



Review article

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Social and Technological Innovation in Chronic Illness Management during the COVID-19 Pandemic

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To Cite This Article: Melchor Alpizar Salazar, Miguel Alejandro Trejo Rangel, Tamara Daniela Frydman, Social and Technological Innovation in Chronic Illness Management during the COVID-19 Pandemic. 2020 - 10(6). AJBSR.MS.ID.001564. DOI: [10.34297/AJBSR.2020.10.001564](https://doi.org/10.34297/AJBSR.2020.10.001564).

Received: 📅 October 10, 2020; Published: 📅 November 06, 2020

Abstract

The current world situation being so affected by the COVID-19 pandemic, personal contact with health care professionals is hard if not impossible for many patients who don't qualify as emergency cases and just need to continue their regular visits for chronic illness. Medicine has had to adapt as well as other disciplines have done to satisfy human needs. One of the innovative strategies used for this adaptation period has been the use of telemedicine. The aim of this paper was to analyze the available data on telemedicine use worldwide and specifically, in Mexico, to contemplate its helpfulness in providing care for non-communicable diseases. A literature review found several papers that generally agree on the fact that this is a feasible strategy in most cases, including third world countries like Mexico where internet access is not always a given for part of the population at least. Many researchers have also talked about the difficulties that arise from this type of medicine, and how by identifying these, the implementation and transition can be that much easier.

Keywords: Technological Innovation; Social Innovation; COVID-19; Pandemic; Prevention; Chronic Illness; Telemedicine.

Abbreviation: COVID-19: Corona Virus Disease 2019; WHO: World Health Organization; SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2 (the strain of coronavirus that causes COVID-19).

Introduction

The COVID-19 pandemic brought a huge challenge upon health systems across the globe, not just by the disease caused by the SARS-CoV-2 but also because this pandemic has interrupted health services for patients suffering from chronic non communicable diseases. Recently, the World Health Organization (WHO) performed a quick evaluation of these types of consultations since COVID-19 and it showed a partial or even complete disruption in several countries. More than half of the polled countries have altered their hypertension treatment services (53%), diabetes and related complications treatment services (49%), cancer treatment services (42%), and cardiovascular (31%) [1]. The above mentioned is counterproductive since, preventive and curative treatment for all these diseases is necessary to ensure that vulnerable population groups have optimal health control enough to have a chance at battling transmitted diseases. Moreover, several studies have ob-

served that in most cases with COVID-19 associated complications, the patients had comorbidities such as obesity, hypertension, and diabetes [2]. Numerous efforts have been made from private and government institutions to provide health access and chronic illness control to all the population in Mexico, however, none have proven successful in the long run [3]. With this information in mind, we ask ourselves what innovative strategy can be implemented to strengthen prevention and attention health services for chronic non communicable diseases during the SARS-CoV-2 pandemic. A novel and current approach is through telemedicine.

Conceptual Framework

Although it is to be expected that health services return to normal with the pandemic dialing down, now more than ever it is important to innovate and come up with new strategies that allow for distanced intervention to handle these diseases. There are two



types of innovation, social and technological, with 75% and 25% of credit for success respectively [4]. We believe that in the context of the current pandemic, the focus of social innovation should be to reach the most vulnerable groups using the available technology. By most vulnerable groups meaning, those patients with diseases that increase their risk of severe complications if infected by the SARS-CoV-2. Telemedicine has the potential to be an effective way to reach this goal. Telemedicine refers to the remote diagnosis and treatment of patients by professional doctors, meaning a virtual version of what would happen in a common medical appointment. This has simplified medical access during a time of danger and difficulty for patients to go out and see their doctors. This difficulty comes from movement restrictions as well as fear of contracting COVID-19 when leaving the house, and it only gets worse for those with other pre-existing conditions [5-8]. Furthermore, doctor-patient-family communication has also been affected by the pandemic. In many cases, family members cannot accompany the patient to visits and/or hospitalization due to the elevated risk of infection. This also inspires the need to implement solutions for this purpose. One example is the residents' initiative of the Hospital General de Mexico Dr. Eduardo Liceaga. These doctors have succeeded in connecting patients to their families through video calls by using a priority system where they categorize critical patients undergoing invasive procedures and those with a deteriorating situation (first), patients with hospital-associated psychological disease and patients with longer hospital stays (second), and general hospitalization patients (third). This protocol always considers immediate disinfection of all used electronics after the video call is made [9].

Material and Methods

A literary mini-review searched in the Google Scholar database for articles with keywords "Telemedicine", "Telehealth", "Mexico", "COVID-19", "Pandemic", "Technological Innovation", "Social Innovation", and "Chronic illness". Boolean operators were used as well. All the articles found using these criteria were reviewed and taken into consideration for the article given that with it being such a current topic there weren't that many results.

Results and Discussion

Health systems that invest in telemedicine are expected to prosper after the COVID-19 pandemic. This doesn't just translate into monetary benefits but primarily, into societal progress that allow people to take control of their illness. As expected, there are challenges that come with this approach, including the need for training health care professionals for this purpose, patient confidentiality related risks, and right protection for both doctors and patients [10,11]. Nonetheless, telemedicine has proven successful in maintaining a positive follow up of patients with chronic diseases [12-14]. In the United States of America, even though telemedicine was already a known practice for some doctors and patients, the

pandemic has popularized it in a massive way. Therefore, the authorities and users have had to lay out the resources and considerations needed for ultimate success. Firstly, ethics committees have designated program and application alternatives for telemedicine without jeopardizing the anonymity and security of patient data. Patients must have access to a device with audio, camera, and an internet connection, and they also need to designate a close contact to function as a "technological expert" in case of any trouble during the consultation. In many cases where access to this type of devices is scarce, a regular phone might be a viable option. The health professional must guarantee suitable conduct during the consult and should make sure that both the patient and companion understand what is being said since communication might be more difficult not being face to face [15]. The WHO has also identified certain elements in telemedicine that should be considered, including providing some sort of clinical support, overcoming the distance barrier, employing different information and communication technology, and always making the patient's well-being the priority [16]. Increasingly, this tool becomes more important to achieve health care availability for all populations, especially those with more difficulties regarding transportation and access to health centers, including lack of money, time, and/or higher vulnerability to infection. Consequently, Kruse et al. published a systematic review evaluating the most frequent challenges that arise from implementing telemedicine in several countries. Their findings present challenges like convincing leaders of the need for this investment, teaching patients and doctors the methodology for this type of medical consult, and having internet access for all who need it. The goal is to avoid the problems linked to these factors to successfully use telemedicine in Mexico. The authors also mentioned that certain medical specialties thrive more than others with telemedicine, one example is patients with diabetes [17]. Ideally, health care should be centered on preventive medicine just as it engages curative medicine. For this to be true, more than telemedicine, telehealth comes into play. Telehealth is a wider category that transcends the patient-doctor relationship to include education and encouragement for patients to get involved in their health process. Mobile phone apps that support lifestyle modifications, diet improvements, exercise habits, symptom managements, and treatment adherence are considered a part of telehealth. In Latin America, national telemedicine strategies have grown since the XXI century, starting in Mexico 1995. The aim was to decrease unequal access to medical attention and to endorse specialized medicine reach. In 2015, public health services in Mexico registered a productivity of 45,000 teleconsultations (31% psychiatric and 25% internal medicine). However, the biggest associated challenges are related to politics, infrastructure, and training. This was determined by Velazquez et al. after analyzing the implementation of The Telehealth Program in Oaxaca, Mexico, a project that worked with patients that had big difficulty in ac-

cessing specialized health services [18]. Certainly, the use of these health platforms is contingent on internet access which makes this a priority, and even though countries like Mexico might not have internet availability as much as other first world countries, there is a considerable number of people who do have access. According to the National Survey on Information Technology Use and Availability at Home (ENDUTIH), 70.1% of the population in 2019 reported being an internet user in Mexico [19]. The survey also presented the means most people used for their connection: 95.3% with a smartphone, 33.2% with laptops, and 28.9% with desktops.

Conclusion

During this critical time for the Mexican population, the use and adequate implementation of these types of strategies must be imminent. With the support of the previously mentioned statistics, we can infer that 70% of this population can be reached through technology. The goal is to have a solid community of health care professionals that can act as a web base for different remote consultations regarding diet plans, exercise programs and personalized recommendations according to specific conditions and control margins for each patient. Perhaps a specialist's database might be useful for a rotation so that according to the needs of each patient, a specific professional could be reached and consulted. This way, the health care professionals would not get saturated and the patients wouldn't neglect their health care out of fear or difficulty in reaching health centers or hospitals. National campaigns should take place for program diffusion as well as for finding the support of the medical community. As do all intervention programs, this would bear a cost that would have to be covered but private companies and government institutions would have to contribute for optimal results. In the long run, this is ultimately an investment, considering the effect of lowering complication rates and handling patients in the prevention phase rather than more difficult scenarios. Given the level of usage of communication technologies in the Mexican population, it is sensible to expect that its use could reestablish health services for non-communicable diseases and to offer an alternative way to promote health care during the current COVID-19 pandemic.

Conflict of Interest

The authors declare no conflicts of interest.

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