



BMJ Open Evidence of community health workers' delivery of physical rehabilitation services in sub-Saharan Africa: a scoping review

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ABSTRACT

Objectives To map the evidence and scope of physical rehabilitation services delivered by community health workers (CHWs) in sub-Saharan Africa (SSA).

Design Scoping review

Data sources PubMed, Scopus, Cochrane Central and databases within the EBSCOhost platform. We also searched other literature sources including reference lists, conference presentations and organisational websites such as WHO, Ministries of Health and non-governmental organisations in SSA.

Eligibility criteria for selection of studies Articles presenting evidence on CHWs' delivery of physical rehabilitation services in SSA from September 1978 to June 2023.

Data extraction and synthesis Screening was conducted by two reviewers and was guided by the inclusion criteria. Thematic content analysis of data was employed. The results are presented according to the Preferred Reporting Items for Systematic Review and Meta-Analysis extension for scoping reviews.

Results A total of 6996 articles were identified through various databases, with only 20 studies qualifying for data extraction. Evidence was presented by Eritrea, Ethiopia, Malawi, Mauritius, Namibia, South Africa and Uganda. Assessments, case management, health education, community liaison with support, health systems linkage and administration were the CHWs' scope of practice identified. The review identified home-based, community-based, community and facility-based, home and community-based and facility-based as modes of delivery. The barriers experienced are resources, societal and community attitudes, governance, geographical barriers and delivery capacity, while proximity to the community, positive job attitude and support with collaboration facilitated service delivery.

Conclusion Training and integrating CHWs in national health care systems, with careful selection of existing CHWs, would minimise the barriers faced.

INTRODUCTION

About 2.4 billion people are living with a health condition requiring rehabilitation in low-income and middle-income countries, and of these, 50% are experiencing unmet

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This review was guided by Arksey and O'Malley's framework, which ensured a systematic approach that can be replicated.
- ⇒ Mixed methods appraisal tool was used to appraise the methodological quality of the included studies.
- ⇒ The use of English keywords could have led to missing some articles.

needs for rehabilitation, physical rehabilitation inclusive.¹ The need for physical rehabilitation has increased as a result of increasing life expectancy and changing lifestyles from active to sedentary, leading to an increase in the prevalence of non-communicable diseases.² This need for physical rehabilitation services leading to the demand for physical rehabilitation service, greatly exceeds the service availability due to various factors such as lack of prioritisation of rehabilitation at the national level, unavailable rehabilitation services and the shortage of trained human resources for health (HRH) for physical rehabilitation.¹

To address the shortage of trained HRH, community health workers (CHWs) have been deployed as a solution, augmenting service delivery by offering screening and preventive healthcare services.^{3,4} This strategy, known as task-shifting, has proven beneficial in some resource-constrained nations, mitigating HRH shortages and enhancing access to health services, thereby yielding positive health outcomes.^{5,6}

Sub-Saharan Africa (SSA) faces a heightened demand for physical rehabilitation services amid a significant shortage and uneven distribution of HRH specialised in physical rehabilitation.⁷ This scarcity is compounded by the region's fragile health systems and a substantial burden of disability.⁸

To address this challenge and advance universal health coverage in SSA, it is imperative to establish comprehensive models for physical rehabilitation service delivery, ensuring equitable access to high-quality services.¹ Task-shifting physical rehabilitation services to CHWs is essential to alleviate the shortage of qualified HRH for physical rehabilitation and extend services to underserved communities.⁹ Furthermore, meeting the escalating demand for physical rehabilitation necessitates reinforcing services at the primary care level by reallocating responsibilities from skilled HRH for physical rehabilitation to CHWs.¹⁰

The existing literature indicates that employing CHWs to enhance access to health services can be cost-effective.^{4 11 12} However, evidence regarding the utilisation of CHWs in physical rehabilitation service delivery is limited. Moreover, there is a lack of understanding regarding the scope of practice and methods of service delivery by CHWs in the area of physical rehabilitation. Additionally, there is a dearth of literature exploring the barriers and enablers of CHWs' provision of physical rehabilitation services, necessitating a need to understand the scope covered by CHWs in this domain as well as facilitators and obstacles.

The purpose of this review was to systematically search the literature for evidence of CHWs' provision of physical rehabilitation services in SSA and to describe their scope of practice with modes of service delivery as well as the barriers and facilitators experienced in the delivery.

METHODS

Design

A scoping review methodology was adopted to answer this study's specific complex questions which are heterogeneous in nature. The title for this review was registered with Open Science Framework (OSF-DOI 10.17605/OSF.IO/M46AQ), and the protocol of this review was published in a peer-reviewed journal.¹³ This review was guided by the framework of Arksey and O'Malley.¹⁴ This framework highlights the stages of scoping review namely:

1. Identifying the research questions.
2. Identification of relevant studies.
3. Study selection.
4. Charting the data.
5. Collating, summarising and reporting the results.

This framework further incorporated Levac *et al*'s methodological enhancement for scoping review projects, which recommends quality appraisal of included literature.¹⁵

Identification of the research question

The research question of this review was: What is the evidence of CHWs providing physical rehabilitation services in SSA? The specific research questions were as follows:

- ▶ What is the scope of physical rehabilitation services delivered by CHWs in SSA?

Table 1 Population, concept and context framework

Criteria	Determinants
Population	Community health workers
Concept	Physical rehabilitation services
Context	Sub-Saharan Africa

- ▶ What is the CHWs' mode of physical rehabilitation delivery in SSA?
- ▶ What barriers are experienced by CHWs in the delivery of physical rehabilitation services in SSA?
- ▶ What factors facilitate the CHWs in the delivery of physical rehabilitation services in SSA?

To determine the eligibility of our research question for a scoping review study, we used the population, concept and context (PCC) framework as depicted in [table 1](#). The PCC framework aims to identify the participants, the topic and the area of interest elements satisfying the needs of a scoping review.

Identification of relevant studies

We conducted a comprehensive search of published and unpublished literature without applying language restriction from September 1978, which was the adoption of primary healthcare as the key to attaining health for all at Alma-Ata declaration, to June 2023 using the databases PubMed, Scopus, Cochrane Central and databases within the EBSCOhost platform. Other sources included tracking citations, conference presentations and publications on organisational websites such as WHO, Ministries of Health in SSA and non-governmental organisations in SSA.

The mix of medical subject heading (MeSH) terms and keywords developed with the aid of the subject librarian used were: "community health worker*" OR "lay health worker*" OR "rehabilitation assistant*" OR "community rehabilitation assistants*" OR "Community Health Aide*" OR "Village Health Worker*" OR "Caregiver*" OR "Bare-foot Doctor*" in All Text AND "rehabilitation service" OR "disability service" OR "rehabilitation" OR "community-based rehabilitation" in All Text AND "sub-Saharan Africa" OR "sub-Sahara" OR "SSA" OR "Africa south of the Sahara" OR Africa. A search strategy enhanced by a search summary table to suit each database was adopted.¹⁶ All the searches and search results were tabulated in a file (online supplemental file 1).

Study selection

To ensure the correct identification and selection of relevant studies, this review was guided by the inclusion and exclusion criteria.

Inclusion criteria

In this review, we included the following articles:

- ▶ Articles in the form of reports, guidelines, commentaries or opinions and primary studies presenting

evidence on CHWs' delivery of physical rehabilitation services in SSA.

- ▶ Articles reporting evidence on CHWs delivering physical rehabilitation services in SSA from September 1978 to June 2023.

Exclusion criteria

The following were excluded:

- ▶ Articles presenting evidence of CHWs delivering physical rehabilitation services in SSA without full articles.
- ▶ Review articles were excluded.
- ▶ Protocols were excluded because they did not present the actual evidence of CHWs delivering physical rehabilitation services in SSA in the study.

Selection of sources of evidence

All identified citations were collated and uploaded into EndNote V.20, and duplicates were removed. The principal investigator (PI) developed screening tools using Google Forms which factored in all aspects of the inclusion criteria and the PCC elements. To ensure the tools capture correct information, the screening tools were pretested using 10 random articles from Google Scholar. The pretest revealed that the screening tools were missing data on the types of studies. Therefore, after pretesting, the full article screening tool was adjusted to include the type of study. The PI and an independent reviewer (R1) conducted the title and abstract screening. The outcome and discrepancies were discussed until a consensus was reached. Studies that met the inclusion criteria were retrieved in full and screened by PI and R1. The disagreements that arose during full article screening were settled through discussion or consultation with a second reviewer (R2).

Charting the data

Dual data extraction was conducted using a Google charting form by PI and R1. The Google charting form required the following information to be entered: author and year of publication, the title of study, aim of the study, country of evidence, type of article, study design, study setting, the scope of physical rehabilitation services, mode of service delivery, barriers experienced and facilitators influencing the provision of physical rehabilitation services. After comparing two sets of data, there was no need for confirmation from the authors as the charted data were clear, and the reviewers were in agreement with the charted data; hence, the data were merged.

Collating, summarising and reporting the results

The summary characteristics of the included studies are described using descriptive statistics. NVivo V.12 was employed in extracting themes from the included studies. Deductive thematic content analysis was done to answer the research questions using the predetermined themes which were evidence, the scope of service, the mode of delivery, barriers and factors influencing CHWs' physical rehabilitation service provision.^{17 18} The results

of this scoping review are presented according to the Preferred Reporting Items for Systematic Review and Meta-Analyses extension for scoping reviews: checklist and explanation.¹⁹

Quality assessment

The mixed methods appraisal tool (MMAT) V.2018 was used to appraise included studies to ensure high-quality findings.²⁰ Two reviewers carried out the quality appraisal process (PI and R1) by assessing the methodological quality of the included studies to avoid bias. Using the MMAT guidelines, the following percentage scores were used to grade the quality of evidence: (1) <50% being below average evidence, (2) 51%–75% being average evidence and (3) 76%–100% being high-quality evidence. We only considered first and second tier-grey literature to maintain quality; hence, only moderate to high outlets or moderate to high credible studies like annual reports, presentations, government reports or white papers were included.²¹

Patent and public involvement

None.

Ethics clearance

This review is part of the larger PhD study, of which ethical approval was granted by the University of KwaZulu-Natal Biomedical Research Ethics Committee (BREC/00000569/2019).

RESULTS

Screening results

A total of 6942 records were identified through database search, and an additional 53 records were identified through other sources, transferring a total of 6996 records into Endnote V.20 for duplicate removal. After the removal of 949 duplicates, 6047 qualified for title screening. A total of 400 records qualified for abstract screening and of this, only 36 abstracts met the inclusion criteria for full texts assessment. After full texts assessment, 20 articles qualified for data extraction, excluding 16 articles due to the inability to access the full text of one study, three were study protocols, three studies did not present the sought evidence and nine studies reported on mid-level workers instead of CHWs. **Figure 1** presents the screening process.

Characteristics of the included articles

The summary characteristics of the studies are presented in online supplemental table 1.

Methodological quality of evidence

16 studies^{22–38} underwent a methodological quality assessment using MMAT tool V.2018.²⁰ Studies excluded from the methodological quality assessment were uncharted methods in the tool, being reports^{39 40} and a dissertation.⁴¹ All the included studies scored 100%, showing high methodological quality; hence, no study was excluded from the

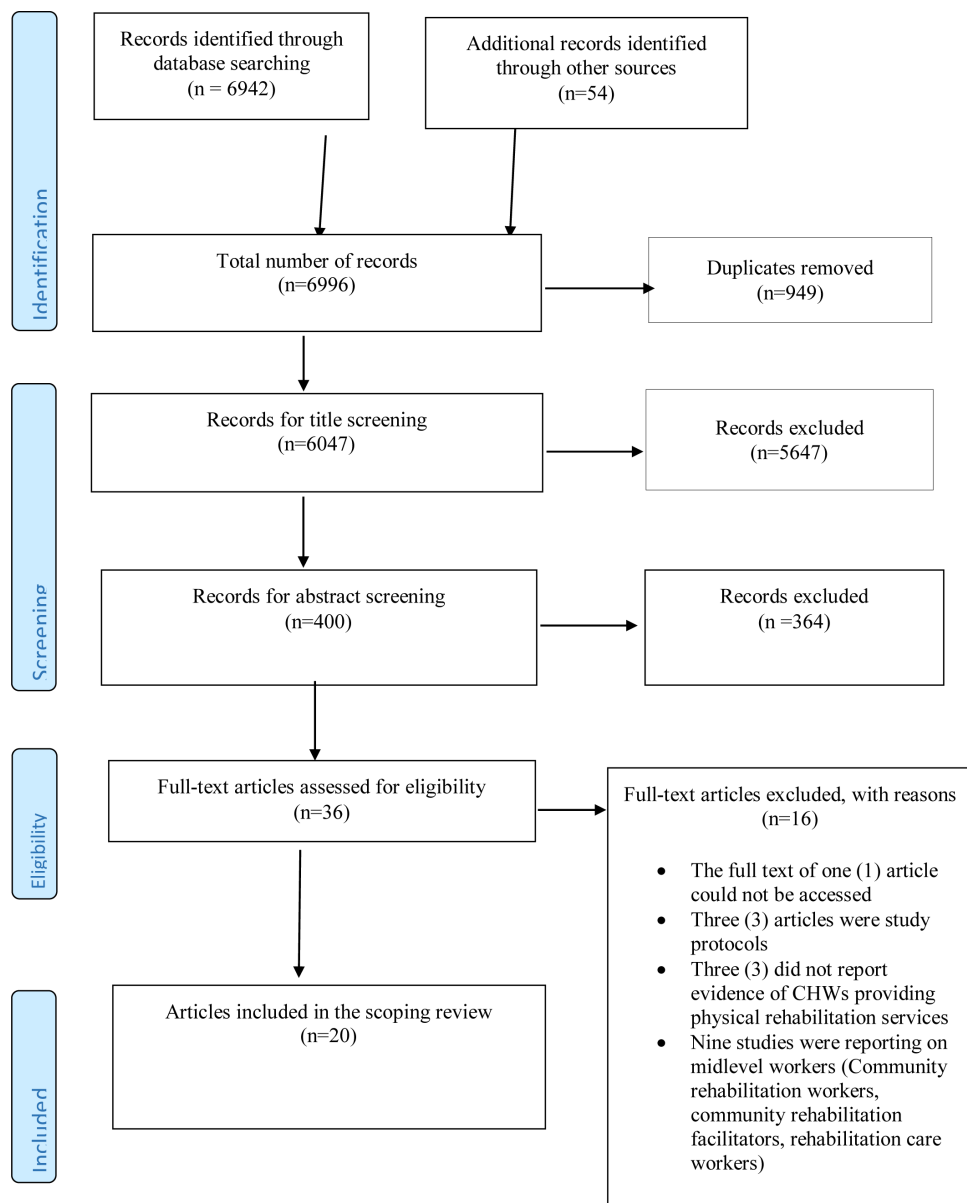


Figure 1 The PRISMA flow diagram. PRISMA, Preferred Reporting Items for Systematic Review and Meta-Analysis.

review at this stage, with overall evidence considered to have a minimal risk of bias (online supplemental file 2).

Main findings

The results are presented in the five predetermined themes. The predetermined themes are evidence, scope of practice, mode of delivery, barriers and facilitators. Online supplemental table 2 contains the main findings of the review.

Evidence of CHWs' delivery of physical rehabilitation services in SSAs

Evidence of CHWs' delivery of physical rehabilitation services was found in seven SSA countries, namely South Africa, Malawi, Uganda, Ethiopia, Eritrea, Mauritius and Namibia. [Figure 2](#) presents the distribution of evidence in SSA.

CHWs' scope of practice

This review found CHWs making assessments,^{24 28 37–39} managing cases in the form of exercise prescription,^{22 23 25–27 30 31 34 40} provision of assistive devices,^{22 23 25 27 29 32 35 40} communication support³³ and patient care.^{24 25 36 37} The CHWs were also engaged in health education,^{30 31 33 34 37 39 41} community liaison with support services,^{22 23 25 27 35 39 40} health systems linkage^{35 36} and administration³⁶ as shown in online supplemental table 2.

Assessment

The CHWs were assessing disabilities in children in KwaZulu-Natal, South Africa²⁴ and identifying neurological disorders in Ethiopia,²⁸ while in Eritrea, the CHWs were making general client assessments in a community-based rehabilitation (CBR) programme.³⁸ In Mauritius,

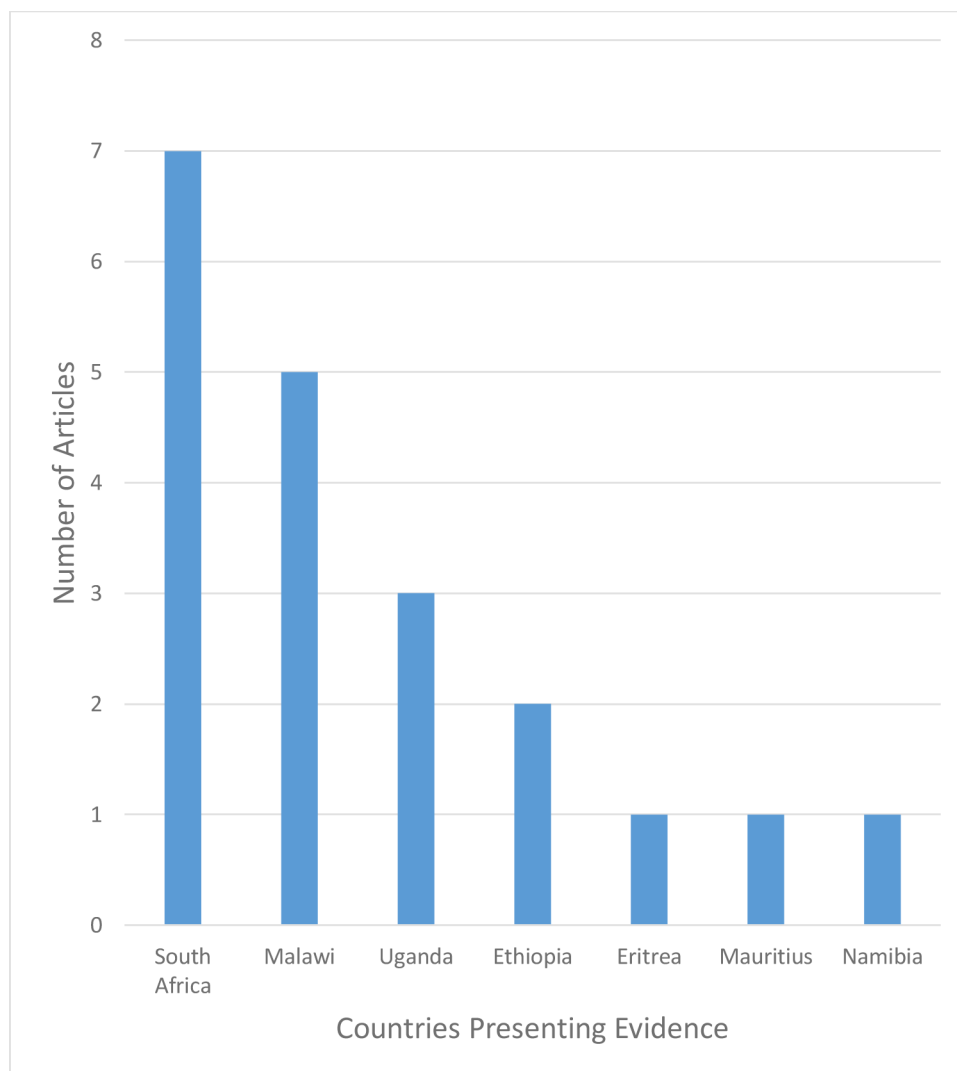


Figure 2 Distribution of evidence in SSA. SSA, sub-Saharan Africa.

the CHWs were assessing the capacities of people with disabilities,³⁹ and in Malawi, they were making home and holistic person assessments in home-based palliative care.³⁷

Case management

Exercise provision

Positioning, bed mobility, transfers, ambulation training, staircase training and maintenance of the range of motion are reported as activities of CHWs in Malawi,^{22 23 25 27} while in Uganda, physical activity counselling and training clients in activities of daily living are reported as CHWs' activities.^{26 40} Teaching and supervising strength, aerobic, functional and home exercises are reported as CHWs' activities in South Africa.^{30 31 34}

Provision of assistive devices

Assistive device fitting and helping in environmental adaption are CHWs' activities reported in Malawi,^{22 23 25 27} while identifying assistive device needs²⁹ and bandaging stumps for prosthetic fitting³² are CHWs' activities reported in South Africa. In Uganda, CHWs were involved

in wheelchair delivery to the clients and training clients in the use of assistive devices.^{35 40}

Communication support

Teaching interaction to deaf children was found as a CHWs' activity in a CBR programme in Ethiopia.³³ This review reported CHWs supporting communication to deaf children in a study aimed at assessing the practice and challenges of CBR services for the deaf in Ethiopia.

Patient care

Monitoring clients' blood pressure, patient care and monitoring their hygiene were found to be among the CHWs' activities in a palliative home care programme in Malawi.^{25 37} Similarly, monitoring clients' welfare was reported as CHWs' activity in the Western Cape Province of South Africa.^{34 36}

Health education

Teaching exercises to clients and their caregivers are reported as CHWs' activities in South Africa,^{30 31 34} and

teaching life skills to deaf children are reported as CHWs' activities in Ethiopia.³³ The CHWs are reported to be training caregivers to take care of the clients in Malawi,³⁷ and health education was reported as their activity in Mauritius,³⁹ while in Namibia, CHWs are reported building capacities and empowering their clients.⁴¹

Community liaison with support services

Studies in Malawi report CHWs encouraging clients to take part in community participation,^{22 23 25 27} while in Uganda, they are reported supporting and empowering clients in the CBR programme,^{35 40} and in Mauritius, they are reported integrating disabled clients in the community.³⁹

Health system linkage

A Ugandan report revealed CHWs making client referrals in the CBR programme,³⁵ and in South Africa, a study reports CHWs linking clients with the health system in the non-communicable diseases (NCDs) management programme.³⁶

Administration

Administrative duties at a health facility are reported as CHWs' activities in South Africa in the NCDs management programme in Khayelitsha, Western Cape Province.³⁶

Mode of delivery

This review found the CHWs engaged in different modes of service delivery. These are home-based,^{22 23 25–27 30 31 37 39} community-based,^{24 28 32 33 38 40 41} community and facility-based,^{35 36} home and community-based³⁴ and facility-based²⁹ as shown in online supplemental table 2.

Home-based

In Malawi, the CHWs operated in a home-based palliative care programme,^{22 23 25 27 37} and in South Africa, the CHWs delivered services to people living with human-immuno virus (PLWHIV) in home settings.^{30 31} Equally, in Uganda, the CHWs delivered physical activity counselling to study participants in home settings,²⁶ and likewise in Mauritius, the CHWs delivered neurological rehabilitation in clients' localities.³⁹

Community-based

In South Africa, CHWs were assessing children for disabilities and bandaging stumps in readiness for prosthetic fitting in community settings.^{24 32} In Ethiopia, CHWs were identifying neurological disorders and providing communication support and teaching life skills to deaf children in the communities,^{28 33} and in Eritrea, CHWs are reported making assessments and registering clients' needs in the community in a CBR programme.³⁸ Similarly, in the Ugandan and Namibian CBR programmes, CHWs are reported delivering services at the community level where they worked as programme volunteers.^{40 41}

Community and facility-based

In Uganda, the CHWs who were providing assistive devices in a CBR programme operated at both community and facility levels.³⁵ Similarly, CHWs are reported to be involved in the management of NCDs both in the community of Khayelitsha and the health facility in South Africa.³⁶

Home and community-based

In a South African study to describe the experience and perceived needs of stroke survivors, their caregivers and CHWs in a context with limited access to and support from formal rehabilitation services, CHWs are reported providing services to stroke survivors in a home and community-based care programme.³⁴

Facility-based

In a study aimed at identifying gaps and helping improve future training of CHWs and the service delivery offered by CHWs for childhood disorders and disabilities, a South African study reported CHWs identifying assistive device needs of children with disabilities at a facility.²⁹

Barriers

The review found different barriers experienced by the CHWs in service delivery. These are resources,^{27 29 33 35 37–39 41} societal and community attitudes,^{27 29 30 33 35 36} governance^{29 32 35} geographical barriers^{30 37} and delivery capacity,^{34 40} as shown in online supplemental table 2.

Resources

The CHWs in Malawi, South and Uganda experienced lack of transport as a barrier,^{27 29 35 37} while lack of medical supplies was reported as a barrier experienced by CHWs in Malawi, Eritrea and Mauritius.^{27 38 39} Poverty was reported as a barrier experienced by CHWs in an Ethiopian CBR programme,³³ and lack of financial support was also a barrier experienced by CHWs in a Namibian CBR programme.⁴¹ Lack of technical devices to use in service delivery was experienced as a barrier by the CHWs in Mauritius.³⁹

Societal and community attitudes

In South Africa, this review found a lack of access to clients' homes, patient stigma and non-maximum utilisation of home visits as barriers to CHWs' service delivery,^{29 30 36} while lack of caregiver compliance was found to be a barrier in a palliative care programme in Malawi.²⁷ Negative societal and parental attitudes towards people with disabilities and low disability awareness were found to be barriers to CHWs service delivery in Ethiopia,³³ and the CHWs in Uganda experienced negative community attitudes as a barrier to their provision of assistive devices in a CBR programme.³⁵

Governance

Unclear roles of CHWs and the stakeholders, lack of cooperation from other stakeholders and lack of CHWs

recognition,²⁹ with unclearly defined general roles,³² posed as a challenge for CHWs' service delivery in South Africa. In Uganda, a high number of clients was a barrier experienced by the CHWs as this made it a challenge in client management.³⁵

Geographical barriers

In a South African study, distances between homes and extreme weather are reported as a barrier for CHWs in a home-based rehabilitation programme for PLWHIV in KwaZulu-Natal Province.³⁰ Similarly, a Malawian study reported bad weather as a barrier for CHWs in a home-based palliative care programme.³⁷

Delivery capacity

Inadequate skills to equip them to manage complications such as pain, stiffness, blood glucose levels and seizures were experienced by CHWs in South Africa,³⁴ while limited training to prepare them for physical rehabilitation service delivery was reported as a barrier by CHWs in Uganda.⁴⁰

Facilitators

The factors facilitating CHWs' service delivery are proximity to the community,^{32 37} positive job attitude^{29 37} and support with collaboration²⁷ as shown in online supplemental table 2.

Proximity to the community

Proximity to the community facilitated CHWs' service delivery when CHWs worked as members of multi-disciplinary team in prosthetic rehabilitation in a South African study.³² Similarly, proximity to their patients facilitated the CHWs' service delivery when CHWs were providing home-based palliative care and basic rehabilitative services in Malawi.³⁷

Positive job attitude

Passion for the job was reported as a facilitator for CHWs in physical rehabilitation service delivery in South Africa,²⁹ and joyful work was reported to be a facilitator for CHWs in home-based palliative care in Malawi.³⁷

Support with collaboration

The use of phones, training programmes, communication with the health facility and collaboration with other CHWs are reported as service facilitators for CHWs' service delivery in home-based palliative care in Malawi.²⁷

DISCUSSION

In SSA, we found evidence of CHWs' delivery of physical rehabilitation services in South Africa, Malawi, Uganda, Ethiopia, Eritrea, Mauritius and Namibia. While the use of CHWs following the scarcity of HRH has been mainly for maternal and child health with infectious diseases,⁴ this review provides evidence of the use of CHWs in physical rehabilitation. This solid evidence of CHWs' delivery of physical rehabilitation services shows that CHWs have

the potential to increase physical rehabilitation service coverage as well as bridge the shortage of HRH for physical rehabilitation.⁴²

The wide CHWs' scope of practice found by this review is similar to the scope of practice reached by consensus between CHWs and their employers in New York, which may be useful in refining the other CHWs' scope of practice.⁴³ While some literature shows that CHWs' responsibilities are narrow and depend on the programme planning, this review shows that CHWs' responsibilities may broaden to equip them to practice at primary health-care level through task-shifting.⁴⁴ This is possible because CHWs have an in-depth understanding of community health and they can take up a wide range of activities.⁴⁵ With adequate training and supervision, CHWs can take up various roles in physical rehabilitation, and hence, fill up the HRH shortage gap in physical rehabilitation.

According to this review, home-based is the CHWs' most common mode of service delivery, and this could be attributed to the physical challenges of clients requiring physical rehabilitation services. However, a national registry analysis of patients' characteristics and modes of delivery associated with the completion of cardiac rehabilitation found that home-based rehabilitation service delivery was associated with a reduced likelihood of rehabilitation completion.⁴⁶ While this may be the case, home-based services present clients with convenience and less disruption in their everyday lives.⁴⁷ Therefore, a combination of different modes considering the context and clients' needs would increase physical rehabilitation coverage and strengthen primary healthcare.

Regarding the barriers faced by CHWs, the findings are supported by other studies which indicate that supervision and governance, remuneration, CHWs' delivery capacity in terms of inadequate skill, lack of supplies and influence of community contexts among the factors and transportation challenges impact on CHWs' service delivery.^{48 49} As CHWs are an important part of the community health systems, addressing the barriers impacting their service delivery is prudent. Training and integration of CHWs in the national healthcare system to provide physical rehabilitation services could minimise the barriers experienced by CHWs in the delivery of physical rehabilitation services in SSA. This has been evidenced by the cadres trained and integrated into the national healthcare system; among them are the community health assistants of Zambia and the community rehabilitation workers and community rehabilitation facilitators of South Africa.⁵⁰⁻⁵²

One of the facilitators of CHWs' service delivery was proximity to the community, which not only enabled them to experience the first-hand consequences of the vulnerabilities of their clients but also removed the burden of transportation required to visit clients.⁵³ Positive attitude towards the job with support and collaborations with other CHWs, which facilitated CHWs' service delivery in this review are the intrinsic aspects of the job that are motivators aside from financial rewards.⁵⁴ While the use of phones was a facilitator by increasing coverage,

the training programmes also facilitated service delivery by allowing them to acquire the skills.^{55 56} The facilitating factors of this review indicate that in training and integrating CHWs in the delivery of physical rehabilitation services, careful selection of existing CHWs needs to be taken into consideration, with proximity to the community and positive job attitudes analysed.

Limitation, implications for practice and research

Seven countries have provided evidence that CHWs can provide a range of physical rehabilitation services. Training and integrating CHWs in national healthcare to deliver physical rehabilitation services could manage the chronic shortage of HRH in resource-constrained SSA countries. The versatility of CHWs in modes of operation may be an opportunity to anchor physical rehabilitation services in primary healthcare, and hence, strengthen the health systems.

CONCLUSION

The evidence of CHWs delivering physical rehabilitation services, with a wide scope of practice and various modes of delivery, shows that integrating CHWs into national healthcare is possible and necessary. With the increase in demand for rehabilitation services amid the chronic shortage of HRH in SSA, this review provides evidence that CHWs could be the cost-effective solution in the delivery of physical rehabilitation services.

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