

Perceptions and Readiness to Use Telerehabilitation Service During the COVID-19 Pandemic Among Physiotherapists: A Review

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ABSTRACT

This paper reviewed the perceptions and readiness to use telerehabilitation service during the COVID-19 pandemic among physiotherapists. A comprehensive overview on acceptance and insights of telerehabilitation will result in the successful implementation of the system. A review of the literature from 2019 to 2022 was performed using MEDLINE, Scopus, ScienceDirect and Google Scholar database. The authors explored all systematic findings to ensure inclusion criteria were met. Ten studies were appraised, and 7 selected studies were reviewed. Most of the findings showed positive perceptions towards telerehabilitation and willingness to use this technology-based service. Inadequate training, lack of connections between information and communication technology (ICT) experts and clinicians, patient privacy and confidentiality, patient ability to use ICT, and internet connection issues are some of the reported barriers that may prevent physiotherapists from using telerehabilitation. Despite these



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barriers, telerehabilitation has the potential to provide a more comprehensive and improved service during or after the pandemic.

Keywords: *physiotherapy; perceptions; readiness; telerehabilitation*

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic has caused a devastating impact on healthcare systems worldwide. Additionally, it has become more evident that the pandemic's effects extend beyond the illnesses it causes as the healthcare systems have to deal with the rehabilitation needs of people who already have comorbidities (Bezuidenhout et al., 2022). Rehabilitation is also an important part of the recovery process for COVID-19 patients who have severe symptoms (Needham et al., 2012). It improves health outcomes by enhancing health and functioning, assisting in early discharge from inpatient facilities, and preventing relapse and worsening after discharge (Bezuidenhout et al., 2022; Puhan et al., 2005). Rehabilitation has been critical in these situations and has a critical role to play throughout the pandemic. Cessation or delay in rehabilitation service can lead to deterioration of patients' health conditions (Robison et al., 2009).

Multidisciplinary professionals are required to carry out rehabilitation roles which include physiotherapy. Physiotherapy is essential for the acute and post-acute rehabilitation of COVID-19 patients as well as the maintenance of rehabilitation for older and disabled people (Shamsi et al., 2020; World Physiotherapy, 2021). Service delivery must be adjusted as appropriate to ensure safety in light of the pandemic. The importance of physiotherapy services raises several concerns and potential challenges for physiotherapists. To limit the spread of the virus, many national and international orders have been issued, including physical separation and other preventative behaviour modification measures such as hand washing and the use of face masks (Van den Broucke, 2021). The continuity of physiotherapy services still needs to be maintained with some modification as it is one of the essential services. This is done to mitigate the long-term impacts of physiotherapy service disruption, which could result in a considerable increase in the number of disabled people in the future (World Physiotherapy, 2021).

The pandemic outbreak has forced the physiotherapy profession to explore the use of telerehabilitation practice to deliver healthcare services. Telerehabilitation is a modern innovation used in delivering rehabilitation services using the technology platform. These services provide people with disabilities with therapeutic interventions, remote monitoring of progress, education, consultation, training, and a means of networking with others who have similar conditions (Brennan et al., 2010). It was considered a suitable alternative healthcare delivery system during the COVID-19 outbreak, and many studies have promoted its feasibility in treating pain and disability. Telerehabilitation provides advantages over the conventional method of face-to-face rehabilitation sessions in that it is more organized, specialized, and effective service (Aderonmu, 2020; Brennan et al., 2010). It enables medical professionals such as doctors, therapists, and nurses to connect with patients and encourage them to engage in rehabilitation activities in the comfort of their own homes. It gives the patient autonomy and encourages them to manage their condition by becoming an active partner in their care. It allows people in remote areas or with mobility limitations due to physical impairment, transport, or socioeconomic factors to access care (Brennan et al., 2009, 2010). In addition, it reduces healthcare provider and patient travel costs and time.

However, the acceptance and implementation of telerehabilitation are attributed to the attitude and willingness of healthcare personnel, and healthcare organizations who are receptive to new technologies. Hence, it is crucial to study how physiotherapists perceive telerehabilitation and whether they are prepared to use it to provide effective rehabilitation services. This article aims to review the published studies on the perceptions and readiness to use telerehabilitation during the COVID-19 pandemic among physiotherapists.

METHODS

This review was conducted following the methodological framework proposed by Arksey and O'Malley (2005). This framework consists of five stages, namely, (1) identifying research questions, (2) identifying relevant studies, (3) study selection, (4) charting the data, and (5) organizing, summarizing, and reporting the results.

Identifying Research Questions

The proposed research questions for this review were (1) what are the physiotherapists' perceptions of telerehabilitation during the COVID-19 pandemic, and (2) are physiotherapists ready or willing to use telerehabilitation during the COVID-19 pandemic?

Identifying Related Literature

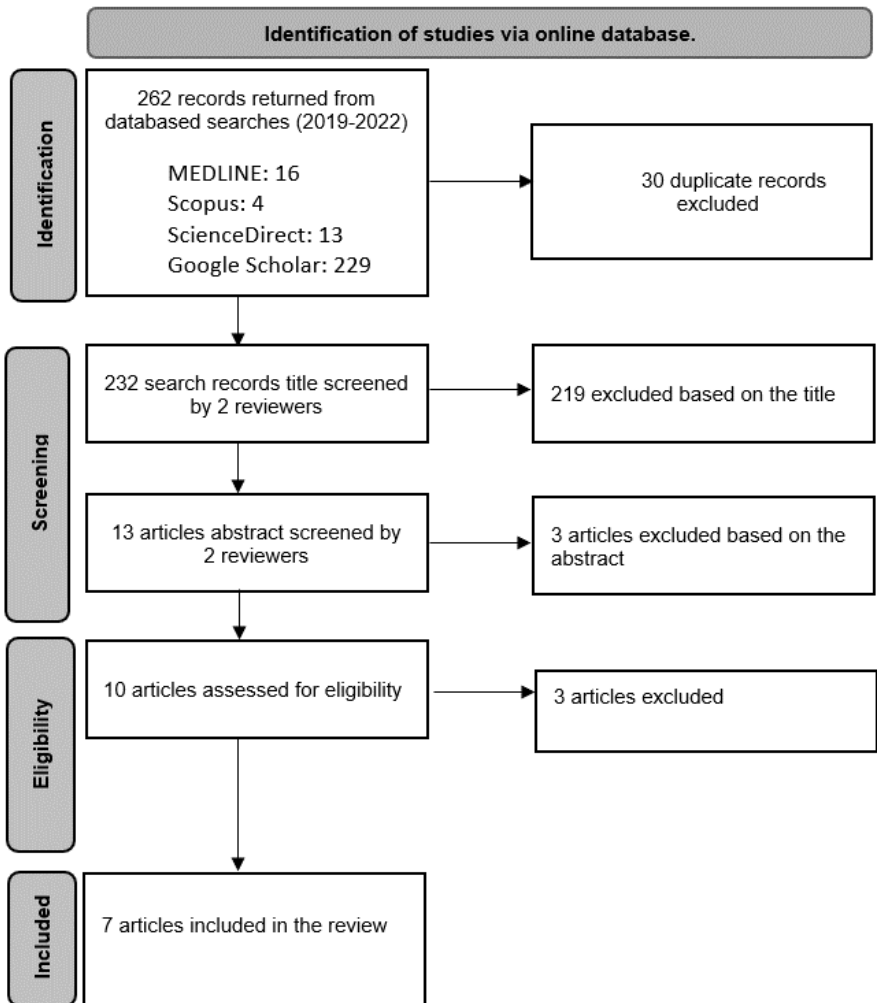
The search was performed in an electronic database (MEDLINE complete at EBSCOhost, Scopus, ScienceDirect and Google Scholar). A comprehensive search of academic journals published on this topic from 2019 to 2022 was conducted. All types of studies, except systematic reviews or review papers, were included in the search. The suggested key terms used in the search for articles included 'COVID-19', 'physiotherapist', 'physical therapist', 'perceptions', 'readiness', 'telerehabilitation', 'telemedicine', 'telehealth', 'telemonitoring', and 'willingness'. The Boolean terms "AND"; "OR" and "NOT" were used to separate the keywords. Examples of search terms in Scopus were: TITLE-ABS-KEY ("COVID-19" OR "Coronavirus Disease 2019") AND ("physiotherapy" OR "physiotherapist*" OR "physical therapy" OR "physical therapist") AND ("perception*" OR "perspective*") AND ("readiness" OR "willingness") AND ("telerehabilitation" OR "telemedicine " OR "telehealth" OR "telemonitoring"). In the search results, the same studies that were reported in more than one online source or publication were spotted and linked to each other, thus preventing data duplication.

Study Selections

The authors explored all systematic findings to ensure inclusion criteria were met. After screening all the identified titles and citations, the relevant studies were chosen. All selected studies were restricted to English and published in academic journals. Studies were included for review based on these inclusion criteria: (1) the studies on the physiotherapists' perception of telerehabilitation, and (2) the studies which investigated the physiotherapists' readiness or willingness to use telerehabilitation. The exclusion criteria were (1) the study which indicated a case series or report, (2) participants or profession other than a physiotherapist. Based on the inclusion and exclusion criteria, 7 articles published between 2021 and 2022

were selected for review. All the reviewers discussed the articles' relevance to the research question and whether they met the inclusion criteria. The screening process was documented in a flow diagram according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Review (PRISMA-ScR) (Tricco et al., 2018) to depict the flow of the articles from search to its final selection (Figure 1).

Figure 1
PRISMA-ScR Study Flow Diagram



Data Charting

A summary of the selected studies is tabulated and summarized in Table 1 which presents (1) study characteristics-author and year, (2) study design, (3) the methodology used, and (4) results. Data were organized to summarize the finding on perception and readiness to use telerehabilitation among physiotherapists during the COVID-19 pandemic. To answer our research question, we used an iterative and thematic approach. The literature was thematically organized according to the important related issues.

Collating, Summarizing, and Reporting Results

All seven selected studies were published recently between 2021 and 2022. These studies were conducted in different countries such as Kuwait, India, Brazil, Belgium, Ireland, and Sweden. Five out of the seven studies were cross-sectional studies, while the other two studies were pilot studies and used semi-structured interviews. Most of the studies used online questionnaires as a medium for data collection and the rest carried out face-to-face interview sessions with the participants. Different terms referring to telerehabilitation were used in two studies which are telehealth (Reynolds et al., 2021) and telemonitoring (Meireles et al., 2022). Six out of seven studies' findings showed positive perception of telerehabilitation and willingness to use this technology-based service. Only one study found that most physiotherapists were hesitant to use telerehabilitation platforms to treat patients.

Table 1
Physiotherapists' Perceptions of and Readiness to Use Telerehabilitation During the COVID-19 Pandemic

Author	Design	Procedure	Result
Dierick, Pierre, Profeta, Telliez, & Buisseret (2021)	Pilot Study	An online questionnaire based on the technology-acceptance model was designed. Sociodemographic data were collected and Likert scales were proposed to assess perceived ease-of-use, perceived usefulness and intention to use telerehabilitation. Data were collected between 17 January and 17 March 2021; 107 physiotherapists answered.	<p><i>Physiotherapists' perceptions towards telerehabilitation</i></p> <p><i>Physiotherapists' readiness to use telerehabilitation</i></p> <p><i>Barriers to the use of telerehabilitation system</i></p> <p>-Only 1% of physiotherapists are willing to use telerehabilitation, and 50% of physiotherapists think they will never use telerehabilitation.</p> <p>-Physiotherapists are reluctant to use telerehabilitation. This is related to their representation of proper Musculoskeletal Disorder management, which must include the use of hands-on techniques.</p>

<p>Meireles, Mendes, Silveira & Machado (2022)</p>	<p>Open electronic survey questionnaire in Google Forms utilizing previously published studies about telehealth. A five-point Likert questionnaire on the use of telemonitoring. This questionnaire consisted of perceptions of knowledge, advantages, disadvantages, necessity, and technology security about telemonitoring consultations. Data were collected between July to September 2020; 394 physical therapists answered.</p>	<p>-Telemonitoring causes low patient satisfaction, and that it leads to low effectiveness in patient care. -Education on telemonitoring for neurofunctional physical therapists is crucial and highly needed in patient care. - It is highly important to provide healthcare via telerehabilitation to the economically disadvantaged. -Specific security policies and guidelines are highly necessary for the use of telemonitoring (55.6%) and that it is critical to create a structure to prevent the breach of confidential data when using telemonitoring (46.6%).</p>	<p>- Caregivers' lack of understanding about handling during sessions (41.2%) and problems with internet connection (16.7%). -Telerehabilitation platform needs legal authorization to operate after the pandemic period.</p>
<p>Reynolds, Awan & ...</p>	<p>Irish Physiotherapists completed an online survey, distributed by ...</p>	<p>-Respondents agreed that telehealth offered a reduction in travel time for ...</p>	<p>-Considerations to commencing telehealth service users</p>

<p>Gallagher (2021) observational study</p>	<p>the Irish Society of Chartered Physiotherapists (ISCP), exploring considerations and barriers to commencing telehealth, and advantages to telehealth, overall experience of telehealth, and their opinion on the future of telehealth.</p>	<p>the service user (82%), offer flexibility in the delivery of physiotherapy (81%) and avoid contact with a potential COVID-19 spreader (92%). -The limited scope of the physical examination (86%) via telehealth is a significant disadvantage. -Telehealth is considered a temporary stop-gap during the pandemic by 40% of physiotherapists while 60% viewed telehealth as a sustainable alternative mode of health care delivery.</p>	<p>suitability, adequate technical and organisational resources, physiotherapist's professional conduct, physiotherapist's skills and COVID-19 restrictions. -No outstanding barrier to telehealth was identified.</p>
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Albahrouh & Buabbas (2021)	<p>(1) Cross-section survey</p> <p>(2) Face-to-face semi-structured interview ws.</p>	<p>(1) An electronic questionnaire was sent to 747 physiotherapists in the governmental health sector. The questionnaire has 4 sections: perceptions of telerehabilitation, comfort with technology, willingness to use telerehabilitation, and barriers to use it.</p> <p>(2) 6 interviews were conducted with physiotherapy managers to explore the barriers and facilitators of telerehab. practice.</p>	<p>-Most of the respondents (237; 86.8%) considered telerehabilitation a viable option to deliver healthcare to patients during the COVID-19 pandemic.</p>	<p>-Majority of the physiotherapist (243;89%) were willing to integrate telerehabilitation into their conventional practice. The results indicate that the more the physiotherapists used the internet and email in their work and the more comfortable they were with technology, the more willing they were to use telerehabilitation systems.</p>	<p>-Lack of connection between ICT experts and clinicians, lack of user-friendly software, inadequacy of suitable training to practise telerehabilitation, patients' privacy and confidentiality were considered barriers in this study.</p>
Bezuidenhout et al. (2022)	<p>Cross-section survey</p>	<p>An online survey questionnaire was sent by email to the Swedish Association of Physiotherapists. The questionnaire consists of questions about the use and</p>	<p>-Most of the respondents (78%), felt comfortable using ICT (57%) and were interested in learning how ICT can be used in rehabilitation (92%).</p> <p>Important functionality of</p>	<p>About half of the respondents were willing to work with telerehabilitation a few times per week whereas about one in ten of the respondents (neurology: n = 13, 9%, geniatrics: n =</p>	<p>-Few telerehabilitation services were used before or during the COVID-19 pandemic and revealed multilevel barriers for implementation, ranging from patients' ability to</p>

	perceptions of existing telerehabilitation services as well as future needs.	future ICT perceived by physiotherapists covered patient communication, assessments, and treatment.	14, 8%) were not willing to work with telerehabilitation at all.	use ICT to existing reimbursement systems within health care.
Buabbas, Albahrou h, Alrowaye h, & Aishawaf . (2022)	Face-to-face structured interviews were conducted with 8 physical therapists to explore their experiences with telerehabilitation, including difficulties and benefits.	7 out of 8 physiotherapists reported benefits of telerehabilitation (i.e., reduced patients' waiting lists and improved access to physical therapy care). They preferred using telerehabilitation to support the conventional physical therapy care, though lack of technological infrastructure.	-Most of the physiotherapists (n = 7) preferred telerehabilitation as an adjunct technique during and after the pandemic, and they preferred to initially examine patients in person and then continue the treatment through telerehabilitation.	
D'souza & Rebello (2021)	Online questionnaire was sent to 747 physiotherapists around India. A self-report questionnaire utilized in a previous study (Albahrouh & Buabbas, 2021) was adapted.	-Majority of the physiotherapists felt that telerehabilitation is appropriate for use in their workplace (83.9%) and would be happy to use telerehabilitation to deliver physiotherapy service (71.2%).	-Most physiotherapists believe that their colleagues would be willing to use telerehabilitation (78.8%) and would be happy to recommend telerehabilitation to other physiotherapists (74.6%).	-The most common barriers identified were lack of training (54.2%) and a lack of connection between information and technology experts and clinicians (52.5%).

RESULTS AND DISCUSSION

The literature search identified 13 published studies that were relevant to the study scope. Reviewers screened the abstract and methodology of all 13 studies. Ten studies were appraised, and 7 studies were selected to be reviewed. The other 3 studies were not selected as 1 had a study population involving another profession and 2 studies did not evaluate the perception or readiness of physiotherapists toward telerehabilitation. Positive perceptions of and readiness to use this telerehabilitation platform were found in the 6 studies (Albahrouh & Buabbas, 2021; Bezuidenhout et al., 2022; Buabbas et al., 2022; D'souza & Rebello, 2021; Meireles et al., 2022; Reynolds et al., 2021). In contrast, one study revealed that most physiotherapists are reluctant to utilize telerehabilitation as a medium to treat patients because they believe that hands-on procedures are necessary, particularly for patients with musculoskeletal diseases (Dierick et al., 2021).

Three themes evolved from the results of the review concerning the perceptions and readiness to use telerehabilitation during the Covid-19 pandemic among physiotherapists: (1) physiotherapists' perceptions towards telerehabilitation (2) physiotherapists' readiness or willingness to use telerehabilitation and (3) barriers to the use of telerehabilitation system.

Physiotherapists' Perceptions Towards Telerehabilitation

Several positive and negative perceptions of telerehabilitation have been identified in the inclusive articles. A total of six out of seven selected studies have reported on perceptions of telerehabilitation among physiotherapists (Albahrouh & Buabbas, 2021; Bezuidenhout et al., 2022; Buabbas et al., 2022; D'souza & Rebello, 2021; Meireles et al., 2022; Reynolds et al., 2021). Positive perceptions of this platform show great advantages in different aspects such as cost and travel time reduction, flexibility in service delivery, and minimising the risk of COVID-19 infection. Based on these positive perceptions, the telerehabilitation platform is suitable and practical to be utilized especially during the COVID-19 pandemic. However, some points on negative perception should be taken into consideration so that some adjustments can be made to ensure this telerehabilitation is viable to implement. According to Meireles et al. (2022), patients were not satisfied with the telerehabilitation service as the effectiveness was low. The possible reason might be due to the elimination

of the physical contact between the physiotherapist and the patient during the treatment sessions (Aderonmu, 2020). Touch is a critical component and essential for physiotherapy practice particularly for assessment and manual intervention purposes (Bjorbækmo & Mengshoel, 2016; Roger et al., 2002). Providing a face-to-face session for an early assessment and intervention before proceeding with telerehabilitation can be an option to improve patients' satisfaction and effectiveness of care.

In terms of physiotherapists' perception of security and privacy of telerehabilitation technology, specific policies, and guidelines to address this issue are essential for telerehabilitation use. This is to prevent breaches of confidential data when utilizing telerehabilitation (Albahrouh & Buabbas, 2021; Meireles et al., 2022). The finding by Meireles et al. (2022) and Albahrouh and Buabbas (2021) indicated that it is very important to provide legal clarification to patients treated through telerehabilitation and store the data in the cloud or backup. Additionally, the ability of physiotherapists to use existing ICT systems will influence the tendency to use telerehabilitation (Albahrouh & Buabbas, 2021; Bezuidenhout et al., 2022; D'souza & Rebello, 2021). These studies revealed that increased comfort and familiarization with ICT will improve the probability to use telerehabilitation. This finding was supported by Tousignant et al. (2011) that revealed healthcare providers who became more familiar with technology will be more comfortable with providing healthcare services over time.

Physiotherapists' Readiness to Use Telerehabilitation

The discovery of this review revealed majority of respondents in these studies were willing to use telerehabilitation particularly during the COVID-19 pandemic. Most physiotherapists believed that using telerehabilitation at work was the appropriate approach to deliver the service (Albahrouh & Buabbas, 2021; Bezuidenhout et al., 2022; Buabbas et al., 2022; D'souza & Rebello, 2021). Moreover, telerehabilitation can be used without restrictions both during and after the COVID-19 pandemic. Another finding from the study in this review shows that the more physiotherapists utilized the internet and email in their job and felt more comfortable with technology, the more ready they were to adopt telerehabilitation technologies (Albahrouh & Buabbas, 2021). This indicated that exposure to ICT for physiotherapists is important to encourage use of telerehabilitation.

However, Dierick et al. (2021) showed opposite findings, where physiotherapists were reluctant to use telerehabilitation as they emphasized proper management which includes touch and hands-on techniques for musculoskeletal disorders. Touch and hands-on techniques are essential for conventional face-to-face treatment session as it is more engaging for both patients and physiotherapists (Bjorbækmo & Mengshoel, 2016; Roger et al., 2002). The alternative suggested by Buabbas et al. (2022) to overcome this situation is to examine the patient in person first, then continue treatment via telerehabilitation. Besides, physiotherapists also highlight the importance of education about neurofunctional telerehabilitation to facilitate the monitoring of patients with neurological problems (Bezuidenhout et al., 2022; D'souza & Rebello, 2021; Meireles et al., 2022). In short, physiotherapists' readiness regarding the benefits of telerehabilitation can reduce patient waiting lists and increase access to physical therapy care (Buabbas et al., 2022; D'souza & Rebello, 2021).

Barriers to the use of telerehabilitation systems

Based on the review conducted, several barriers have been identified in the selected studies. Inadequate training, lack of connections between ICT experts and clinicians, patient privacy and confidentiality, patient ability to use ICT, caregivers' lack of understanding about handling during sessions and internet connection issues are some of the common barriers that may prevent physiotherapists from using telerehabilitation (Albahrouh & Buabbas, 2021; D'souza & Rebello, 2021; Meireles et al., 2022). However, Reynolds et al. (2021) reported that no significant barriers to telehealth implementation were discovered in their study, as telehealth was just getting started. Some factors that were considered included service user suitability, adequate technical and organizational resources, physiotherapist's professional conduct, physiotherapist's skills, and COVID-19 restrictions.

Good connections between ICT experts and physiotherapists and proper training are necessary for successful telerehabilitation delivery. Thus, communication between these multidisciplinary experts regarding the needs and suitability of appropriate telerehabilitation implementation is required to reach a consensus (Leochico, 2020). Furthermore, exposure to massive open online courses, as well as other accessible educational materials must be established for physiotherapists to address inadequate

training issues (Fioratti et al., 2021). Next, before using telerehabilitation, patients' privacy and confidentiality must be prioritized to avoid data breaches. This could be overcome by developing particular policies and regulations for telerehabilitation practice to ensure the safety of both parties—patients and physiotherapists (Albahrouh & Buabbas, 2021).

Patients' ability to use ICT and understanding during the telerehabilitation session are some barriers that must be considered. A comprehensive training program and user-friendly software for both patients and physiotherapists can be introduced to increase the clinical efficacy of telerehabilitation (Mukaino et al., 2020). This must be a priority to ensure telerehabilitation is more accessible to a larger population. Besides, good infrastructure such as strong internet coverage will influence the viability of telerehabilitation practice. Collaboration between the healthcare and telecommunication sectors is an option to resolve the internet connection problem for telerehabilitation implementation.

CONCLUSION

This review's findings indicated that telerehabilitation is a promising alternative method of delivering physiotherapy services, particularly during the COVID-19 pandemic. However, the identified potential barriers must be addressed in order to implement effective telerehabilitation. Despite the reported barriers, telerehabilitation has the potential to provide a more comprehensive and improved service during or after the COVID-19 pandemic. The development of a user-friendly application as a medium for telerehabilitation delivery through collaboration between physiotherapists, ICT experts, and stakeholders would improve telerehabilitation adoption. Therefore, proper guidelines and policies should be designed to manage the telerehabilitation practices.

CONTRIBUTIONS OF AUTHORS

The authors confirm equal contribution in each part of this work. All authors reviewed and approved the final version of this work.

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CONFLICT OF INTERESTS

All authors declare that they have no conflicts of interest.

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