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Occupational Low Back Pain and Accompanying Disability in Rehabilitation Professionals in Rwanda

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ABSTRACT

Background: Low back pain (LBP) is the most prevalent work-related musculoskeletal disorder and the principal contributor to years lived with disability worldwide.

Objective: We aimed to assess the levels of disability associated with LBP among rehabilitation professionals in Rwanda.

Methods: A cross-sectional study design was used to gather information from 136 rehabilitation professionals who had LBP, including physiotherapists, prosthetists and orthotists, and occupational therapists working in Rwanda. A convenience sampling approach was employed to ensure the inclusion of eligible professionals who were willing to participate. Data were collected using an online questionnaire that captured demographic and occupational characteristics (age, sex, profession, and years of professional experience) and disability related to low back pain using the revised Oswestry disability questionnaire. This tool consists of ten elements and each of them is scored on a 0–5 scale, with higher scores indicating greater disability. The overall maximum score is 50.

Data were analysed using the Statistical Package for the Social Sciences (SPSS) software, version 29. Descriptive statistics were used to summarize demographic characteristics and disability scores. Chi-square tests and binary logistic regression analyses were performed to examine associations between age, sex, profession, years of professional experience, and disability level.

Results: The mean age of the participants was 35.87 years (SD = 8.351); most of the participants were males (72.8%) and physiotherapists (66.2%). The largest group (41.9%) had less than seven years of experience. The mean disability score was 5.67 (SD = 4.821), with employment (32.6%), lifting (21.2%), and standing (13.0%) being the most affected domains. Over half of the participants (53.7%) reported no disability and 39.0% had mild disability. Age appeared to be independently associated with disability level, with participants above 35 years old reporting greater disability (OR=19.981, 95% CI: 1.329-217.041; p=.029).

Conclusions: Most rehabilitation professionals with LBP reported no or mild disability, and older age was associated with higher disability levels. Workplace measures that support healthy working conditions, particularly for older staff, may help reduce disability associated with low back pain.

BACKGROUND

Low back pain (LBP) is a major global public health problem and the leading cause of years lived with disability worldwide.[1] Low back pain (LBP) is generally defined as pain, muscle tension, or stiffness localized below the costal margin and above the inferior gluteal folds, with or without leg pain.[2] It may be acute, recurrent, or chronic in nature and is one of the most common reasons for healthcare utilization worldwide.[3] In 2020, an estimated 619 million people were affected globally, with this number projected to rise to 843 million by 2050.[4,5] Beyond its clinical burden, LBP has significant public health implications because it contributes to functional limitations, reduced quality of life, absenteeism, decreased productivity, and substantial healthcare expenditures.[6,7] LBP is also the most prevalent work related musculoskeletal disorder, contributing substantially to productivity losses and healthcare expenditure.[6,8]

Current international guidelines recommend a combination of patient education, physical activity, exercise therapy, self-management strategies, and ergonomic modifications as first line approaches for managing most cases of LBP.[9] Pharmacological interventions may be used when clinically indicated, while multidisciplinary rehabilitation is recommended for persistent or disabling conditions.[10]

In sub-Saharan Africa, management of LBP often relies on physiotherapy services, exercise-based interventions, and pain management strategies.[11] However, access to multidisciplinary rehabilitation services, workplace ergonomic programs, and occupational health resources remains limited in many settings, potentially increasing the burden of disability associated with LBP.[1]

Rehabilitation professionals, including physiotherapists (PTs), occupational therapists (OTs), and prosthetists and orthotists (P&Os), are particularly susceptible to LBP because of the physical demands of their work. These professionals frequently perform patient transfers, manual therapy techniques, repetitive movements, prolonged standing, and awkward postures, all of which increase the risk of developing LBP.[12] Studies from high-income countries have consistently reported high rates of LBP among rehabilitation professionals and demonstrated its negative effects on work performance, absenteeism, mobility, sleep, social participation, and overall functioning.[8,13,14]

Evidence from sub-Saharan Africa is comparatively limited but suggests that LBP is a significant occupational health concern among healthcare workers. Studies conducted in Uganda, Nigeria, Ethiopia, and South Africa have reported high prevalence rates of work-related musculoskeletal disorders, particularly LBP, among physiotherapists, nurses, and other allied health professionals.[15,16] These studies indicate that LBP contributes to reduced work efficiency, absenteeism, and decreased productivity. However, most research in the region has focused on the prevalence and risk factors of LBP, with relatively little attention given to the extent of disability and functional limitations associated with the condition, especially among rehabilitation professionals.

In Rwanda, the rehabilitation workforce has expanded considerably in recent years to meet growing rehabilitation needs across the healthcare system. Despite this growth, little is known about the impact of LBP on the functional ability of rehabilitation professionals. Understanding the degree of disability associated with LBP is important for protecting the health and well-being of this workforce and ensuring the sustainability and effectiveness of rehabilitation services. Therefore, this study aimed to assess disability levels among rehabilitation professionals with LBP in Rwanda. Findings from this study may inform workplace health interventions, prevention strategies, and occupational health policies aimed at improving productivity and professional longevity within Rwanda's rehabilitation sector.

METHODS

Study Design and Settings

A cross-sectional survey design was used to assess disability levels among rehabilitation professionals in Rwanda. Rehabilitation professionals in Rwanda work across approximately 53 healthcare facilities, including specialized, teaching, provincial, and district hospitals, as well as rehabilitation centres. These facilities were not sampled or selected for participation. Instead, rehabilitation professionals were recruited nationally through their professional associations using a convenience sampling approach, irrespective of their workplace. Consequently, participation was not facility-based, and no recruitment quotas were established for individual facilities.

Participants

The present study is a secondary analysis of data collected as part of a larger cross-sectional study investigating the epidemiology of LBP among rehabilitation professionals in Rwanda. The primary aims of the parent study were to determine the prevalence of low back pain, identify associated demographic and occupational risk factors, and describe its distribution among PTs, OTs, and P&Os working in Rwanda. The current paper focuses specifically on disability levels associated with low back pain among participants who reported experiencing the condition.

A convenience sampling strategy was employed; whereby eligible participants were invited to complete an online questionnaire distributed through professional networks, WhatsApp groups, and email. At the time of the study, the rehabilitation workforce in Rwanda comprised 274 registered professionals, including 186 physiotherapists, 72 prosthetists/orthotists, and 16 occupational therapists, representing the study sampling frame. To be eligible, participants had to be practicing physiotherapists, prosthetists/orthotists, or occupational therapists with at least one year of professional work experience. Professionals who were on long-term leave were excluded. Participants were also excluded if they self-reported having a musculoskeletal disorder other than low back pain that could affect their functional abilities. This was assessed through a screening question in the questionnaire asking respondents whether they had any current musculoskeletal condition unrelated to low back pain that limited their daily or professional activities. A total of 174 rehabilitation professionals participated in the primary study, corresponding to a response rate of 63.5% of the eligible national workforce. The sample comprised 109 physiotherapists, 39 prosthetists/orthotists, and 26 occupational therapists. For the purposes of the present paper, analyses were restricted to the 136 participants who reported experiencing low back pain during the preceding 12 months. The study was designed to assess disability levels among rehabilitation professionals who reported low back pain and to explore whether disability levels differed according to professional discipline, age, sex, and years of professional experience.

Data Collection Instrument

Data were collected using an online Google form questionnaire which collected information on demographic, occupational characteristics and disability levels. Assessment of disability was based on the revised Oswestry disability questionnaire (Ref). Although the questionnaire has not undergone formal psychometric validation in Rwanda, it has demonstrated excellent validity and reliability internationally.[17] Prior to data collection, the questionnaire was reviewed by the authors to ensure clarity, relevance, and contextual appropriateness for use among rehabilitation professionals in Rwanda. The tool consists of ten elements: pain intensity, personal care, lifting, walking, sitting, standing, sleeping, social life, travelling, and employment. Each element is scored on a 0–5 scale, with higher scores indicating greater disability.

The scores from all ten domains are summed to obtain a total disability score ranging from 0 to 50. No

weighting was applied to individual domains. The total score was interpreted using the disability categories commonly applied to the Modified Oswestry Disability Questionnaire: 0–4 (no disability), 5–14 (mild disability), 15–24 (moderate disability), 25–34 (severe disability), and 35–50 (complete disability).[17] No disability means that the majority of daily tasks can be managed by the individual. Typically, only recommendations for lifting, sitting, and exercising are necessary. Mild disability means that the individual has increased discomfort and has a harder time standing, lifting, and sitting down. They may experience disabilities that make it difficult for them to work and travel. Taking care of oneself, having sex, and sleeping are not significantly impacted, and the individual may typically be controlled using conservative methods. Moderate disability means that pain continues to be the predominant issue, but daily activities are also impacted. A thorough investigation is necessary for these individuals. Severe disability means that an individual's life is affected by discomfort in every way. It is necessary to intervene positively. Complete disability indicates that LBP has a profound impact on daily functioning, such that individuals may be confined to bed for much of the time and are unable to carry out most routine activities independently.[17]

Data Collection Procedures

Data collection was conducted between January 22 and April 27, 2025, through a structured online survey disseminated via professional associations, including the Rwanda Occupational Therapy Association (RWOTA), the Rwanda Physiotherapy Organization (RPTO), and the Rwanda Society of Prosthetists and Orthotists (RSPO). These professional associations were engaged because they maintain the most comprehensive membership databases of rehabilitation professionals in Rwanda and therefore provided an efficient mechanism for identifying and recruiting eligible participants nationwide. Their involvement facilitated access to professionals working across different healthcare settings and improved coverage of the target population. The research team first engaged these associations to present the study objectives, aims, and ethical considerations and subsequently obtained members' contact information (emails and telephone numbers). Rehabilitation professionals were then invited to participate through personalized messages containing the study introduction, objectives, researcher contact details, and a link to the Google Forms questionnaire, which included consent and eligibility screening questions before access to the survey. To enhance the authenticity of responses, invitations were distributed only through professional association membership lists and professional communication platforms used by rehabilitation professionals in Rwanda. Participants were required to indicate their profession, years of experience, and workplace characteristics, which were reviewed for consistency with the eligibility criteria. However, professional registration numbers were not collected, and therefore independent verification of respondents' professional status was not possible. To maximize participation, reminders were sent monthly by email and phone, with designated team members following up across different levels of healthcare facilities (teaching, specialized, provincial, and district hospitals). Upon completion of the questionnaire, all respondents automatically received a thank-you note acknowledging their participation.

Statistical Analysis

Data were entered into the Statistical Package for the Social Sciences (SPSS) version 29 for analysis. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize participants' demographic characteristics and disability levels.

Chi-square analyses were conducted to explore associations between demographic and occupational factors (age, sex, profession, and duration of professional experience) and disability level (no/mild disability versus moderate disability). A P value of <.05 was considered statistically significant.

Binary logistic regression analysis was performed to identify variables independently associated with moderate disability among rehabilitation professionals with low back pain. The dependent variable was disability level, categorized as no/mild disability versus moderate disability. Because only a small proportion of participants reported moderate disability (n=10), while no participants reported severe or complete disability, disability levels were dichotomized into "no/mild disability" and "moderate disability" categories. Variables that were significantly associated with disability level in the bivariate analysis (P<.05) were entered into the multivariable logistic regression model. Adjusted odds ratios (ORs) and 95% confidence intervals (CIs) were calculated, and statistical significance was established at P<.05. The purpose of the multivariable analysis was to examine whether variables that showed statistically significant associations in the bivariate analysis remained independently associated with moderate disability after adjustment for other demographic characteristics, rather than to estimate prevalence ratios.

Given that only 10 participants had moderate disability, the events-per variable (EPV) ratio was 2.5 (10 events and four predictor variables: age, experience duration, sex, and profession), which is below the commonly recommended threshold for stable logistic regression estimates. Therefore, the regression findings should be interpreted with caution and considered exploratory due to the potential risk of model overfitting. Age was dichotomized at 35 years, corresponding approximately to the median age of the study sample, to facilitate bivariate and multivariable analyses while maintaining adequate numbers within each category.

Ethical Considerations

Ethical approval for this study was obtained from the Institutional Review Board of the University of Rwanda, College of Medicine and Health Sciences (Approval Notice No. 598/CMHS IRB/2024). In addition, permission to conduct data collection was obtained from relevant professional organizations and associations.

Prior to participation, the research team provided all eligible participants with a clear explanation of the study's aim and objectives. The participants were encouraged to ask any questions they had through an email which was provided at the end of the participant information,

and any concerns were addressed respectfully. Informed consent was obtained electronically from all participants through a mandatory consent checkbox embedded in the Google Form before they could access and complete the questionnaire. No names or signatures were collected to ensure participant anonymity.

Confidentiality was ensured by assigning unique identification codes to participants, with no personal identifiers recorded in the research materials. Participation was entirely voluntary, and individuals were informed of their right to withdraw from the study at any time without penalty. The data collected were used exclusively for the purposes of this research.

All procedures adhered to the ethical principles outlined in the World Medical Association's Declaration of Helsinki for research involving human participants.[18]

RESULTS

Participants' Demographic Characteristics

The study screened 174 rehabilitation professionals in Rwanda, of whom 136 reported experiencing low back pain (Table 1). The mean age of 136 (78.2%) participants who experienced LBP was 35.87 years (SD = 8.35). The largest age group was 31–38 years (36.0%), followed by 23 to 30 years (30.9%). Males represented 72.8% of participants. Physiotherapists accounted for 66.2% of the sample. The mean duration of professional experience was 9.35 years (SD = 6.83).

LBP Disability Scores

Table 2 presents the mean disability scores across the ten domains of the Modified Oswestry LBP Disability Questionnaire. Employment was the most affected domain (1.63, SD = 0.516; 32.6%), followed by lifting (1.06, SD = 1.338; 21.2%) and standing (0.65, SD = 0.891; 13.0%). The least affected domains were walking (0.13, SD = 0.429; 2.6%) and sleeping (0.19, SD = 0.705; 3.2%). Out of the 50 maximum scores, the mean was 5.67 (SD = 4.821).

Percent Distribution Participants' LBP Disability Level

As summarized in Table 3, over half of the participants (53.7%) reported no disability, 39.0% experienced mild disability, and 7.4% had moderate disability. No participants reported severe or complete disability.

Associations Between LBP Disability Level and Demographic Factors

Table 4 presents the results regarding the associations between levels of disability and demographic factors. The chi-square analysis demonstrated significant associations between disability level and age (df = 7.32, *P*=.007) as well as work experience duration (df = 3.48, *P*=.027). No significant associations were observed for sex or profession. However, the binary logistic regression analysis indicated that only age was independently associated with disability level among participants. Those aged above 35 years were significantly more likely to report higher levels of disability than younger professionals (OR=19.98, *P*=.029). Although statistically significant, the confidence interval was wide (95% CI: 1.33-217.04), indicating substantial uncertainty around the effect estimate due to the small number of participants with moderate disability. Therefore, this finding should be interpreted with caution.

Although work experience greater than 10 years was associated with moderate disability in the bivariate analysis (*P*=.027), this association was not retained after adjustment for age, sex, and profession in the multivariable model (OR = 1.16, 95% CI: 0.21–6.29, *P*=.862). The wide confidence interval indicates considerable uncertainty around the estimate and includes both potentially protective and harmful effects, suggesting that no definitive conclusion can be drawn regarding the independent association between work experience and disability level in this sample.

TABLE 1: Participants' Demographic Profile

Demographic characteristic	Frequency	Percentage
Age in years		
23-30	42	30.9
31-38	49	36.0
39-46	28	20.6
≥47	17	12.5
Total	136	100.0
Sex		
Male	99	72.8
Female	37	27.2
Total	136	100.0
Profession		
Physiotherapists	90	66.2
Prosthetists & Orthotists	28	20.6
Occupational therapists	18	13.2
Total	136	100.0
Work experience in years		
0-<7	57	41.9
7-<14	42	30.9
14-<21	29	21.3
21-<28	7	5.1
28-35	1	0.7
Total	136	100.0

TABLE 2: Participants' LBP Disability Mean Scores

Dimension (Maximum score=5)	Mean score ± SD	% of mean score
Pain intensity	0.56 ± 1.121	11.2%
Personal care	0.31 ± 0.746	6.2%
Lifting	1.06 ± 1.338	21.2%
Walking	0.13 ± 0.429	2.6%
Sitting	0.54 ± 0.918	10.8%
Standing	0.65 ± 0.891	13.0%
Sleeping	0.19 ± 0.705	3.2%
Social life	0.28 ± 0.640	5.6%
Travelling	0.32 ± 0.569	6.4%
Employment	1.63 ± 0.516	32.6%
Total (Maximum score 50)	5.67 ± 4.821	11.3%

Abbreviation: SD, Standard Deviation

TABLE 3: Percent Distribution of Participants' LBP Disability Level

Score	Disability level	Frequency	Percentage
0-4	No disability [a]	73	53.7
5-14	Mild disability [b]	53	39.0
15-24	Moderate disability [c]	10	7.4
25-34	Severe disability [d]	0	0
35-50	Complete disability [e]	0	0
Total		136	100.0

[a]**No disability:** The patient can cope with most living activities. Usually, no treatment is indicated apart from advice on lifting, sitting and exercising.
[b]**Mild disability:** The patient experiences more pain and difficulty sitting, lifting and standing. Travel and social life are more difficult, and they may be disabled from work. Personal care, sexual activity and sleeping are not grossly affected, and the patient can usually be managed by conservative means.
[c]**Moderate disability:** Pain remains the main problem in this group, but activities of daily living are affected. These patients require a detailed investigation.
[d]**Severe disability:** Back pain affects all aspects of the patient's life. Positive intervention is needed.
[e]**Complete disability:** Patients are either bed bound or exaggerating their symptoms.

TABLE 4: Associations Between LBP Disability Level and Demographic Factors

Variable/ Category	No to Mild Disability n (%)	Moderate Disability n (%)	Chi-squared Analysis Degree of freedom	*P value*	Binary Logistic Regression Analysis OR (95% CI) for Moderate Disability	*P value*
Age (years)						
≤35	75 (98.7)	1 (1.3)	7.32	.007	Ref.	–
>35	51 (85.0)	9 (15.0)			19.98 (1.33–217.04)*	0.029

Continue

TABLE 4: Continued

Variable/ Category	No to Mild Disability n (%)	Moderate Disability n (%)	Chi-squared Analysis Degree of freedom	*P value*	Binary Logistic Regression Analysis OR (95% CI) for Moderate Disability	*P value*
Experience (years)						
0–10	82 (96.5)	3 (3.5)	3.48	.027	Ref.	–
>10	44 (86.3)	7 (13.7)			1.16 (0.21–6.29)**	0.862
Sex						
Male	93 (93.9)	6 (6.1)	0.33	.345	–	–
Female	33 (89.2)	4 (10.8)			–	–
Profession						
OT	17 (94.4)	1 (5.6)	0.11	.946	–	–
PT	83 (92.2)	7 (7.8)			–	–
P&O	26 (92.9)	2 (7.1)			–	–

Abbreviations: OR, odds ratio; CI, confidence interval; n, frequency; %, percentage; OT, occupational therapist; PT, physiotherapist; P&O, prosthetist and orthotist.
*Adjusted for experience duration, sex, and profession.
**Adjusted for age, sex, and profession.

DISCUSSION

The primary objective of this study was to assess disability levels among rehabilitation professionals with low back pain in Rwanda. The findings indicate that disability levels were generally low, with most participants reporting either no disability or mild disability. This suggests that although low back pain is common among rehabilitation professionals, its functional consequences may be limited for the majority of affected individuals. Nevertheless, the presence of moderate disability among a subset of participants highlights the need for ongoing occupational health monitoring and preventive interventions.

The mean disability score was 5.67 out of 50, indicating mild disability, slightly lower than 9.13 mean score reported in Omani study.[19] Several factors may explain this discrepancy. The participants' professional backgrounds likely had the most substantial impact on their scores. The lower disability scores observed in our study may be partially related to the professional backgrounds of the participants. Rehabilitation professionals often possess knowledge and skills related to functional recovery and disability management, which may have influenced their perceptions of disability and responses to the assessment tool. However, these factors were not directly assessed in the present study and therefore should be interpreted cautiously. Differences in professional background between the Omani study participants and those in the present study may have influenced attitudes, awareness, and perceptions related to low back pain and disability, potentially contributing to the observed differences in disability scores.

The difference may also partly be explained by variations in professional roles and work-related physical demands. In fact, the Omani study involved nurses working in medical, surgical, emergency, or intensive care units. It was reported that nurses frequently experience back injuries due to the physical demands of manual patient handling, including lifting and moving of patients using their body strength.[20] In contrast, rehabilitation professionals often receive training in body mechanics and ergonomic principles and may utilize assistive devices or mechanical aids during patient mobilization and transfers. In addition to differences in participant characteristics and occupational demands, methodological factors may have contributed to this variation. Although both studies assessed disability related to low back pain, differences in study populations, sampling approaches, and response distributions may influence mean disability scores. In addition, disability outcomes are sensitive to the assessment tools used and the methods employed to categorize or interpret disability levels. Furthermore, differences in sample sizes represent another important factor that needs investigation. First, our research enrolled 136 participants, whereas the Omani study included 236 nurses. A larger sample size creates more dependable results that better reflect different viewpoints and life experiences.

Most participants (92.7%) in our study exhibited either no disability or only mild disability, which is consistent with findings from the literature. Studies conducted in Malaysia[21] and Saudi Arabia[22] demonstrated that 81.6% and 80.7% of their participants, respectively, possessed this level of disability, which indicates that similar patterns exist across different settings. The higher percentage in our study may be due to multiple reasons.

For example, the Malaysian study included only OTs, the Saudi Arabian study included dentists, whereas our study involved PTs, P&Os and OTs. The different professional backgrounds of participants may have affected the distribution of disabilities because each profession faces unique work requirements and ergonomic conditions. The variation in research outcomes may also arise from differences between healthcare systems and work settings in different contexts. It is plausible that rehabilitation professionals in Rwanda may benefit from training in body mechanics, ergonomic principles, and exercise-

based approaches that could help mitigate the functional impact of LBP. However, these factors were not assessed in the present study and therefore cannot be confirmed. Differences in workplace resources, occupational demands, and cultural perceptions of disability may also have contributed to the observed variations in disability levels across studies.[13] The results of the present study demonstrate that researchers need to evaluate professional backgrounds along with healthcare contexts during their outcome assessments.

The participants in our study experienced the most difficulties in their work-related activities along with their ability to lift objects and maintain standing positions. A similar study from Saudi Arabia on work-related LBP among PTs and OTs revealed that nearly half of the participants struggled with standing activities and work-related tasks, whereas one-third had difficulty stair climbing and walking.[8] The Saudi Arabian study did not include lifting activity in its assessment. The finding that employment, lifting, and standing were the most affected domains has important implications for clinical practice. Rehabilitation professionals routinely engage in patient handling, manual therapy techniques, prolonged standing, and repetitive physical activities. Limitations in these functions may reduce their ability to perform essential clinical duties efficiently and may increase physical strain during service delivery. However, the employment domain of the Oswestry Disability Index assesses overall work-related disability but does not distinguish between rehabilitation professionals working in a single facility and those engaged in multiple workplaces or private practice. This may have introduced some variability in respondents' interpretations of the employment item.

Age was independently associated with disability level; whereby older participants were significantly more likely to report higher levels of disability than younger professionals. This finding is consistent with previous studies.[23,24] However, our results yielded a very wide confidence interval (95% CI: 1.33–217.04), probably due to the limited sample size and small number of participants with moderate disability. Consequently, the magnitude of the observed association is imprecisely estimated and should be interpreted with caution. Although age emerged as a statistically significant predictor, the precision of the estimate is insufficient to support individual risk prediction or clinical decision-making. Replication of these findings in larger studies is needed to obtain more stable estimates and confirm the strength of the association between age and disability among rehabilitation professionals with low back pain.

Age was independently associated with disability level; whereby older participants were significantly more likely to report higher levels of disability than younger professionals. This confirmed the results from previous similar studies.[23,25] However, our results yielded a very wide confidence interval (95% CI: 1.329-217.041), probably due to the limited sample size and, consequently, our findings need to be interpreted with caution.

Work experience was associated with greater disability during the bivariate analysis, but there was no more evidence for this effect after adjusting for other factors during the multivariate analysis. This finding was consistent with a previous similar study conducted in Iran.[24] The findings suggest that age may be more strongly associated with disability levels than years of professional practice. One possible explanation is that age-related physiological changes, such as reduced muscle strength, decreased flexibility, and degenerative spinal changes, may increase vulnerability to disability associated with LBP.[4] However, the cross-sectional design does not allow causal inferences, and further longitudinal research is needed to better understand these relationships. Our study demonstrated that age-specific interventions, which include ergonomic adjustments, and focused exercise plans and workplace health promotion activities, are essential to minimize disabilities and enhance the quality of life of LBP patients.

Sex was not significantly associated with disability level, consistent with findings in Iran.[24] Contrarily, a study conducted in the United States of America (USA) indicated that sex was independently associated with disability among persons with chronic severe back pain.[23] The disagreement in the findings may be partly attributable to differences in study populations and demographic characteristics. The USA study included a large nationally representative sample (2,925 participants) with chronic low back pain, of whom 58.4% were female and 29.3% were aged 65 years or older. In contrast, our study involved a much smaller sample of rehabilitation professionals that was predominantly male (72.8%) and relatively young, with the largest age group being 31–38 years. The limited representation of females and older adults in our sample may have reduced our ability to detect sex-related differences in disability. Furthermore, the younger age profile of our participants may have attenuated potential sex differences, as disability associated with LBP tends to increase with age.

Although severe disability was not observed, the reported difficulties in work-related activities may still have implications for rehabilitation service delivery. Even mild disability can contribute to reduced work efficiency, increased fatigue, decreased productivity, and greater susceptibility to future musculoskeletal problems. In settings with limited rehabilitation workforce capacity, such as Rwanda, these effects may influence service availability, workload distribution among staff, and the overall sustainability of rehabilitation services. Therefore, proactive workplace health interventions remain important even when disability levels appear relatively low.

To the best of our knowledge, this is the first study to investigate the disability patterns of rehabilitation professionals with LBP in Rwanda, which represents a unique research area because this population faces increased occupational risk and remains understudied in sub-Saharan Africa. Furthermore, this research utilized the Modified Oswestry Low Back Pain Disability Questionnaire, which represents a validated and widely used measurement tool, thus enhancing both the study's validity and its ability to compare results with those of international studies.

However, our study is subject to several limitations that should be considered when interpreting the findings. First,

the cross-sectional design precludes the establishment of causal relationships between low back pain and disability outcomes. Second, the use of self-reported data may have introduced recall and reporting biases. In fact, although disability was measured comprehensively using the Modified Oswestry Questionnaire, a separate pain intensity scale was not included. In addition, social desirability bias may have occurred, as rehabilitation professionals possess knowledge and skills related to the management of musculoskeletal conditions and may therefore have under-reported the extent of their disability. Third, although invitations were distributed exclusively through professional association membership lists and professional communication platforms, and respondents were required to provide information on their profession, years of experience, and workplace characteristics that were reviewed against the eligibility criteria, professional registration numbers were not collected. Consequently, independent verification of participants' professional status was not possible. As with many online surveys, there remains a small possibility of respondent misclassification, which may have introduced some degree of information bias. Fourth, the relatively small sample size, particularly the limited number of participants with moderate disability, may have reduced the precision of some estimates and limits the generalizability of the findings. Fifth, the study sample consisted predominantly of physiotherapists, which may restrict the applicability of the findings to occupational therapists and prosthetists/orthotists. Finally, we did not collect information on the availability or use of workplace ergonomic aids (e.g., patient hoists, transfer devices, or adjustable treatment beds), pain chronicity (acute, recurrent, or chronic LBP), workload intensity, or psychosocial factors. The employment domain assessed overall work performance; however, the questionnaire did not differentiate between respondents working in a single facility and those with multiple jobs or private practice, which may have introduced some variability in responses. These variables may influence disability levels and should be considered in future research.

CONCLUSIONS

This study found that most rehabilitation professionals in Rwanda with low back pain experienced no or mild disability, with employment, lifting, and standing being the most affected functional domains. Older professionals were more likely to report higher disability levels than their younger counterparts.

These findings suggest the need for workplace interventions that promote ergonomic practices, safe patient-handling techniques, and occupational wellness programs, particularly for older rehabilitation professionals. Future research should investigate workplace, ergonomic, and psychosocial factors associated with disability among rehabilitation professionals and should focus on rehabilitation disciplines where awareness and knowledge of back protection strategies may be limited. Such research may help identify profession-specific needs and inform targeted interventions to reduce disability associated with low back pain. Policymakers should also strengthen occupational health strategies to support workforce well-being, productivity, and the sustainability of rehabilitation services in Rwanda.

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