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LOW BACK PAIN AMONG PATIENTS AGED ≥ 12 YEARS RECEIVING PHYSIOTHERAPY SERVICES IN A REFERRAL HOSPITAL IN RWANDA

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Abstract

Background: Lower back pain, or Global Burden Disease (GBD), is underestimated in treatment. Rwanda studies show its prevalence: 78% of nurses in 2010, and 45.8% in 2021. Individual traits, work conditions, and psychosocial factors contribute to its development, highlighting the multifaceted nature of this condition.

Aim: This study aimed to determine the prevalence of lower back pain and its associated factors among patients aged twelve and above receiving physiotherapy services at Kibungo Level II Teaching Hospital

Materials and Methods: Quantitative methods were employed, with interviews and questionnaires conducted with eligible patients, following ethical procedures. The collected data were analyzed using SPSS version 22, utilizing descriptive statistics, chi-square tests, and multivariate logistic regression.

Results: The results revealed a high prevalence of lower back pain, with 73.9% of patients experiencing this condition. Significant associations were observed between lower back pain and certain factors such as age (33-54 years old), occupation as a farmer, lack of education, and diabetes.

Conclusion: The study highlights the necessity of interventions in addressing lower back pain and its factors among physiotherapy patients. It recommends mechanized farming to prevent farmer back pain and stresses the role of policymakers and healthcare providers in mitigating this issue effectively.

Keywords: *Low back pain, Patients, Physiotherapy, Services, Rwanda*

1.0 Introduction

Lower back pain is a global health issue that affects the musculoskeletal system. Research has shown that around 95% of people worldwide have experienced lower back pain, which can cause discomfort and hinder daily activities[1]. The pain caused by LBP can be classified into three categories: acute (lasting for at least six weeks), sub-acute (lasting from six weeks to three months), chronic (lasting for more than three months), and low (lasting for less than six weeks). Chronic LBP is the most common and affects around 80% of people worldwide, significantly impacting their daily activities[1], [2], [3].

In the United States, low back pain is prevalent in 75-85% of the population, with a yearly prevalence of 15-20%[4]. In European countries, 10-15% of all sickness absences from work are due to back pain, with a prevalence of 25-45% becoming chronic low back pain[4]. Nurses working in a clinical setting in Africa have a prevalence of low back pain of 44.1% and 82.7% respectively, over the period 2000-2018[5]. A study in Nigeria found that the prevalence of lumbar pain in the population was 67.5% [6]. Overall, back pain can cause disability, lack of well-being, and lack of social support for those who experience it, especially after stopping work.

Research conducted at the Rwanda Military Hospital found that 78% of patients suffered from back pain[7]. Low back pain can have various causes, such as heavy work, poor posture, pushing or pulling objects, lifestyle factors, psychological factors, trauma, osteoporosis, and vertebral infections or tumors. Soft tissues like cartilage, ligaments, muscles, and soft connective tissue can easily become torn, strained, stained, or sprained, leading to inflammation[8].

Social-demographic factors (age, sex, marital status), lifestyle factors (smoking, drinking, participating in sports), occupational factors, and duration of activities are just a few of the factors associated with low back discomfort. Back pain affects about 37% of the global population, particularly those whose jobs involve sitting or standing for prolonged periods. Therefore, spinal posture activities should be considered when treating low back pain[9] .

Preventing and reducing the morbidity, mortality, and cost related to low back pain involves modifying its risk factors. People at risk of this condition include those who smoke, abuse alcohol, are overweight (body mass index >30 kg/m2), are physically inactive, or have depressive disorders[10].

3.0 Materials and Methods

Study Design

This descriptive cross-sectional study aimed to determine the prevalence of low back pain and its associated factors among 203 patients aged twelve and above receiving physiotherapy services at Kibungo Level II Teaching Hospital (formerly Kibungo Referral Hospital) between August 1, 2023, and September 30, 2023, utilizing a total population sampling approach.

Data Collection and Techniques

Multiple data collection methods, including interviews and questionnaires, were employed following protocol training and patient consent. The questionnaire, divided into four parts and translated into Kinyarwanda, aimed to comprehensively assess musculoskeletal conditions, socioeconomic factors, occupational influences, physical activity patterns, and other causes of low back pain. A pre-test with 20 physiotherapy patients aged twelve and above ensured question clarity, refined data collection strategies, and incorporated supervisor feedback to enhance the study's structure, content, clarity, consistency, and relevance.

Data analysis Procedure

Upon completing data collection, the questionnaire was coded to enable data entry and quantitative analysis using SPSS software. Descriptive statistics were then calculated and presented in terms of frequency and percentage. Proportional statistics were computed concerning both independent and dependent variables, focusing on low back pain. Bivariate analysis was conducted to determine odds ratios with corresponding 95% confidence intervals (CI), comparing individual independent variables to the dependent variable. Additionally, multivariate logistic regression analysis was utilized to evaluate the independent association of each factor with low back pain while adjusting for confounding variables. Statistical significance was set at $P < 0.005$.

Ethical Consideration

Ethical clearance for the study was obtained from Mount Kenya University in Rwanda, and permission to collect data was secured from Kibungo Level II Teaching Hospital. All participants received a consent form outlining the study's objectives, and they provided their consent by signing the form after receiving a detailed explanation. Participants were assured of confidentiality by using their initials on the form.

4.0 Results

Participants in the study reported a prevalence of low back pain of 73.8%, while no back pain was reported by 26.1% of respondents.

Prevalence of low back pain among Patients Receiving Physiotherapy Services

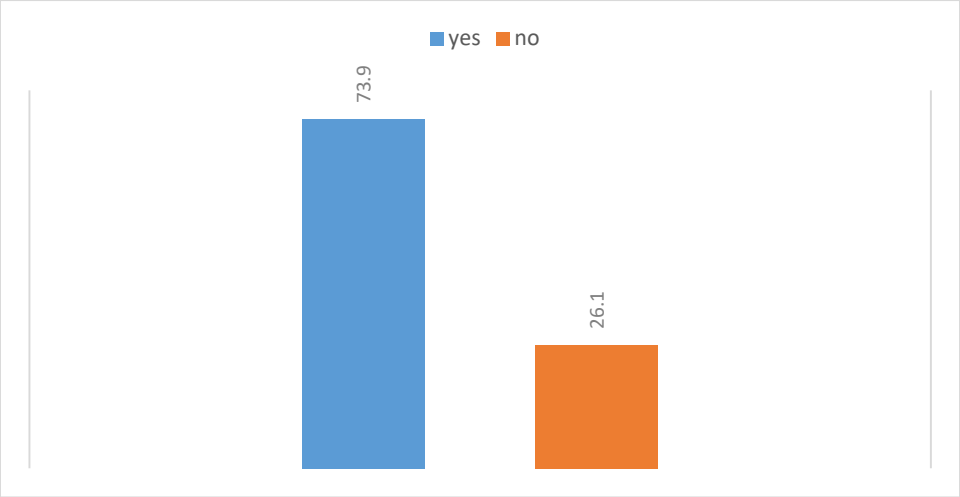

Figure 1: Low Back Pain of Respondents

Source: Primary Data (2023)

Factors Association with Low Back Pain among Patients

Table 1 show the association between social-demographic characteristics and prevalence of low back pain among patients.

Table 1: Factors associated with low Back Pain among patients participants

Variable	Back Pain		No Back Pain		P-value
Age	**N**	**%**	**N**	**%**	
12-32	17	39.5	26	60.5	<0.001
33-53	61	76.3	19	23.8	
54-74	60	90.9	6	9.1	
75-95	12	85.7	2	14	
Gender					
Male	99	71.7	39	28.3	0.20
Female	51	78.5	14	21.5	
Occupation					
Farmers	63	85.1	11	14.9	0.003
Other manual	40	60.6	26	39.4	
workers	45	77.6	13	22.4	
Office workers	2	40.0	3	60	
Level of education					
Un educated	54	85.7	9	14.3	0.017
Primary	32	66.6	12	33,3	
Advanced level	15	53.6	13	46.4	
Graduated	42	76.4	13	23.6	

Post graduated	7	77.8	2	22.2	
Marital status					
Single	22	45.8	26	54.2	
Marriage	106	84.8	19	15.2	<0.001
Divorce	15	75.0	5	25	
Other	7	70.0	3	30	

Source: Primary Data (2023)

The respondents' ages were significantly correlated with low back pain as follows: those between the ages of 33-54) and above had a higher likelihood of experiencing low back pain than those between the ages of 12-33 {p= <0.001}. The likelihood of low back pain in married respondents was three times higher than in single respondents, with a significant difference of p=<0.001}. Those without a college education were also more likely to experience low back pain than those with a college education (p=0.017). In addition, compared to other manual workers, farmers are twice as likely to experience low back pain, with a significant association of {p=0.003}.

Lifestyle and clinical factors has significant association with low back pain among patient receiving physiotherapy services is shown in Table 2.

Table 2: Lifestyle and clinical factors associated with low back pain

Variable	**Back pain**		**No Back Pain**		**p-Value**
	N	**%**	**N**	**%**	
Smoking					
Yes	23	95.8	1	4.2	<0.001
No	107	67.3	52	32.7	
Stopped because of sickness	20	100	0	0	
Alcohol					
Yes	57	76	18	24.0	0.024
No	72	67.9	34	32.1	
Stopped because of sickness	21	95.5	1	4.5	
Sport					
Yes	57	67.9	27	32.1	0.145
No	68	81.0	16	19.0	
Started because of sickness	25	71.4	10	28.6	
Posture					
Bending	38	82.6	8	17.4	0.001
Sitting	55	69.6	24	30.4	
Standing	56	81.2	13	18.8	
Other	1	11.1	8	88.9	
Body mass index					
Normal	111	75.5	42	27.5	0.83
Over weight	26	86.7	4	13.3	

Under weight	9	56.3	7	43.8	
Obesity	4	100	0	0	
Non-communicable disease					
Diabetes	27	13.3	0	86.7	0.001
Hypertension	27	17.2	8	82.8	0.630
Arthritis	1	21.2	42	78.8	0.001
Injury	3	6.9	11	93.1	0.001

Source: Primary Data (2023)

Smoking has a significant association with low back pain (p=<0.001}), and the number of nonsmokers among respondents was significantly higher than that of smokers. Although there was a significant correlation between alcohol consumption and low back pain (p=0.024}), and there was a significant correlation between posture and low back pain (p<0.001}). In terms of body mass index, those with a normal weight were four times more likely than those who were overweight to experience low back pain, but there was no significant difference in low back pain (p=0.83}). Respondents with diabetes, arthritis, and injuries showed significantly higher levels of low back pain (p=0.001}, {P<0.001}, and {P<0.001}, respectively).

5.0 Discussions

Recent studies indicate that low back pain affects approximately 80% of individuals globally, making it a leading cause of disability that significantly impacts the musculoskeletal system and daily activities [1], [3].This condition spans all age groups, with those aged twelve and older at higher risk, as evidenced by a significant correlation ($p < 0.001$) among individuals aged 12-54.

Demographically, the study sample consisted of 32.0% females and 68.0% males, with 61.6% married individuals. Common occupations included farmers (36.2%), manual laborers (32%), and office workers (28.6%). Studies focusing on nurses at RMH and CHUK hospitals reported high prevalence rates of 78% and 70%, respectively, suffering from low back pain[3].

Causes of low back pain range from strains and sprains due to muscle overstretching to disk herniation pressing on spinal nerves and disk degeneration linked to aging (Basics, 2019). Lifestyle choices, sociodemographic factors, and the absence of communicable diseases were identified as associated factors in contrast to other research findings. Financially, low back pain imposes a substantial burden, encompassing therapy costs and disruptions to work-family balance, leading to sick leave among 64% of respondents[1].

Preventive measures include the use of anti-inflammatory medications, rest, ice application, and ergonomic adjustments in the workplace. Rehabilitation through physiotherapy services revealed that 73.9% of patients sought treatment for low back pain, underscoring the prevalence and urgency of early intervention.

6.0 Conclusion

Low back pain is a common global health issue that affects a significant portion of the population, particularly individuals aged twelve and older. Factors such as age, occupation, and lifestyle choices are closely linked to its occurrence. The study revealed a strong correlation between age groups, types of occupation, and the prevalence of low back pain, highlighting the need for targeted preventive measures. Strategies such as lifestyle modifications, ergonomic interventions, and early rehabilitation through physiotherapy services are recommended for managing and preventing low back pain. Furthermore, the financial burden and negative impact on daily activities underscore the importance of effective intervention and management strategies.

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Conflict of interest statement

The author declares no conflicts of interest.

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REFERENCES

[1] M. L. Ferreira *et al.*, 'Global, regional, and national burden of low back pain, 1990–2020, its attributable risk factors, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021', *Lancet Rheumatol.*, vol. 5, no. 6, pp. e316–e329, Jun. 2023, DOI: 10.1016/S2665-9913(23)00098-X.

[2] A. R. Bosma, C. R. L. Boot, N. C. Snippen, F. G. Schaafsma, and J. R. Anema, 'Supporting employees with chronic conditions to stay at work: perspectives of occupational health professionals and organizational representatives', *BMC Public Health*, vol. 21, no. 1, p. 592, Dec. 2021, DOI: 10.1186/s12889-021-10633-y.

[3] A. Wu *et al.*, 'Global low back pain prevalence and years lived with disability from 1990 to 2017: estimates from the Global Burden of Disease Study 2017', *Ann. Transl. Med.*, vol. 8, no. 6, pp. 299–299, Mar. 2020, DOI: 10.21037/atm.2020.02.175.

[4] G. B. J. Andersson, 'Epidemiology of low back pain', *Acta Orthop. Scand.*, vol. 69, no. sup281, pp. 28–31, Jan. 1998, DOI: 10.1080/17453674.1998.11744790.

[5] A. S. Kasa, Y. Workineh, E. Ayalew, and W. A. Temesgen, 'Low back pain among nurses working in clinical settings of Africa: systematic review and meta-analysis of 19 years of studies', *BMC Musculoskelet. Disord.*, vol. 21, no. 1, p. 310, Dec. 2020, DOI: 10.1186/s12891-020-03341-y.

[6] B. Bello and H. Bello Adebayo, 'A Systematic Review on the Prevalence of Low Back Pain in Nigeria', *Middle East J. Rehabil. Health*, vol. 4, no. 2, Feb. 2017, DOI: 10.5812/mejrh.45262.

[7] M. Lela and J. Frantz, 'Physical Activity Among Nurses in Kanombe Military Hospital', *Afr. J. Physiother. Rehabil. Sci.*, vol. 4, no. 1–2, pp. 63–66, Oct. 2012, DOI: 10.4314/ajprs.v4i1-2.10.

[8] E. R. Castillo and D. E. Lieberman, 'Lower back pain', *Evol. Med. Public Health*, vol. 2015, no. 1, pp. 2–3, 2015, DOI: 10.1093/emph/eou034.

[9] W. Yan *et al.*, 'Research Relating to Low Back Pain and Physical Activity Reported Over the Period of 2000–2020', *J. Pain Res.*, vol. Volume 14, pp. 2513–2528, Aug. 2021, DOI: 10.2147/JPR.S312614.

[10] S. T. Shemory, K. J. Pfefferle, and I. M. Gradisar, 'Modifiable Risk Factors in Patients With Low Back Pain', *Orthopedics*, vol. 39, no. 3, May 2016, DOI: 10.3928/01477447-20160404-02.