

Telemedicine in Orthopedics during the Covid-19 pandemic



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Abstract

Introduction: *telemedicine emerged decades ago as a possibility of medicine, with quality increasingly believed, especially given circumstances that prevent the patient from visiting the office, such as the pandemic of COVID-19. In the context of the pandemic, remote care can represent greater security for the patient, doctor, and the entire hospital team, in addition, to provide care that would be postponed or would pose a risk of contagion to those involved.* **Objective:** *This article aims to present a review of telemedicine in orthopedics in the context of the COVID-19 pandemic to present discussions that guide those interested in the topic to decide about the viability and applicability of this technology, to propose viable public policies during the pandemic or in normality.* **Methods:** *Literature review based on articles published in 2020, in Portuguese and English.* **Results and Conclusion:** *Decades of international experience with the use of telemedicine and recent results during the pandemic point to this technology as an alternative that must be practiced, disseminated, and taught. The COVID-19 pandemic highlighted telemedicine, especially in the field of orthopedics, as a viable alternative in a public health model, even in normal times.*
Keywords: *Coronavirus, Orthopedics, Telemedicine.*

Resumen

Telemedicina en Ortopedia durante la pandemia Covid-19.
Introducción: *La Telemedicina surgió hace décadas como una posibilidad de la medicina, en la que cada vez se cree más en la calidad, sobre todo ante circunstancias que impiden que el paciente acuda al consultorio, como la pandemia de COVID-19. En ese contexto, la atención remota puede brindar una mayor seguridad para el paciente y todo el equipo hospitalario, además de brindar una atención que se pospondría o traería el riesgo de contagio a los involucrados.* **Objetivo:** *Presentar una revisión sobre la telemedicina en ortopedia en el contexto de la pandemia de COVID-19 y presentar discusiones que orienten a los interesados en el tema a decidir sobre la viabilidad y aplicabilidad de esta tecnología, para proponer políticas públicas viables durante la pandemia o en la normalidad.* **Método:** *Revisión de la literatura basada en artículos publicados en 2020, en portugués e inglés.* **Resultados y Conclusión:** *La experiencia internacional de décadas con el uso de la telemedicina y los resultados recientes durante la pandemia apuntan a esta tecnología como una alternativa que debe ser practicada, difundida y enseñada. La pandemia COVID-19 destacó a la telemedicina, especialmente en la ortopedia, como una alternativa viable para la salud pública, incluso en normalidad.*
Palabras clave: *Coronavirus, Ortopedia, Telemedicina.*

Resumo

Telemedicina na Ortopedia durante a Pandemia do COVID-19. .
Introdução: *A telemedicina surgiu décadas atrás como uma possibilidade da medicina, com qualidade cada vez mais acreditada, principalmente em vista de circunstâncias que impedem que o paciente visite o consultório, como a pandemia do COVID-19. No contexto da pandemia, o atendimento remoto pode representar maior segurança para o paciente, médico e toda equipe hospitalar, além de proporcionar atendimentos que seriam postergados ou trariam risco de contágio aos envolvidos.* **Objetivo:** *Apresentar uma revisão acerca da telemedicina em ortopedia no contexto da pandemia de COVID-19 e apresentar discussões que orientem interessados no tema a decidir sobre a viabilidade e aplicabilidade desta tecnologia, para propor políticas públicas viáveis durante a pandemia ou na normalidade.* **Método:** *Revisão de literatura que utilizou como base artigos publicados no ano de 2020, nos idiomas português e inglês.* **Resultados e Conclusão:** *A experiência internacional de décadas com o uso da telemedicina e resultados recentes durante a pandemia apontam essa tecnologia como alternativa que deve ser praticada, difundida e ensinada. A pandemia do COVID-19 evidenciou a telemedicina, especialmente no campo da ortopedia, como alternativa viável em um modelo de saúde público, mesmo em tempos de normalidade.*
Palavras-chave: *Coronavirus, Ortopedia, Telemedicina.*

INTRODUCTION

Telemedicine emerges as an increasingly necessary aspect of medical science, especially during exceptional circumstances, such as the SARS-COVID19 pandemic that is a pathology with high potential for contagion and pathogenicity. It requires social isolation of the population and quarantine of the infected to curb population contagion since an efficient means of immunization has not yet been developed and the treatments developed are based on symptomatic and palliative care, not having yet defined a highly effective treatment for the most severe cases that sometimes die^{1,2}. In addition to the advantage of social distance, telemedicine offers an alternative to the paradoxical need to reduce costs and increase accessibility, in the context of a society increasingly globalized by the advent of communication technologies, such as the internet³.

For orthopedics, this reality is no different, the emergence of the need for remote care for its several reasons led specialists to adapt to their reality, whether by adapting anamnesis and physical examination methodologies, creating special care, and developing protocols new forms of remote investigation that can compensate for the impossibility of palpation and the dynamics of face-to-face evaluations^{1,4}.

Several studies that evaluated the results of online orthopedic care experiences highlight positive cost-effectiveness. In general, there is a reduction in costs, mainly for patients, either by dispensing with travel costs, and structural costs for professionals who do not need an establishment and associated expenses to meet³. Regarding the effectiveness of care, there is a reduction in the total treatment period of 80% when compared to face-to-face care, in addition to enabling universal care in regions such as those found in developing countries that have a shortage of specialist professionals attending patients outside large centers^{4,5}.

To obtain favorable results in these telemedical orthopedics experiences, the process of anamnesis and physical examination had to undergo an adaptation to reduce the impact of the absence of face-to-face contact during the service. For this, it was necessary to develop consultation protocols, which guided the patient with standardized image provision issues and more precise clarification of complaints, signs, and symptoms, so that it could enhance care and help in the physician's clinical reasoning¹.

O objetivo do artigo é apresentar uma revisão acerca da telemedicina em ortopedia no contexto da pandemia de COVID-19 e apresentar discussões que orientem interessados no tema a decidir sobre a viabilidade e aplicabilidade desta tecnologia, para propor políticas públicas viáveis durante a pandemia ou na normalidade. O objetivo do artigo é apresentar uma revisão acerca da telemedicina em ortopedia no contexto da pandemia de COVID-19 e apresentar discussões que orientem interessados no tema a decidir sobre a viabilidade e aplicabilidade desta tecnologia, para propor políticas públicas viáveis durante a pandemia ou na

normalidade. O objetivo do artigo é apresentar uma revisão acerca da telemedicina em ortopedia no contexto da pandemia de COVID-19 e apresentar discussões que orientem interessados no tema a decidir sobre a viabilidade e aplicabilidade desta tecnologia, para propor políticas públicas viáveis durante a pandemia ou na normalidade.

A study focused on evaluating the level of patient satisfaction with the results of care and treatment provided remotely found a high level of satisfaction of approximately 90% of patients assisted by telemedicine and a satisfaction difference of less than 10% compared to the control group that was assisted in person, verifying the efficiency and approval of the people towards this emerging methodology⁶. This article aims to present a review of telemedicine in orthopedics in the context of the COVID-19 pandemic and discuss guidance of those interested in the topic to decide on the feasibility and applicability of this technology, to propose viable public policies during the pandemic or in normality.

METHOD

This work is a literature review and was based on original articles published in 2020, in Portuguese and English. This chronological cut was chosen because of the understanding of the Sars-Cov-2 pandemic. The references used were collected from electronic databases: PubMed Medline, Lilacs, and Scielo, due to the ease of use of selection filters and the quality of the scientific literature. We selected all articles that had keywords: "*ortopedia*", "*coronavirus*" and "*telemedicina*" or "*telessaúde*" or similar descriptors in English "orthopedics", "coronavirus" and "telemedicine" or "telehealth", excluding those that were not relevant to the topic. The selected articles were extensively analyzed and their main contributions were then systematized.

RESULTS

The search returned 6 publications, all on the Pubmed platform of the National Center for Biotechnology Information (NCBI) and in English, totaling 4 original articles, 1 editorial, and 1 reader's letter. The editorial was excluded as it only mildly mentioned the topic of telemedicine.

With telemedicine, calls or video calls proved to be necessary tools and have a good resolution rate for patients with orthopedic conditions⁷. According to Iyengar et al., the National Health Service of the United Kingdom (NHS) has carried out a major restructuring in the way it organizes the triage of its patients, using apps and video calls to optimize and select the patients and/or conditions that need in-person medical follow-up, reducing the risk of contagion between health professionals and patients by COVID-19⁸.

The NHS has also produced several documents to systematize a national telemedicine implementation strategy aimed initially at separating patients who can be seen by telemedicine from those who need face-to-face medical care. The use of applications, video calls, and telephone

calls create new formatting and interaction in the doctor-patient relationship, favoring greater coverage and patient satisfaction, who, instead of being assisted by a professional, is now assisted by a multidisciplinary team that will treat their problem more broadly and with a greater probability of getting it right, in terms of diagnosis. The temporal relationship will be used in a more efficient way for both the health professional and the patient, due to communication through digital platforms that scale the severity of the condition and save both times. The relationship between distance and problem solving is also important, as it maintains the policy of social isolation and reduces the spread of diseases such as COVID-19⁸.

According to Loeb et., who report the experience of rapid installation of telemedicine during the SARS-COV-2 pandemic in a hospital in Baltimore, United States, the use of telemedicine was organized with screening schemes that ensure the optimal execution of consultations through virtual platforms. As in the United Kingdom, documents were created to instruct and assist the patient when making appointments online, maintaining the social isolation that the moment of a pandemic requires. The service created and published tables showing what patient is a candidate for a remote approach and a checklist for implementing telemedicine⁹.

Parisien et al. conducted an electronic questionnaire survey of 168 orthopedic surgery residency programs (96% of the total) on the use of telemedicine in the SARS-COV-2 pandemic and showed that 88 of the 106 programs that used telemedicine (63% of the total) implemented the service driven by the COVID -19 pandemic. It also reports the need to direct financial resources for investment in technological apparatus and training of professionals in the use of telemedicine, in addition to the dissemination of a tutorial for service users¹⁰. However, Loeb et al demonstrated that the use of telemedicine in orthopedic patients minimizes the use of surgical centers for elective procedures during the pandemic, which reduces expenses with personal protective equipment, maintaining high-quality patient care even in those simultaneously affected by COVID- 19 and orthopedic disorders⁹.

Halim et al. mention the increase in social isolation as a benefit of telemedicine, which impacts the doctor-patient binomial and the entire hospital team with a reduction in the flow of people, contributing to a reduction in the dissemination of COVID-19. They also mention that for patients that personal care is essential, the telephone survey for symptoms of COVID-19 can limit potential exposures⁷.

The negative aspect of remote consultations was the no rigorous physical examination, with the possibility of provocation tests, strength tests, palpation, and others. However, Tanaka et al. reported their experiences with the implementation of telemedicine, tools, and protocols in hospitals from Boston, United States, and present studies that demonstrate that with the aid of a detailed history and basic evalu-

ation, satisfactory results can be obtained with high rates of assertive diagnoses².

Parisien et al. also report that there was an increase in the use of telemedicine in orthopedics in North American states during the SARS-COV-2 pandemic, being 550% in New York, 900% in California, 1200% in Texas, for example. It also reports that the service approval rate with and without online care was similar among users, in which 75% of patients seen by telemedicine said they would use the service again¹⁰.

There was also an analysis of the efficiency of the service provided to the elderly population, noting that such interaction will be of great value to this type of patient not only because of the difficulty in mobility but also because of the greater severity of Covid-19 in this population².

One of the limitations of the study was that the review returned few articles, which hindered an analysis that allows an overview of the contribution of telehealth in the area of orthopedics, as it was restricted to the period of the pandemic.

DISCUSSION

These studies show that the implementation of a telemedicine service aimed at orthopedics enables a better screening of patients' demands, providing a better distinction of priorities for the service of those that can only be solved in person and with an emergency nature^{8,9}. At the same time, those with elective demands are attended online, with a quality of service similar to that offered by the traditional method⁶. In addition, there is the possibility of implementing a pre-consultation service that allows for an epidemiological screening of patients, with symptomatology questionnaires for SARS-COV-2 or another disease that may emerge with risk of contact, providing greater security for the professionals and patients⁷.

We highlight the need for training of professionals who provide this virtual service to ensure the quality of care and even more to overcome the barrier of remote care that limits the patient's physical assessment. Studies suggest that the implementation of protocols for pre-consultation and patient instruction, regarding the positioning of the camera and guidance of semiological maneuvers to assist in the clinical investigation, are efficient for remote consultation^{1,4,8,2}. This training is carried out with the participation of the entire multidisciplinary team so that the responsibility for the remote service does not fall only to the physician, and everyone in the team can assist in the screening and consultation process, increasing the effectiveness, resoluteness, and agility in the service^{8,10}.

Buvik et al. carried out two studies in which they investigated the cost-benefit³ and quality¹¹ of remote video care in medicine, concluding that there is no appreciable difference in the quality of care and that there is the financial feasibility.

Vuolio et al. concluded in 2003 that telemedicine is a viable alternative for the management of outpatients¹². Cota et al. carried out 921 orthopedic consultations by email between 2008 and 2013, enabling 79.4% of patients with acute conditions to be treated in their localities¹³. Several other works with similar conclusions can easily be found in the literature. Thus, it is understood why 88 institutions in the United States opted for rapid implementation of remote service during SARS-COV-2¹⁰ pandemic and why the NHS further encouraged the use of existing remote care methods⁸.

Some studies analysis^{3,11-13} concern the financial and temporal cost of transportation that is saved with telemedicine, and social isolation is a benefit that should be added during the pandemic, especially in the elderly population, which is more severely affected by SARS-COV-2. Although difficulties have been reported with the elderly population¹⁴, this is the most benefit from remote care during the pandemic².

In a study carried out in Norway, Buvik et al. concluded that considering a public health system, a remote telemedicine service is economically viable and interesting for the population when the demand exceeds 151 patients per year. They propose a model in which a typical consultation environment is complemented with elements for filming and transmission of images via the internet and with the presence of a nurse³. This model can be applied to most primary care centers in Brazil, and an additional study could identify the demand that makes the service viable in the Brazilian reality and places that would have such demand during the pandemic.

As mentioned by Halim et al., social distancing has made telemedicine essential, whether by phone, real-time video, or recording. By offering patients a way to interact and discuss their problems, the physician demonstrates that he has not abandoned them and remains dedicated to promoting care¹⁰.

Despite the legal obstacles to the implementation of telemedicine in Brazil, the Federal Council of Medicine has exceptionally authorized teleorientation, telemonitoring, and teleconsultation¹⁵. Based on the international experience of decades with the use of telemedicine and the recent results of countries during the pandemic, telemedicine is an alternative that must be practiced, disseminated, and taught, being a great alternative for times like this.

CONCLUSION

The area of orthopedics shows many possibilities for the use of telemedicine, with different results in different study designs. These results point to a reduction in waiting time, an increase in the quality of care as it is possible to detect cases early, and a very significant use aimed at the care of the elderly population.

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