Journal of Rehabilitation Research and Practice

Dukuzimana MJ, et al., J Rehabil Res Pract. 2025;6(1):44-50.

Original Research

Nurses' insights on challenges and strategies to enhance rehabilitation in rural primary care settings

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Received date: July 11, 2025
Accepted date: August 12, 2025

Abstract

Introduction: Rehabilitation is a fundamental healthcare component focusing on enhancing and restoring functional ability and quality of life for individuals experiencing physical, mental, cognitive, social, and psychological limitations. Rehabilitation helps individuals to maintain or regain independence, reduces long-term disability and improves community integration. In Rwanda, rehabilitation services are largely inaccessible in rural primary care (PC) settings, where the majority of persons with disabilities reside. This study explores nurses' insights on challenges and strategies to enhance rehabilitation in rural PC in Burera district, Northern Rwanda.

Methods: The study used a qualitative exploratory design to understand the challenges of rehabilitation services in PC. The study involved a focus group discussion (FGD) that used a semi-structured interview guide. Ten health centers' nurses participated in the FGD conducted at University of Global Health Equity (UGHE), Butaro campus. The inclusion criteria were a minimum of one year working in outpatient service at the health center. Additionally, three follow-up individual interviews were conducted to validate information provided during FGD.

Results: The study identified challenges affecting rehabilitation services delivery and utilization, and strategies to enhance rehabilitation services at health centers. This included challenges faced by rural health centers such as limited access to rehabilitation services, inadequate resources and structural and social barriers. These challenges hinder access and utilization of rehabilitation services at health centers. Despite the challenges, nurses highlighted strategies to overcome the listed barriers, such as investment in rehabilitation services, an outreach model, and telerehabilitation, which should increase rehabilitation services at PC.

Conclusions: Primary healthcare settings in rural Rwanda face multifaceted barriers in providing rehabilitation services. Strengthening service delivery requires integrating rehabilitation into PC, training rehabilitation health personnel, improving infrastructure, and adopting innovative solutions like digital rehabilitation. These efforts will enhance access, reduce disparities, and promote the social inclusion of persons with disabilities in rural communities.

Keywords: Rehabilitation, Challenges, Strategies, Primary care, Nurses, Disability, Rwanda, Rural settings, Qualitative study

Introduction

Rehabilitation is a fundamental component of health care that focuses on enhancing and restoring functional ability and quality of life for individuals experiencing physical, mental, or cognitive limitations [1,2]. According to the World Health Organization (WHO), rehabilitation is an essential component of universal health coverage and primary healthcare (PHC). Worldwide, one in three individuals is affected by a health condition that requires rehabilitation services [3], however, only 50% of people who need rehabilitation services in developing countries have access to the needed

care [2]. While rehabilitation helps individuals to maintain or regain independence across physical, cognitive, social, and psychological domains, which reduces long-term disability and improves community integration [1]. For example, a study by Langhorne *et al.* (2011) shows that stroke survivors receiving rehabilitation have improved in motor function and activities of daily living [4]. Another study by Wilco *et al.* (2011) revealed that patients who experienced spinal cord injury demonstrated improvement in mobility and dependence after receiving rehabilitation services [5]. In addition to that, individuals with musculoskeletal conditions reported pain reduction and returned to work after rehabilitation interventions [6,7].

Despite these benefits, rehabilitation services face multiple challenges, especially in sub-Saharan Africa. Recent reviews have categorized rehabilitation challenges into provider-related, such as limited training, health system-related, such as poor infrastructure, inadequate funding, and individual-related factors such as low awareness, cultural beliefs. Poor access to rehabilitation services is associated with less attention given to rehabilitation by governments, which led to less funding, cultural and social beliefs, fewer and poorly equipped rehabilitation centers, failure of the health systems, lack of training for professionals, logistical and financial constraints [8,9]. For instance, a study in Uganda revealed the lack of assistive devices due to high cost and inavailability at a local market, leading to long distance travel to obtain needed devices in other districts [10]. Other studies in Nigeria and Malawi have documented the scarcity of trained rehabilitation personnel outside urban centers and financial barriers limiting rural patients' access to rehabilitation. These challenges disproportionately affect rural populations, where healthcare access is already fragile [11–13]. In response, some strategies have been proposed or piloted in low-resource settings to expand rehabilitation access, particularly at the primary care (PC) level. These include community-based rehabilitation (CBR), mobile outreach clinics, and task-shifting to community health workers [14–16]. In Uganda, community health workers have provided basic rehabilitation services, including wheelchair distribution, user education, and follow-up support [17]. A review across low-resource countries also showed that CBR improved the functional outcomes of people with disabilities [18].

In Rwanda, rehabilitation needs are particularly pressing. Based on the 2023 national census, approximately 3.4% of individuals aged five and above live with a disability [19]. According to the WHO, PHC is identified as the optimal platform for delivering inclusive and accessible health services, including rehabilitation, especially in low-resource settings [2]. A study by Kumurenzi *et al.* (2022) showed that many people with disabilities across Africa, including Rwanda face barriers to accessing rehabilitation mainly due to service unavailability at the PC level which consequently leads to traveling long distances which therefore incur financial and logistical burdens that hinder both initial access and continued care [20].

Rehabilitation in Rwanda is currently organized under the Ministry of Health, with services primarily delivered through hospitals, a few specialized rehabilitation centers, and some health centers. However, significant gaps persist at the PC level, particularly in rural areas [21]. To date, most studies on rehabilitation in Rwanda have focused on service availability or infrastructure, often in urban or centralized settings. Few have explored the lived experiences of rural service providers. Moreover, many studies have relied on quantitative surveys, limiting the depth of insight into contextual challenges and opportunities [22]. This study addresses those gaps by exploring the perspectives of rural nurses, frontline providers with direct experience of delivering health care at health centers. By focusing on Burera District, Northern Rwanda, this study aims to understand nurses' insights on challenges and practical strategies to enhance rehabilitation services at the PC level. These insights will inform future interventions, policies, and models of care that are more responsive to local needs and realities.

Methodology

Study design

This was an exploratory study design that involved FGD and in-depth individual interviews. A semi-structured interview guide was used to explore challenges and strategies to enhance rehabilitation services at rural PC [23,24].

Setting

This study was conducted at ten health centers located in the Burera District of Rwanda. According to Rwanda's recent population census, 12,347 persons (above 5 years) with disability and 27,388 elderly people (people above 60 years) who are living in the Burera District [25]. While this district is located in a remote area of Rwanda with higher mountains, it is evident that persons with disabilities who are living in that district experience difficulty in reaching rehabilitation services. In addition, this district has only one hospital, which is Butaro Level Two Teaching Hospital, that serves a population of 387,729 from 17 Sectors [25].

Sample

Purposive sampling was used to get ten nurses from ten health centers. Purposive sampling facilitates the selection of nurses with the required experience to dive into the subjective with relevant and rich insights. This sampling method ensures the credibility of shared information [26,27].

The inclusion criteria were nurses with valid licenses and currently working at a health center, with a minimum of one year working in outpatient services at the health center in the rural area. Nurses gathered at the UGHE Campus and participated in the FGD. Additionally, three follow-up individual interviews were conducted to validate information provided during FGD.

Data collection

This study used a semi-structured interview guide with six open-ended questions that helped the research team explore rehabilitation challenges people with disabilities are facing in PC. The interview guide was developed by the research team based on the research objectives and previous literature [28,29]. Ten nurses participated in FGD, and three of them participated in three follow-up individual interviews. Both FGD and interviews happened physically and were conducted in Kinyarwanda since all participants were comfortable participating in Kinyarwanda. The discussion and interviews were audio recorded. The FGD took one hour and fifteen minutes while individual interviews lasted around 20 minutes. Before data collection, the research team explained the purpose and objectives of the study to the participants, and all participants agreed to participate by signing an informed written consent form. Data saturation happened after the third interview.

Data analysis

After data collection, all audio records were saved on a password-protected computer. Audio files were transcribed verbatim, and all transcripts were translated into English by experts. The research team analyzed the data thematically. Before data analysis, the research team read the transcripts extensively and identified key ideas or quotes that led to the creation of codes. Three members of the research team created codebooks independently and then met to compare identified codes, resolve discrepancies, and agree on one codebook for the study. The research team grouped similar codes and formed themes. Excerpts and corresponding themes were included in the study findings.

Ethics

This study was approved by the University of Global Health Equity, UGHE, through the Institute Review Board with a reference number UGHE-IRB/2024/328, and the Butaro level two teaching hospital provided permission to conduct this study in its zones. Informed consent was sought and signed by each participant before data collection. Collected data were stored on password-protected computers with limited access to the research team only.

Results

Demographics

The average age of study participants was 42.1 years (33–55). Seven of the ten participants were female, aged between 33 and 54 years, compared to the males (40 to 55 years). Participants' working experience in outpatient services was between 3 and 24 years. The diversity in ages and years of working experience among participants ensured a comprehensive discussion and insights sharing from the subject. This contributed to a clear understanding of rehabilitation challenges and strategies to overcome these challenges at health centers.

Findings

The results of this study revealed two main themes: The first theme highlighted challenges to rehabilitation services, and the second theme underlined strategies to overcome those challenges. All sub-themes, impact and participants' are summarized in tables below.

Theme 1: Challenges to rehabilitation services

This table summarizes the identified sub-themes, impact, and quotes from participants (**Table 1**).

Theme 2: Strategies to mitigate challenges to rehabilitation services

This table summarizes the identified sub-themes on strategies to mitigate challenges to rehabilitation services, impact, and quotes from participants (**Table 2**).

Table 1. Challenges to rehabilitation services.

Sub-themes	Impact	Participant's Quotes
1. Limtied access to rehabilitation services	People with mobility issues, hearing, and speaking impairments, and congenital malformations experience limited access to rehabilitation services they need at HC. This results in poor living conditions due to inadequate services and lack of timely rehabilitation services.	Participants highlighted: *At HC, we don't have physiotherapy, and rehabilitation services cannot be found. We refer people with walking problems to the Hospital. (Participant 9, Female).* *'Yes. I will talk about children who are deaf, children with vision problems, and speaking issues. When we meet with them, it is a huge burden to us. (Participant 5, Male).*
2. Inadequacy of resources for rehabilitation care	The lack of essential resources such as rehabilitation professionals, infrastructure and equipment significantly affects the quality of services people with disabilities receive. This results in the increased number of patients transfers to other health facilities such as hospitals or specialized rehabilitation centers. While transfers aim to direct individuals to quality care but is associated with extra cost such as transport, accommodation, time lost, and delays in receiving timely care.	Participants mentioned: *At the health center, health workers that are supposed to help people with disabilities, don't have such knowledge and skills. The second thing, if there is no trained staff, the equipment will also not be available. (Participant 2, Male).* *For a person who comes to us with an issue of the prosthesis, we can't help such a person because our health center doesn't have the equipment to help such a person. (Participant 3, Female).* *Where I work, we don't have such infrastructure. We do not have sidewalks for patients using wheelchairs. You can come in wheelchair but there are rooms you cannot access. (Participant 9, Female).*

3. Structural and social barriers inhibiting access to rehabilitation services	Financial constraint limit person with disabilities from getting required services; Inability to pay medical services such as consultation, hospital stay, consumable and transportation fees impede person with disabilities from accessing quality health services. In additional, geographical remoteness make it difficult for persons with disabilities, particularly those living in rural areas to reach health facilities that offer rehabilitation services. Long distance travel, poor road infrastructure, and lack of accessible public transport delay care and discourage service seeking. Moreover, communication barriers affect quality of care persons with disabilities receive. When persons with disability are unable to effectively communicate, it becomes difficulty to understand their needs. As results patients may not receive appropriate health interventions. Stigma and social isolation hinder access to health services. When person with disabilities is isolated or hidden, they are less likely to have access to health facilities for treatment. This prevents early intervention, and worsen the condition.	Participants expressed*:* *Persons with disabilities say if I go at the health center, they will transfer me to the hospital, and I don't have money for transport and opt not to come for that service. (Participant 9, Female).* *What I would like to add, for injured people whose some parts of their body are damaged, when such persons have pain, we give them analgesics, but most of them, when they have an appointment to go to the hospital, they don't go there because of financial constraints. (Participant 8, Female).* *Another challenge people with disabilities face at the health centers is the capacity to effectively communicate with service providers. It is difficult to know what they need. When they come, the service is not adequate because we cannot communicate with them to fully understand their main problem. We lack the skills to communicate with them and fully grasp what they want to tell us. (Participant 6, Female).* *people with disability tend to be stigmatized/ isolated, and that results in being difficult for them to seek medical help at the health center because their family members do not take care of them or keep them at home'. (Participant 8, Female).*

Table 2. Strategies to mitigate challenges to rehabilitation services.

Strategies	**Impact**	**Participant's Quotes**
Increase investment in rehabilitation services	Increased investment improves quality of services delivered and increases access to essential equipment. This ensures the availability of rehabilitation services to all people in need.	*'Eeeeeh, it requires significant effort, but the government needs to invest in it, of course' (participant 4, male).*
Outreach model enhances services accessibility	Community outreaches bring services near to person with disabilities, this increases services utilization, early identification of cases and promote awareness.	*Specialists from the hospital go down to the health centers to treat people with disability who need services (Participant 6, female).*
Health education in the community	Furthermore, nurses mentioned that health education in the community is the key to raising awareness on rehabilitation services accessibility and utilization.	*I think the first step would be mobilization because sometimes they have lost hope and feel like they are not valued as others are. If mobilization were done and they were encouraged to visit the health center, even though we don't have all the resources to help them, we could at least issue a transfer to the hospital (Participant 6, Female).*
Digital rehabilitation can enhance services availability and accessibility	Digital technologies enhance rehabilitation service delivery in the community. This a solution to rehabilitation services as challenges to those services persist. They highlighted.	*'If someone has a phone, a doctor can call them and say, "This is what I want you to do, and the patient follows 'instructions, then report the feedback to the doctor. (Participant 5, Male).*

Discussion

The insights of nurses on the challenges of rehabilitation services at PC revealed connected barriers between the facilities and service seekers. These barriers significantly limit access to rehabilitation services in rural areas. Nurses highlighted limited access to rehabilitation services due to scarcity of these services, inadequate resources such as human resources, materials to deliver comprehensive rehabilitation care and structural and social barriers such as financial constraints, social isolation that hinder access to rehabilitation services among persons with disabilities. Nurses also highlighted strategies to mitigate these barriers, such as targeted investment in rehabilitation services, increase outreach to the community, and digital rehabilitation.

The main findings of the results highlighted limited access to rehabilitation services at rural health centers. This finding consists with a study conducted in Sierra Leone, which reported limited availability of rehabilitation services due to poor policy implementation [30]. Scarcity of rehabilitation services at PC was reported in previous studies done in Rwanda [21,31]. In addition, Kumurenzi *et al.* found that in Rwanda, rehabilitation services are more available in private facilities compared to public facilities [20]. This shows the unmet needs of integrating rehabilitation services into PC in Rwanda, particularly in rural settings. However, in South Africa, the integration of rehabilitation services into PC showed much improvement in the activities of daily living performance and community participation among persons with disabilities [32]. While in developed countries such as China, rehabilitation services are available in primary health centers at 88.9%. But, disparities in the availability between rural and urban areas were highlighted. In that country rehabilitation services are more available in urban settings compared to rural settings. This is due to differences in development, including available transport means, the higher economic status of people living in urban and health providers' preferences [33]. Continue advocacy for the integration of rehabilitation services in PC in developing countries like Rwanda will be illuminated by future research on the feasibility and cost-effectiveness of these services in PC.

Inadequate resources such as human resources, infrastructure and materials at rural health centres, consists with results of other studies that mentioned insufficiency of materials as barriers to quality rehabilitation services provision [9,34]. Assistive devices such as prostheses, orthoses, mobility aids, and eyeglasses are crucial for persons with disabilities. Limited access to assistive devices leads to poor quality service delivered and stress on healthcare providers [35,36]. This results in patient dissatisfaction and low service utilization in the future. Similarly, numerous studies described the impact of inadequate equipment and materials on rehabilitation services delivery, including unmet rehabilitation needs, prolonged recovery periods, and decreased healthcare providers' ability to deliver comprehensive services [2,37]. In addition, limited workforce aligns with the report of the Rwanda Ministry of Health that mentioned a small number of rehabilitation professionals compared to the needs in public health facilities [21]. Adugna *et al.* found that a shortage of skilled rehabilitation professionals substantially distresses the quality of health services and prevents users from utilizing them [38]. Shortage of trained rehabilitation professionals affect service availability and results in a higher number of patient transfers. Although transfer orients individuals to higher-level facilities with quality care, but it creates additional challenges, mainly finance-related such as inability to afford travel, accommodation and cost of care. This contributes to delays in getting services and a lack of adherence to rehabilitation services [20,39,40]. Establishing rehabilitation services with specialized health professionals and training available nurses at health centers can solve the problem of workforce shortage and improve rehabilitation services delivery. In addition, strengthening community-based health services delivery at PC to include rehabilitation services, could address the burden of transfer, and reduce the cost of care. Moreover, the study findings highlighted that digital solutions are enablers to rehabilitation services accessibility and utilization in remote settings. This consists with another study conducted in Rwanda which showed that digital rehabilitation initiatives have improved adherence to home-based exercise programs, reduced service costs, and enhanced accessibility for patients in remote areas [40]. This underscores the need for prioritizing digital rehabilitation interventions that promote rehabilitation services utilization.

Then communication issues between service providers and service seekers result in misdiagnosis, delayed treatment, and negative patient experience. Inability to communicate is not limited to service seeking but also hinders people with disabilities from interacting with others in every day's social interactions. Lack of communication ability along with limited involvement in social interactive activities often result in stigma and social neglect [41]. Integrating communication support in health facilities and community health education will ensure inclusivity and reduce the stigma person with disabilities face in the community. Strengths and limitations: this study highlights valuable insights into rehabilitation services at rural health centers. This could light policymakers through the process of integrating rehabilitation services into PC particularly in rural settings. However, further studies should include insights from people with disabilities and their care givers, rehabilitation professionals and policymakers for a comprehensive understanding of rehabilitation situations at PC. This will help to collect tailored strategies that improve rehabilitation services at PC. The study was conducted in one district located in a rural area, so the results should not be generalized to the whole country. Future studies should consider mapping rehabilitation challenges across the country and use both qualitative and quantitative methods to provide in depth understanding and quantify rehabilitation challenges at PC.

Conclusion

The PC setting of rural Rwanda still faces the challenge of delivering comprehensive rehabilitation services. Government and partners should take action to improve services availability and accessibility in PC. Collaborative efforts are needed to integrate rehabilitation services into rural PC, through community interventions such as outreach models, digital solutions, and increase numbers of trained rehabilitation professionals at PC. This will solve the problem of unmet needs of rehabilitation services and promote wellbeing for people with disabilities.

Abbreviations

PHC: Primary Health Care; FGD: Focus Group Discussion; UGHE: University of Global Health Equity; RADIC: Rehabilitation for All through Digital Innovation and New Competences; IRB: Institute Review Board; HC: Health Center

Acknowledgements

The research team gratefully appreciates the collaboration and support provided by the leadership of Butaro level two teaching hospital and the leaders of ten selected health centers and 10 nurses who participated in this study.

Authors' Contributions

EN and MJD developed the research protocol, analyzed data, and participated in the manuscript writing. JBU analyzed data and participated in manuscript writing. Then CM, NM participated in manuscript writing. All authors reviewed and approved the manuscript.

Funding

This article is partly funded by the European Union through a project called RADIC (Rehabilitation for All through Digital Innovation and New Competences). The RADIC project number is 101082426 — RADIC — ERASMUS-EDU-2022-CBHE).

Data Availability

More information including Data and materials is available upon request to the corresponding author.

Declarations

Ethics approval and consent to participate

This study was approved by UGHE's Institute Review Board with a reference number UGHE-IRB/2024/328 and the Butaro Hospital research committee reviewed the protocol and gave permission to conduct this study in its catchment zone. Informed consent was signed by each participant before data collection.

Consent for publication

Not applicable.

Competing interests

Authors declare no conflict of interest.

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