


A scoping review of feasibility, cost-effectiveness, access to quality rehabilitation services and impact of telerehabilitation: A review protocol

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Abstract

Background: Telerehabilitation is an emerging segment of telehealth and telemedicine that has a potential to deliver quality, accessible, cost-effective and efficient rehabilitation services where geographical distance is a critical factor. The objectives of this review are: to describe the feasibility and cost-effectiveness of telerehabilitation, to scope to what extent telerehabilitation has the potential impact on access to quality of rehabilitation services with specific references to low to middle income countries, and to understand key process factors including barriers and facilitators relevant to the implementation of telerehabilitation.

Methods: A scoping review of the literature will be conducted. An electronic search literature will be conducted in PubMed, Scopus, Cochrane library, Africa-wide information, CINAHL, MEDLINE, ProQuest, Web of science and reference lists. The review team will develop a data charting form and pilot it on four randomly-selected studies. The form will be refined based on the results of the piloted articles. Studies identified will be screened at the title and abstract levels by the first reviewer, followed by an independent verification for the accuracy and eligibility by two more reviewers prior to obtaining the full texts. Studies to be included must report on feasibility, cost-effectiveness, access to rehabilitation services, implementation process factors including barriers and facilitators of telerehabilitation. The analysis will include both descriptive summary and inductive thematic analysis.

Conclusion: Telerehabilitation has ability to change the current standard of care and allow for improved access and health outcomes in cost-effective ways, while addressing the scarce and unequal distribution of limited number of healthcare providers especially in low to middle income country settings. Thus, the research findings could be used by different stakeholders including: researchers, clinicians, policy makers, and implementation teams as they determine the appropriate setup for new telerehabilitation programs.

Keywords

Access, barriers, facilitators, effectiveness, impact, LMICs, rehabilitation, telerehabilitation

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Introduction

Telerehabilitation (TR) is an emerging segment of telehealth and telemedicine that has been considered as a suitable alternative health care delivery system using electronic or digital information and communication technologies to deliver quality, accessible, cost-effective, and efficient

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rehabilitation services where geographical distance is a critical factor.¹⁻⁴ The term “telerehabilitation” encompasses a range of rehabilitation and habilitation services that include assessment, monitoring, therapy, prevention, supervision, education, consultation, and counselling.^{5,6}

TR falls under both categories of telehealth care and telemedicine. According to Winters,⁷ telehealth refers to the management of disability and health, whereas telemedicine refers to delivery of clinical services. Since TR may involve the delivery of clinical services such as in teletherapy, TR intersects with telemedicine, whereas the rest of TR models fall under telehealth care or telehealth, referring to the management of disability and health.⁸ In this review, we will use the term “telerehabilitation” to include both telehealth and telemedicine.

Although TR has been reported as a beneficial and cost-effective way of delivering rehabilitation services,¹⁻³ its overall use has been slow among health care providers globally, and even slower in low to middle income countries (LMICs) as it has been an optional health care service before coronavirus outbreak.⁹ Given the shift in paradigm from TR as an alternative to an integral part of the health system, it is important to take a systematic approach to identifying the overall impact, implementation processes, outcomes, including barriers and facilitators to its implementation to help guide clinicians and researcher who wish to utilize TR as an alternative service delivery.

Previous studies demonstrated that TR is feasible and cost-effective.^{2,3} However, barriers to its implementation also exist. The common barriers to implementation include but are not limited to: conflicting health system priorities, lack of political will, technically challenged staff, resistance to change, language barriers, lack of infrastructures, privacy of data security, quality of health care services, lack of smart devices, low battery life, poor design, loosely defined details surrounding TR/telehealth, age, and level of education.⁹⁻¹⁶ In addition, the lack of international standards on the ethics of TR and the lack of applicable legal provisions is also a major obstacle to the widespread and effective use of these practices.¹⁷

The diversity of TR practice across the globe calls for uniformity of guidelines and standards of implementation processes as these are very important and valuable processes to help ensure effective and delivery of quality health care.¹⁸ Policy makers, role players, and regulators would refer to these uniform implementation guidelines and standards especially if TR is to be integrated into existing policies.^{1,19} However, the information about TR outcomes, implementation processes, including barriers and facilitators, especially those that could be applicable to LMICs have not been summarized and well synthesized for easy understanding. Thus, the aim of this scoping review will be to scope all published information reporting on the: feasibility, cost-effectiveness, impact on access to quality rehabilitation

services, barriers and facilitators of TR in high and low to middle income country settings.

Specific objectives

1. To describe the feasibility and cost-effectiveness of TR with specific reference to LMICs.
2. To scope to what extent TR has the potential to impact access and quality rehabilitation services with specific references to LMICs.
3. To understand key process (including barriers and facilitators) factors relevant to the implementation of TR.

Methods

A scoping method will be used for this review. A scoping review was selected because it enables mapping of exploratory research by systematically searching and synthesizing exiting knowledge without critically appraising the methodological quality. Scoping reviews aim to examine the amount, range and nature of empirical and conceptual research activity in a broad topic area.²⁰ Thus, this review will examine the emerging TR technology in relation to its implementation process factors and outcomes in both high and low to middle income country settings. The methodological framework proposed by Arksey and O'Malley,²⁰ enhanced by Levac et al.,²¹ and refined by Peters et al.²² will be applied to extract and synthesize the data. The five stages proposed in this framework are: (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data, (5) collecting, summarizing, and reporting the results.²⁰

Identifying research questions

Scoping review questions are naturally broad and the aim of these type of reviews is to summarize the range of evidence in the area of interest. Following the initial engagement and gaining familiarity with the existing literature, the following questions were identified; (1) Is TR feasible and cost-effective especially in LMICs settings?

(2) Does TR has a potential impact on access to quality rehabilitation services especially in LMICs settings? (3) What are potential barriers and facilitators to implementation of TR?

Identifying relevant studies (information source)

The review team developed a comprehensive search strategy in consultation with University of Stellenbosch's librarian during an initial meeting. A preliminary search was conducted in PubMed, Scopus, and google scholar

databases to determine the breadth and depth of scientific literature which is relevant to the review questions. A comprehensive electronic search of PubMed, Scopus, PEDro, Cochrane library, EBSCOhost (Academic search premier, Africa-wide information, CINAHL, Eric, MEDLINE, Health sources-Nursing/Academic edition), Africa online, Web of science and ProQuest databases will be conducted. Table 1 contains search terms and strategies that will be used to identify the relevant studies for this review.

Study selection (screening)

The selection process in this review is of two-fold. The primary reviewer (NE) will screen the articles identified in the search at title and abstract levels, and an additional two reviewers (QL & CJ) will independently verify the accuracy and eligibility prior to obtaining full texts. Our review will include experimental and empirical studies such as randomized and non-randomized studies, surveys, qualitative descriptive and cohort studies that reported on any form of TR describing its feasibility (e.g. recruitment rate, retention rate, completion rate, compliance, adherence, satisfaction, etc.); cost-effectiveness; impact on access to quality rehabilitation services (e.g. care continuity, follow-up, access to rehab professionals and rehab consultants); as well as barriers and facilitators of implementation. These studies should also be published in peer-reviewed journals with full texts available in English.

As TR is technology driven that keeps evolving, and since one of the objectives is to identify barriers to and facilitators of its implementation, studies published prior to 2010 will be excluded as some of barriers related to the lack of smart devices and knowledge about the use of technology before 2010 might not be the same as at this particular moment.

Charting the data (data extraction)

Data charting is a method which allows researchers/reviewers to capture a breadth of information and details on processes to provide further context to the research outcomes.¹⁹ The review team will develop a standardized data charting form and pilot it on four randomly-selected studies. The extraction form will include information on; (1) authors and year of publication, (2) aim and objectives of the study, (3) study design, (4) country where the study was conducted, (4) implementation processes (e.g. mode and methods of delivery), (5) barriers and facilitators to implementation, (6) outcomes (e.g. feasibility, cost-effectiveness, access to quality rehabilitation services, continuity of care). The form will be modified based on experiences of extracting data from each of the four (pilot) studies.

Collating, summarizing, and reporting the results (synthesis of the results)

In order to increase the methodological rigor of the scoping review, Lavac et al. suggested that this section be divided into three separate foci including; analyzing the data, reporting results, and applying the meaning to the results.²⁰ Search results will be presented in a flow diagram, using a modified preferred reporting items for systematic reviews and meta-analysis (PRISMA-ScR). Figure 1 indicates proposed studies selection process.

Our analysis will include both descriptive summaries and inductive thematic analysis. We will descriptively summarize the study characteristics such as: authors and year of publication, aim and objectives of the study, country where the study was conducted, implementation processes, feasibility and cost-effectiveness, impact on access to quality rehabilitation services as well as barriers and facilitators of implementation. The evidence extracted from all sources will be narratively summarized into key themes. To synthesize results, we will form clusters of similar publications by classifying the data items collected. This method will allow us to analyze and compare evidence of TR within each publication cluster.

Ethical consideration

As this is a scoping review of published literature, ethics approval is not required. This protocol has been registered at open science framework. Public profile identifier: <https://osf.io/eq96n/>

Results

As per July 2021, the scoping review is at data extraction stage. Data will be synthesized and the results of the synthesis will be presented in a form of tables and graphs. All data gathered and synthesized will be included in the article to be published in peer-reviewed open access journal. The final results of the review are expected to be submitted for publication by November, 2021. Data gathered from this review will be made available upon reasonable request.

Discussion and conclusion

Previous studies have shown that TR has ability to change the current standard of care and allow for improved access and health outcomes in cost-effective ways, while addressing the scarce and unequal distribution of limited number of healthcare providers especially in LMIC settings. Barriers to its implementation do also exist. However, these outcomes have not been summarized and well synthesized for easy understanding. In addition,

Table 1. Search terms.

Concept 1	Concept 2	Concept 3
“Telemedicine” [Mesh] OR	Effect*[tiab] OR	Africa [Mesh] OR
“Telerehabilitation” [Mesh] OR		Develop*countr*[tiab] OR
“Telehealth” [tiab] OR	AND Barrier*[tiab] OR	AND “Low income countr*[tiab] OR
“Tele physiotherapy”[tiab] OR	Challeng*[tiab] OR	“Middle income countr*[tiab]
“Tele-physiotherapy” OR	Facilitate*[tiab] OR	LMIC*[tiab]
“Tele therapy” [tiab]	Impact[tiab] OR	
“Tele-therapy” [tiab] OR	Implement*[tiab] OR	
“Tele-occupational therapy” [tiab] OR	Process [tiab] OR	
“Tele-audiology” [tiab] NOT	Access [tiab] OR	
“Telemedicine” [tiab]	“Quality of care” [tiab]	

Additionally, a snowball search (hand searching and citations tracking/reference lists) will also be conducted.

most of the studies have been conducted in high income countries.

Therefore, a comprehensive global review of the literature is warranted to gain more in-depth understanding of implementation processes of TR and its associated outcomes. Identifying TR outcomes, implementation processes factors, including barriers and facilitators to implementation of TR around the globe will provide baseline information needed to suggest a guiding framework for the development of contextually relevant TR programs applicable to low/middle income country settings. The research findings

could be used by different stakeholders including: researchers, clinicians, policy makers, and implementation teams as they determine the appropriate setup for new TR programs. Furthermore, the information gathered might also contribute towards the design and development of contextually relevant TR educational material that could be included in curricula of undergraduate rehabilitation science students.

Limitations

This review will include studies from both high and low to middle income countries. Since TR is technology driven, and high income countries are believed to have a better access to and knowledge of the use of technology compared to the LMIC, this may limit the generalizability of review results depending on the context. Additionally, we anticipate that most studies utilizing TR may derive from high-income countries. This may hamper the generalizability to other dissimilar contexts, particularly LMICs. However, the results should be interpreted using a pragmatic lens of what is affordable and possible in the setting where interested parties wish to explore the use of TR.

Contributorship

EN was responsible for conceptualizing the study, collecting the literature, writing the first draft, and the final revision of the review protocol. **CJ** assisted in conceptualization, and approved the final revision of the protocol. **QL** assisted in conceptualization, assisted in the

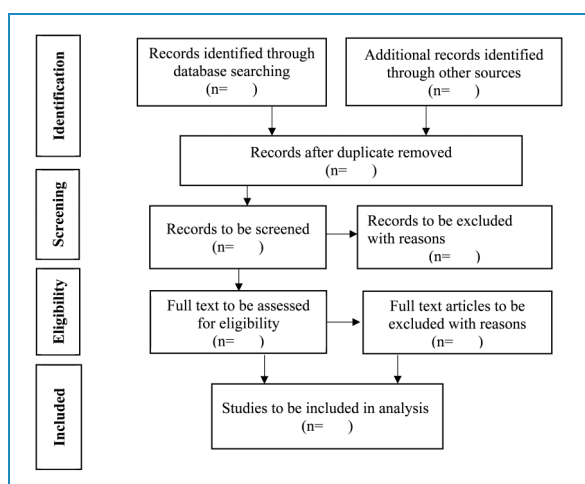


Figure 1. Flow diagram outlining the proposed selection process for the study to be included in this review.

literature collection, and approved the final revision of the protocol.

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