibility to patients in choosing a convenient schedule [8]. Shorter primary care appointment wait times are associated with enhanced patient satisfaction and improved clinical outcomes [9]. Online consultations can provide a more convenient route to patients for addressing their health issues as compared with conventional practices. Additionally, patients can get preliminary advice and recommendations via digital health services to decide if they need in-person consultations, saving them time.

There is a growing body of evidence that online health consultations are more affordable and time-saving (waiting, work, and commute) for patients as compared to traditional in-person doctor visits [10]. Even when compared with booking on the phone, it has been found that patients could easily schedule an appointment via digital tools at a more convenient time, leading to shorter waiting times. An online survey was conducted by Zanaboni in 2020, to evaluate the patients' perspective regarding e-consultation and other digital health services. A majority of the survey participants, comprising over 80% of the respondents responded that they experienced time savings when using the electronic scheduling of appointments. Over 90% of the patients responded that renewing a prescription online saved their time. Over 80% of the patients mentioned that e-consultation facilitated easier access and communication with healthcare providers. 60% of the patients agreed that submitting an inquiry online is significantly easier than a phone call [11].

Another survey by Hsiao and Oh, 2008 showed that eConsult can reduce time intervals for initial consultation and treatment when compared to the conventional consultation system [12]. A specific study involving treatment for dermatology patients residing in remote areas, using teledermatology reported shorter waiting times than conventional referrals [13]. Edwards., *et al.* in 2017 showed that women were twice as likely as men to approach OMCs [14]. A cross-sectional study explored the key characteristics of OMCs for pregnant women during the COVID-19 pandemic. It was observed that many pregnant women opted to delay or cancel their scheduled appointments due

to the severe epidemic situation. The study reported that pregnant women were highly satisfied with online consultations [15]. Studies have highlighted high patient satisfaction with telemedicine due to reduced delays in treatment initiation and a decrease in lost working hours [16].

Help in creation of a cost-effective and sustainable healthcare system

A study was carried out to evaluate perceived efficiency, utility, confidentiality, and patient satisfaction during remote video visits as compared to office visits for outpatient consultations. The cost for each visit included distance traveled, travel duration, financial expenses, and absence from work. The video visit group (VV) and office visit (OV) groups showed no significant differences in the patient's overall health conditions or their participation rate in their healthcare such as discussing concerns with their healthcare provider (HP). Both groups demonstrated similar levels of trust in their provider, perceived confidentiality during their appointments, and their ability to share sensitive information with HP [17]. Additionally, both groups identified similar efficiency in their healthcare, received a comparable quality of education from their providers, and indicated a similar level of satisfaction with their medical consultations. Patients from both VV (88%) and OV (76%) strongly agreed that their healthcare practitioners could effectively perform their duties without conducting a physical examination during each appointment.

It is now recognized that online consultation portals offer dynamic approaches to enhance resource allocation, improve service efficiency, reshape care delivery modes and reduce costs. The rising costs within primary care systems have prompted the development of an easily accessible and cost-efficient digital healthcare delivery model while improving patient outcomes. Digitization in healthcare has been found to cut the costs of service delivery by reducing the ratio of unnecessary in-person visits and improving access to quality care for patients in remote areas [18]. Studies suggest that teledermatology also was less expensive for patients when compared to usual care [19]. It has also been also been reported that teledentistry could save up to 69% of costs to the patients [20].

In a study conducted in 2014, researchers explored the use of Skype for orthopedic clinical follow-up. They provided Skype as an option to 78 patients who had undergone total joint arthroplasty. These patients were encouraged to communicate with their surgeon via Skype in addition to their scheduled in-person follow-up appointments. Out of the 78 patients, 34 used Skype for at least one consultation, while 44 couldn't use Skype due to a lack of appropriate electronic devices or internet access. Patients who opted for Skype consultations had fewer unscheduled in-person visits or calls to the medical office for advice. Furthermore, patients who used Skype reported higher satisfaction with their postoperative experience compared to those who didn't [21]. Another study showed that the time spent on consultations and the costs incurred by patients were lower in the Skype group. An associated economic evaluation found that the overall service costs were significantly lower in the Skype group [22].

Several studies have concluded that eConsult was more cost-efficient than outpatient clinic visits [23,24]. Furthermore, online video consultations reduced costs for insurance providers and overall healthcare systems [25]. It is a well-known fact that traditional health services are associated with high waste production and energy consumption, and thus are not very environment friendly. Remote consultations have been found to be having a significant contribution to environmentally sustainable health care. There is overwhelming evidence that virtual consultations can reduce carbon emissions by up to 70 times when compared with in-person clinic visits [26]. Virtual visits eliminate the need to travel by staff and patients which is beneficial in reducing transport-associated emissions and the carbon footprint of healthcare services. Virtual consultations can improve access to rural and remote settings thereby increasing the average distance travel savings and environmental benefits [27]. These findings suggest that online consultation could play a valuable role in mitigating the environmental impacts of healthcare systems on this planet.

Role of online consultation in enhancing patient comfort and privacy

Online medical consultations offer a feasible solution to individuals who face challenges in accessing traditional healthcare facilities due to their demanding work schedules. OMCs also allow regular medical assessments, improve patient adherence to treatment regimens,

and prevent symptom aggravation by offering flexible appointment schedules that suit patients' work routine. Patients have generally demonstrated a high acceptance level for OMCs [28]. Online patient-provider relationships encourage patients to initiate queries, allow as much time as needed, establish patient engagement, and participate in back-and-forth communication with healthcare providers. Improved communication opportunities empower patients to actively participate in information gathering, evaluating, and making decisions about their health and care [29].

Virtual environments have been found to reduce stress, promote relaxation, and enhance overall well-being in patients with stress-related physical disorders [30]. Some medical conditions or inquiries may carry a social stigma that can discourage individuals from pursuing in-person medical assistance. Online consultation platforms offer a dynamic and inclusive space for individuals to address intimate or sensitive health-related matters that might be challenging to bring up in other situations. Online platforms provide a secure [31] and non-judgmental environment to patients that encourages them to discuss medical issues they may otherwise refrain from communicating with their General Practitioner (GP). A high degree of confidentiality facilitates discourse on sensitive topics such as sexual health and mental well-being symptoms, promoting a positive healthcare experience. In a web survey evaluating Internet-based medical consultation, 45% of the people mentioned that they asked a question they hadn't discussed before with their healthcare providers. After receiving a response, 43% didn't need to ask further questions as they were satisfied with the provided information. These results indicate that people who seek online consultation might not need to visit their healthcare providers in person.

Reducing physician burnout and enhancing workflow

The role of the online health community is becoming increasingly important in enhancing healthcare workflow. Online medical consultations (OMC), in particular, offer a convenient approach that can streamline the existing workflow of healthcare settings as compared to traditional models of healthcare [32]. According to a recent study clinicians, particularly those who worked remotely, appreciated the implementation of online video consultations [33]. It was found that video conferencing is comparatively safe and promotes improved clinician decision-making [34-36]. In a survey with family physicians, it was concluded that cell phone consultations offer comparable medical value to regular face-to-face appointments [37].

Online medical consultations offer a feasible alternative to routine medical appointments for both healthcare professionals and patients. Reduction in frequent patient hospital visits can substantially decrease the workload on healthcare staff. The adoption of remote medical consultations can potentially reduce unplanned in-home physician visits that must be performed regardless of the time. This leads to eliminating physicians' travel burden by facilitating online consultation and monitoring without a physical visit to an onsite location for care. OMCs promote visual interaction between patients and doctors. Healthcare practitioners can effectively assess a patient's condition through virtual assessment during real-time video linkage, facilitating prompt decision-making comparable to in-person visits [38]. Björndell, *et al.* 2021 found that video consultations can improve work flexibility while promoting effective time management for physicians [39]. Thus a significant reduction in the pressure and workload of healthcare professionals can be effectuated, while improving their work-life balance.

Discussion

Virtualization of healthcare services, including patient portal services, has effectively increased reliance on OMC to provide services to different groups. The OMCs provide high technological capabilities that help establish a strong physician-patient relationship for service flexibility [40]. When physicians are highly professional, credible, and trustworthy, they attract and retain patients, reducing commitment to alternative services [41]. The doctors are able to stay home and connect with the patients after office hours and on the weekend [42]. The greater convenience and flexibility increase the volume of services delivered to the patients within a specific time [43]. OMCs also support different healthcare service interventions, including care coordination and family-based care, depending on the needs of various

patients. Physicians are so satisfied with OMCs that a major concern for them is the limited adoption of telemedicine services by different patient groups [44].

The number of online medical consultations (OMC) increased at a high rate during the COVID-19 outbreak. China was among the first few countries to adopt and provide online medical services during the pandemic. Since online treatment channels help avoid unnecessary face-to-face contact, internet medical facilities worked as a key strategy to control the spread of COVID-19 [45]. The Children's Hospital of Fudan University introduced an online consultation system for children to access medical services countrywide. Data showed the excellent impact of this online consultation system during the first two months of its operation, accounting for around 15% of the overall visits. The system served children from ages 0 to 18-year-olds, with the majority of medical consultations being for infants (those under one year of age). This highlights the role of online consultation in providing key medical services to vulnerable populations who might face substantial challenges in seeking hospital-based care during the pandemic situation.

It is important to note that the scope of these consultations covered all medical specialties. Furthermore, it was accessible to the general public from diverse regions across China [46]. In sum, the implemented online consultation system played a crucial role in addressing the diverse healthcare requirements of children nationwide in China throughout the COVID-19 outbreak. Neonatal patients, immunocompromised children, and those with chronic medical conditions greatly benefited from Internet-based consultation services. Even in stable and controllable epidemic conditions, this shift towards virtual healthcare is likely to continue advancing as technology advances while making healthcare more accessible and patient-centered.

Conclusion and Future Perspectives

It is widely accepted that online medical consultation approaches could be embedded in future health services as an alternative to in-person visits [47]. Online consultation services hold the potential to meet the population's needs while achieving large cost savings. A reliable and effective robust online consultation platform can be a versatile solution in managing situations where in-person GP visits are less preferable or when capacity must be conserved for critical cases like during large-scale emergencies or Epidemic crises. In the future, further work is needed to investigate initiatives that need to be taken to improve the security, user-friendliness, and reliability of online consultation tools. Overall, It is anticipated that the benefits of this new way of working could enable sustained improvement in the quality of healthcare at various levels of primary care settings.

In developing nations, these digital tools can help accomplish strategic health objectives along with significant cost savings, besides being a huge convenience for patients, and enabling optimal efficiency within the healthcare sector. With the exponential development of Artificial Intelligence tools in digital healthcare, dynamic collaborations and incorporation of these AI tools in online consultations can result in aggregation of eventual huge data bases with applications in evidence-based healthcare for improved healthcare delivery [48]. The advantages mentioned in this article have implications for policymakers and healthcare professionals to incorporate online consultation and treatment across healthcare settings. Careful consideration should be given to support clinically appropriate and acceptable online medical consultations. Developing a better understanding of the cost-effectiveness of innovative e-consultation platforms over current practices will aid in achieving optimized health system performance.

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