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Review Article

A systematic review on patient satisfaction and wellbeing with teleconsultation / telemedicine during the covid-19 outbreak

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ABSTRACT

The use of teleconsultation / telemedicine has recently undergone rapid growth and proliferation. Although the feasibility of many applications has been tested for nearly 30 years, data concerning the costs, effects, and effectiveness of telemedicine are limited. Teleconsultation / Telemedicine is a convenient tool for providing medical care remotely. It is routinely offered as an alternative to face-to-face consultations in healthcare settings all over the world. Due to the COVID-19 pandemic and increased use of telemedicine in everyday clinical practice, the effectiveness of this modality and patient satisfaction with telemedicine is a subject of growing concern. Researchgate, PubMed and Google Scholar databases were searched. Papers published between January 2020 and April 2022 which met inclusion and exclusion criteria were analyzed. During the COVID-19 pandemic patients have found telemedicine a beneficial tool for consulting healthcare providers. A high level of satisfaction with telehealth was observed in each study across every medical specialty. Telemedicine is undoubtedly a convenient tool that has helped ensure continuity of medical care during the COVID-19 pandemic thanks to its considerable potential. In particular situations, telehealth may adequately replace face-to-face consultation. Regular patients' feedback is necessary to improve the use of telemedicine in the future.

1. Introduction

The coronavirus disease 2019 (COVID-19) pandemic catalyzed rapid adoption and implementation of telemedicine beginning March 2020. Digital technologies are revolutionizing the healthcare industry. Each involved actor cannot create value and achieve a sustainable competitive advantage without new technology-based devices. Teleconsultation/telemedicine is the use of telecommunications technology to provide health care services to persons who are at some distance from the provider. It involves a spectrum of technologies including facsimile, medical data transmission, audio-only format (telephone and radio), still images, and full-motion video. Robotics and virtual reality interfaces have been introduced into some experimental applications.

Teleconsultation, sometimes referred to as remote consultation or telehealth, refers to interactions that happen between a clinician and a patient for the purpose of providing diagnostic or therapeutic advice through electronic means. Telemedicine refers to the practice of providing medical care remotely. It is routinely offered as an alternative to face-to-face consultations in healthcare settings all over the world.[1] A number of investigations have revealed that remote consultations improve access to healthcare and reduce the workload of healthcare workers.[2] Furthermore, better prevention of acute infectious diseases is observed with the use of telehealth, which has been

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of particular importance during the COVID-19 pandemic. In August 2021, the total number of COVID-19 cases exceed 200 million worldwide, just six months after reaching 100 million.[3] The outbreak of the COVID-19 pandemic has had a profound impact on healthcare delivery globally. A number of countries have faced challenges related to healthcare provision, including staff shortages, poor distribution of services, and incompatibility between the health needs of the population and the competencies of health professionals.[4] Many countries have reported a more or less severe disruption in the treatment of hypertension, diabetes and diabetes-related complications, and cardiovascular emergencies.[5] Countries that have reported disruptions in the availability of medical services, have implemented alternative strategies such as telehealth to ensure continuity of medical care. Due to the COVID-19 pandemic and increased use of telemedicine in everyday clinical practice, the effectiveness of this modality and patient satisfaction with telemedicine is a subject of growing concern. In our systematic review, we focused on the patient perspective and the level of satisfaction among patients suffering from different medical conditions with telemedicine during the COVID-19 pandemic.

2. Materials and Methods

In April 2022, we searched Researchgate, Google Scholar and PubMed online databases for the following search terms: "teleconsultation", "telemedicine", "telehealth" in combination with "patient's perspective", "patient's wellbeing", "patient's satisfaction", "patient's experience". We did not search MEDLINE as we wanted to avoid duplicating papers already identified in Researchgate, PubMed and Google Scholar. We found a total of 703 articles in Researchgate, PubMed and Google Scholar. Then, we consecutively screened abstracts and full-text articles which assessed patient satisfaction during the COVID-19 outbreak. We excluded articles which did not meet inclusion and exclusion criteria. The inclusion criteria were as follows: survey studies including adults, original studies published between January 2020 and April 2022, studies published in English as well as Hindi. Finally, 69 papers were analysed in this review.

Identified studies covered mainly the patient's satisfaction with teleconsultation / telemedicine during COVID-19 pandemic across an extensive range of medical specialties: Emergency Room,[6] Psychiatry,[7] Primary Care,[8] Neurosurgery,[9] Internal Medicine,[10] Dermatology,[11] Cardiology,[12] Obstetrics,[13] Urogynecology,[14] Orthopedics,[15] Otolaryngology,[16] Oncology,[17] Allergology,[18] Rheumatology,[19] Gastroenterology,[20] Oral and Maxillofacial Surgery,[21] Ophthalmology,[22] Urology,[23] Endocrinology,[24] Spinal Disorders,[25] Surgery.[26]

3. Results

3.1. Satisfaction rate

Telemedicine can improve healthcare access and health outcomes in medically underserved communities by addressing structural barriers like transportation, excess wait times, childcare responsibilities, inconvenient appointment times, and regional medical provider shortages. Telemedicine can be a low-cost option and expand communication opportunities with a provider. During the COVID-19 pandemic, patients have found teleconsultation a valuable tool for consulting healthcare providers. A study conducted by Tanya Ngo in a Student-Run Free Clinic revealed that most patients (97.6%) were satisfied with their teleconsultation experience.[27] Additionally, a survey of 1010 respondents revealed that overall satisfaction with telehealth in primary care was high—91% of respondents were satisfied with video consultations and 86% were happy with telephone consultations.[28] A study by Ashwin Ramaswamy et al., in which the surveyed group of patients was largest in comparison to patient groups examined in other papers analysed in the present review, patient satisfaction with video consultations was significantly higher in comparison to in-person visits (94.9% vs. 93.0%, $p < 0.001$).[29] A different study demonstrated that trust in doctors correlated with higher patient satisfaction with remote visits.[30] 88% of patients agreed that a virtual consultation was more convenient for them than an in-person visit.[31] In a study by Park et al., 87.1% of patients thought telemedicine had the same reliability as in-person visits.[32] A study by Porche et al. reported interesting findings that indicate that virtual consultations are not significantly different from in-person visits in all domains ($p = 0.085$).[33]

3.2. Other Aspects of virtual consulations

3.2.1. Missed appointment rate

During the pandemic, many academic medical centers and private medical organizations leveraged prior telemedicine experience and existing infrastructure to scale up operations. In the era of the COVID-19 pandemic, it is important that the economic impact of noshow rates is evaluated. Three of the cited studies examined the in-office visit no-show rate compared to the telehealth visit no-show rate. In a study conducted by Brenden Drerup, the in-office missed appointment rate was 36.1% compared with the telehealth visit no-show rate of 7.5%. This was highly statistically significant at $p < 0.0001$ identified by Fisher's exact test.[34] Analogous results were observed in research by Sumithra Jeganathan, which showed a significantly lower rate of appointments canceled by patients for in-person visits than telehealth visits (5.44% vs. 3.82%, $p = 0.021$). Telehealth visits also had a lower no-show rate; however, this difference was not statistically significant.[35] Therefore,

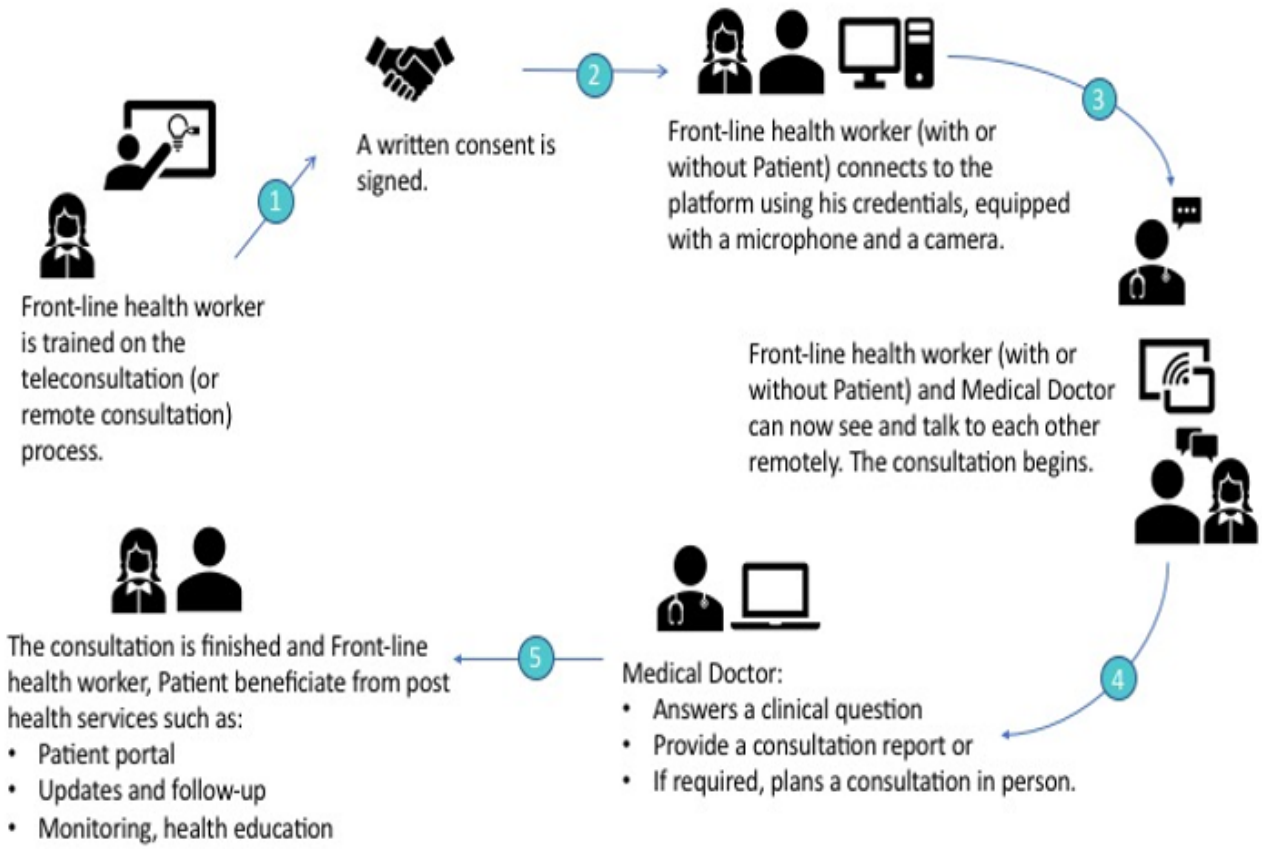

Fig. 1: Teleconsultation work flow

the use of telehealth is not only beneficial for patients but also increases the efficiency of healthcare systems by reducing missed appointment rates.

3.2.2. Clinical needs of patients

A large number of the reviewed studies revealed that telehealth visits adequately addressed patients' needs.[36,37] What is noteworthy, in two of the analysed studies, all respondents confirmed that their diagnosis and treatment options were satisfactorily explained by their doctors who spent sufficient time with them.[38] Regarding privacy concerns, there was general acceptance of virtual consultations as an alternative to face-toface encounters.

3.2.3. Technical aspects

Professional development capacity refers to personnel knowledge and familiarity with telemedicine as well as the availability of trainings or learning resources. Personnel with limited telemedicine knowledge and prior experience struggled, saying a lack of knowledge and uncertainty about appropriate use was challenging in the face of rapid implementation and workflow changes. Some said it was difficult to assess the validity of different sources when they encountered conflicting information. Reimbursement policy confusion was particularly difficult to navigate. All reviewed papers reported a significant level of satisfaction with connection quality and ease of use of telemedicine.[39,40] However, patients who encountered connection and other technical issues expressed lower satisfaction with virtual visits.[41]

3.2.4. Time and cost savings

Telemedicine convenience was an important facilitator to promote continued use and contribute to high satisfaction. Reduced wait times, reduced travel costs, and fewer transportation-related issues were mentioned as helpful, particularly for patients with chronic illness or limited mobility. Saving on travel represented the most important advantage of having a virtual consultation, followed by time savings and cost savings, and reduced family interruption.[42,43] Many patients emphasized that they did not have to leave their workplace to consult with their doctor.[44] Furthermore, decreasing the exposure to SARS-CoV-2 infection is the perceived benefit of telemedicine.[45]

3.2.5. Willingness to use

Telehealth in the Future Preference for future telehealth visits was reported by a significant number of the reviewed

studies.[46,47] This suggests that respondents received appropriate care and were satisfied with the telemedicine encounter. Patients who preferred a virtual consultation generally had a greater distance to travel, were younger and had fewer problems with their physical examination in comparison to patients who were more inclined to choose in-person visits.[48] It is worth emphasizing that many patients would like to be offered the choice between an in-person visit and a virtual consultation in the future.[49]

4. Discussion

4.1. Advantages of telemedicine

Due to the COVID-19 pandemic, telemedicine has become a tool used to maintain continuity of medical care. The advantages of telehealth are the comfort and convenience it offers patients, and a reduction in costs incurred by the healthcare system. By triaging patients through a telehealth platform, access to primary and specialty care is increased,[50] and medical providers' workload may be decreased. Most importantly, nonessential inperson appointments in the clinic or surgery may be replaced with a virtual consultation to reduce patients' exposure to acute infectious diseases such as COVID-19. Moreover, human and equipment resources could be redirected to fight against the COVID-19 pandemic.[51] The articles reviewed in the present paper reported a high level of patient satisfaction with telemedicine encounters. Furthermore, the studies revealed that new patients reported higher satisfaction scores than follow-up patients.[52] Similarly, established patients were less satisfied than new patients. This may be related to previous experience since established patients may consider in-person visits to be more reliable than virtual consultations. In a study by Firas Hentati, 62.2% of respondents indicated that they did not prefer their telemedicine encounter to an in-person visit.[53] On the other hand, in a study by Janet S. Choi, follow-up visits and postoperative visits were associated with higher patient satisfaction levels in comparison to new patient encounters.[54] The results of a study by Sheena Bhuva demonstrate that telehealth can be a tool to provide satisfactory and effective care, particularly with follow-up visits, in the case of which a greater number of patients preferred a virtual consultation to a face-to-face encounter.[55] Some patients found virtual visits more successful when there was a pre-existing relationship with the doctor. Moreover, the majority of respondents believe that a virtual consultation could adequately replace an in-person visit.[56] It should be mentioned that the rate of missed virtual visits is significantly lower compared with in-person encounters, which has financial implications.[57] The time and cost savings of having a consultation with a medical professional from one's workplace or home is one of the other advantages of telemedicine emphasized by respondents.[58]

4.2. Limitations of telemedicine

It needs to be remembered that telemedicine has its limitations. One of the biggest concerns faced by patients is the lack of a physical examination, which may lead to misdiagnosis.[59] Moreover, the absence of direct physical examination reduces the patient's preference for virtual consultations in the future.[60] Hence, telemedicine is more often recommended for follow-up visits. In one out of the reviewed papers, patients reported that they had not been sufficiently asked about their medical history or they had not spent enough time with their doctors. Establishing rapport between the doctor and the patient is another important factor in favor of an in-person encounter. Although few patients experienced difficulty connecting with their doctor, the use of telemedicine may be challenging for those not well acquainted with new information and communications technologies or those without access to appropriate equipment, such as elderly patients. Patients who had video consultations instead of telephone consultations were statistically significantly more likely to be under the age of 65 ($p = 0.0031$).[61] Respondents who experienced smartphone data or internet connection problems reported lower levels of satisfaction[62] Security and protection of medical data, and patient privacy are also among the main concerns related to telemedicine[63] There is no doubt that a secure computer system allows access to medical data by authorized personnel and prevents any unauthorized access. Another aspect that needs to be carefully assessed is obtaining verbal informed consent which should be noted in the patient's medical records.[64] Effective verification and confirmation of the patient's identity is an essential part of ensuring patient privacy and preventing imposture. Due to the occurrence of cyber attacks in the past, doctors should inform patients about potential risks associated with telehealth services. Telehealth platforms have healthcare-specific features and security. However, it is sometimes necessary to use video conferencing software, e.g., Skype for Business, Microsoft Teams, VSee, Doxy me. which is considered highly secure by the U.S Department of Health and Human Service (HHS).[65] By way of illustration, in a study by Mojdehbakh, the surveyed patients reported that their privacy was respected as either "excellent" (84.0%, n = 95) or "good" (8.8%, n = 10) during virtual consultations.[66]

The findings of the present review are limited by the nature of the examined studies-most of the research was conducted in a single clinic, where patients were treated by a few doctors. Due to the low survey response rate in the reviewed studies, the results do not correspond to the entire population of patients participating in telemedicine visits. The pandemic and related stressors may have also influenced the response rate. Furthermore, the fact that the reviewed studies were conducted during the COVID-19

pandemic, when patients may have been reluctant to attend in-person appointments, could have led to a higher patient satisfaction rate with telemedicine. Therefore, it cannot be presumed that the reported data represent patient attitudes to telemedicine beyond the pandemic. The majority of respondents in the reviewed studies were women, who are more likely to complete surveys than men. Women also visit primary healthcare centres more frequently than men. Some studies revealed that the satisfaction rate was higher among women in comparison to men, which may have impacted the results obtained in those studies. Patients who were more acquainted with new information and communication technologies were more likely to participate in the surveys, which improved satisfaction scores. To sum up, during the pandemic telehealth offered support to traditional medicine with high patient satisfaction. The utilization of telemedicine services allowed us to prevent the spread of the SARS-CoV-2 virus and played an important role in maintaining the continuity of healthcare.[67]

5. Future of healthcare technology

As 2022 rolls forward, healthcare technology will continue to improve in every area. Although security will improve across the industry, threats are always evolving that must be dealt with through prevention rather than response. Quality and efficiency of care will continue to improve due to groundbreaking and evolving technologies like artificial intelligence, machine learning, and extended reality. When deciding how to modernize your healthcare organization, time and funding are both on the line. It's important that you team up with the right team of software engineers who understand your needs and objectives.

6. Recommendations

Digital Health models in all over the world must currently focus on three legal principles- data privacy, compliance with existing regulations and conformity with medical ethics. The COVID-19 pandemics have accelerated the adoption of technologies at an astonishing rate and have therefore necessitated specific laws. However, the difficulty in the enactment of a comprehensive Digital Health specific law in India is the lack of clarity on the potential of the emerging technologies itself. At the present, the inter-disciplinary nature of Digital Health applications will require restructuring of multiple legislations.

7. Conclusions

Telemedicine is undoubtedly a convenient tool that has helped maintain continuity of medical care during the COVID-19 pandemic thanks to its considerable potential. In particular situations, telehealth may adequately replace face-to-face consultation. Regular patient feedback is necessary to improve the use of telemedicine in the future. In this study, the overall rates of early follow up have remained stable throughout the COVID-19 pandemic. These fluctuations of telemedicine visit volume may be due to a range of factors related to implementation, patient and provider preferences, organizational behavior, and policy adoption at the state and national level.[68,69] We are currently in the midst of an "information age" envisaged by Alvin Toffler which is a form of industrialization in which information, expertise, and technology is critical to every industry's growth and success. The present-day digital world is populated by various forms of technologies which contribute to the advancement of the global society. This situation benefits humanity enormously, particularly in the health sector with the advancement of therapies, tests, and new medicines that improve our quality of life and extend our life expectancy, among other things. The Digital Health market presents a lot of opportunities, but with every opportunity, there are bound to be risks involved. Innovation in this sector is yet to reach a saturation point, with new products frequently being introduced in the market. The legislative framework to protect and regulate such developments will remain one step behind, as it is yet to be seen how the industry will mature. Regardless, regulators have to anticipate and ensure that in the absence of specific laws, how existing laws can be harnessed to adequately regulate emerging technologies

8. Conflict of Interest

The authors declare no relevant conflicts of interest.

9. Source of Funding

None.

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