PREVALENCE OF LOW BACK PAIN AND AWARENESS OF PHYSIOTHERAPY INTERVENTIONS AMONG WELDERS IN NNEWI, ANAMBRA STATE, NIGERIA: A CROSS-SECTIONAL STUDY

Authors:
Egwuonwu, V.A[1]., Ugwuanyi, D. C[2]*

Author Affiliations:
[1] Department of Medical Rehabilitation, Nnamdi Azikiwe University, Nnewi Campus, Anambra State, Nigeria.
[2] Department of Radiography and Radiological Sciences, Nnamdi Azikiwe University, Nnewi Campus, Anambra State, Nigeria

*** Corresponding Author:**
Dr Daniel Chimuanya Ugwuanyi
Department of Radiography and Radiological Sciences
Faculty of Health Sciences and Technology
Nnamdi Azikiwe University, Nnewi Campus, Anambra State, Nigeria
Email: dc.ugwuanyi@unizik.edu.ng

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

ABSTRACT

Background: Low back pain (LBP) is a major occupational health problem among workers in physically demanding jobs. Welders are particularly susceptible due to prolonged bending, awkward postures, and heavy lifting. Despite the established effectiveness of physiotherapy in managing musculoskeletal disorders, awareness and utilization of physiotherapy services remain critically low among informal sector workers in Nigeria.

Aim: This study investigated the prevalence of LBP and assessed whether welders in Nnewi North Local Government Area (L.G.A.), Anambra State, were aware of physiotherapy interventions.

Materials and Methods: A descriptive cross-sectional survey was conducted among 67 male welders (mean age 34.25 ± 7.79 years) selected via purposive sampling. Data were collected using the Modified Nordic Musculoskeletal Questionnaire (NMQ; Cronbach's α = 0.79) and a

structured Awareness of Physiotherapy Questionnaire (adapted from Maruf et al., 2012; Cronbach's $\alpha = 0.81$). Descriptive statistics (frequencies, percentages) and inferential statistics (Chi-square and Fisher's Exact tests) were used for analysis ($\alpha \leq 0.05$).

Results: The 12-month prevalence of LBP was 53.7%, with 40.3% reporting activity limitation due to pain. Only 13.4% of respondents were aware of physiotherapy, with family/friends as the exclusive source of information (100%). Among the nine respondents who were aware, none demonstrated any knowledge of what physiotherapy involves or the conditions it manages. A statistically significant association was found between experiencing LBP and awareness of physiotherapy ($\chi^2 = 7.10$, $p = 0.008$).

Conclusion: LBP is highly prevalent among welders in Nnewi North L.G.A., yet awareness of physiotherapy interventions is critically low. Awareness is predominantly reactive, arising from personal pain experience rather than structured occupational health education. Targeted outreach and integration of physiotherapy into primary and occupational healthcare services are urgently needed.

Keywords: Low Back Pain; Metal Workers; Cross-Sectional Studies; Occupational Health; Prevalence; Nigeria; Health Education; Surveys and Questionnaires; Posture; Informal Sector

INTRODUCTION

Low back pain (LBP) is defined as pain or discomfort localized between the lower margin of the 12th rib and the gluteal folds, often accompanied by stiffness or functional limitation.[1] It is a global public health concern and the leading cause of years lived with disability (YLDs) worldwide.[2] The global point prevalence of LBP is estimated at 7.5%, with lifetime prevalence ranging from 70% to 85%.[3] In Nigeria, 12-month prevalence rates vary between 32.5% and 73.5%, reflecting substantial burden across occupational groups.[4]

Welders represent a high-risk occupational group due to prolonged static postures, repetitive trunk flexion, and heavy lifting.[5] These biomechanical demands place excessive mechanical stress on the lumbar spine, predisposing welders to musculoskeletal disorders including LBP. Physiotherapy plays a crucial role in LBP management through exercise therapy, manual therapy, and ergonomic education.[6] However, awareness and utilization of physiotherapy services remain low in many developing countries, particularly among informal sector workers.[7]

Despite the high physical demands of welding, no known study has focused specifically on welders in Nnewi North L.G.A., Anambra State, creating a significant gap in the occupational health literature. This study therefore sought to answer two sequential research questions: (i) Are welders in Nnewi North L.G.A. aware of physiotherapy interventions? and (ii) Among those who are aware, what is the

extent of their knowledge of physiotherapy? This approach recognizes the conceptual distinction between awareness (knowing that a construct exists) and knowledge (understanding what it entails), as well as the methodological principle that the level of knowledge should be assessed only among those already confirmed to be aware of the subject matter. Accordingly, this study aimed to determine the prevalence of LBP and to assess awareness — and, among aware respondents, the extent of knowledge — of physiotherapy interventions among welders in this region.

MATERIALS AND METHODS

Study Design and Setting

A descriptive cross-sectional survey was conducted among welders in Nnewi North L.G.A., Anambra State, Nigeria, from January to June 2024. Nnewi North is a major commercial and automotive artisan hub in Anambra State, with a dense concentration of welding workshops in its informal industrial clusters.

Participants and Sampling

A purposive sampling technique was used to recruit 67 male welders. Sample size was calculated using Taro Yamane's formula (1967). **Inclusion criteria:** age ≥18 years, at least one year of welding experience, and welding as the primary occupation. **Exclusion criteria:** history of back or spine surgery, and presence of hip region structural abnormalities diagnosed by a clinician. Note: 'less than one year of experience' was not retained as an exclusion criterion, as it is logically redundant with the inclusion criterion requiring at least one year of experience — including it as both an inclusion and exclusion criterion would introduce a logical contradiction.

Instruments

Two validated instruments were used: **(1) The Modified Nordic Musculoskeletal Questionnaire (NMQ)** — a widely used tool for assessing regional musculoskeletal pain prevalence (Cronbach's $\alpha = 0.79$; test-retest reliability $r = 0.82$ in comparable populations), used here to assess LBP prevalence, activity limitation, work absenteeism, and healthcare consultation. **(2) Awareness of Physiotherapy Questionnaire** — a structured questionnaire adapted from Maruf et al. (2012) to assess: (a) whether respondents were aware of physiotherapy (binary yes/no), (b) source of awareness, and (c) among those who were aware, their knowledge of what physiotherapy entails and the conditions it addresses. The adapted tool demonstrated acceptable internal consistency (Cronbach's $\alpha = 0.81$) and test-retest reliability (ICC = 0.78) in a pilot sample of 10 welders prior to the main study.

Data Collection and Analysis

Ethical approval was obtained from the Research and Ethics Committee of Nnamdi Azikiwe University, Faculty of Health Sciences and Technology, Nnewi Campus (Approval No.: NAUTH/CS/66/VOL.16/VER.3/032/2024). Questionnaires were researcher-administered in person to each eligible welder to ensure comprehension, given that the majority had secondary-level formal education. For respondents who could not read English fluently, the questionnaire was

read aloud and responses recorded by the researcher. All respondents provided written informed consent before participation.

Data were analyzed using IBM SPSS Statistics version 26 (IBM Corp., Armonk, NY). Descriptive statistics — frequencies, percentages, means, and standard deviations — were computed for all variables. For inferential analysis, a 2×2 contingency table was constructed to examine the association between LBP status (yes/no) and awareness of physiotherapy (yes/no). The Pearson Chi-square test with Yates' continuity correction was applied, and Fisher's Exact Test was used given the small expected cell frequencies. Statistical significance was set at $p \leq 0.05$.

RESULTS

Socio-Demographic Characteristics

A total of 67 male welders participated (mean age 34.25 ± 7.79 years). The majority were aged 30–39 years (52.2%), were single (53.7%), and had completed secondary school education (76.1%). No respondent had primary school as their highest level of education; 23.9% had vocational/technical training as their highest qualification. Mean years of welding practice was 11.37 ± 7.87 years. Full socio-demographic data are presented in Table 1.

Prevalence and Impact of Low Back Pain

The 12-month prevalence of LBP was 53.7% (n = 36/67). Among all respondents, 40.3% reported that LBP had prevented normal daily activities or work within the same period, and the 7-day point prevalence was also 40.3%. Regarding work absenteeism attributable to LBP, 59.7% reported no days lost, 16.4% lost 1–7 workdays, and 23.9% lost 8–30 workdays. Only 29.9% had ever consulted a healthcare professional for their LBP (Table 2).

Awareness of Physiotherapy

Only 13.4% (n = 9/67) of respondents indicated awareness of physiotherapy. The sole source of this awareness was family members or friends (100%), with no exposure through healthcare professionals, workplace programmes, or mass media. Among the nine respondents who were aware, none could accurately describe what physiotherapy involves or identify any conditions that physiotherapy addresses. Awareness and knowledge data are presented in Table 3.

Association between LBP Experience and Awareness of Physiotherapy

All nine respondents who were aware of physiotherapy had experienced LBP (100%). Among those with LBP (n = 36), 25.0% were aware of physiotherapy, compared to 0% among those without LBP (n = 31). Chi-square analysis with Yates' continuity correction ($\chi^2 = 7.10$, df = 1) and Fisher's Exact Test revealed a statistically significant association between experiencing LBP and awareness of physiotherapy ($p = 0.008$). The test statistic, degrees of freedom, expected values, and p-value are presented in Table 4.

Table 1: Socio-Demographic Profile of Respondents (N = 67)

Variable	Category	Frequency (n)	Percentage (%)
Age (Years)	20–29	12	17.9
	30–39	35	52.2
	40–49	20	29.9
	Mean ± SD = 34.25 ± 7.79 years		
Marital Status	Single	36	53.7
	Married	31	46.3
Educational Level	Primary	0	0.0
	Secondary	51	76.1
	Vocational/Technical	16	23.9
Years of Practice	1–10	37	55.2
	11–20	12	17.9
	21–30	18	26.9
	Mean ± SD = 11.37 ± 7.87 years		

SD = Standard Deviation

Table 2: Prevalence and Functional Impact of Low Back Pain (N = 67)

Questionnaire Item	Response	Frequency (n)	Percentage (%)
1. Had LBP in last 12 months?	Yes	36	53.7
	No	31	46.3
2. Did LBP prevent ADL/Work?	Yes	27	40.3
	No	40	59.7
3. Had LBP in the last 7 days?	Yes	27	40.3
	No	40	59.7
4. Total days unable to work	None	40	59.7
	1–7 days	11	16.4
	8–30 days	16	23.9
5. Consulted a healthcare professional for LBP?	Yes	20	29.9
	No	47	70.1

ADL = Activities of Daily Living; LBP = Low Back Pain

Table 3: Awareness of Physiotherapy and Source of Information (N = 67)

Item	Response	n (%)
Are you aware of physiotherapy?	Yes	9 (13.4)
	No	58 (86.6)
Source of awareness (n = 9)	Family/Friends	9 (100.0)
	Healthcare professional	0 (0.0)
	Workplace/Media	0 (0.0)
Do you know what physiotherapy involves? (n = 9)	Yes	0 (0.0)
	No/Not Sure	9 (100.0)
Do you know conditions physiotherapy treats? (n = 9)	Yes	0 (0.0)
	No knowledge	9 (100.0)

Note: Knowledge items (rows 3–4) were assessed only among the nine respondents who indicated awareness of physiotherapy.

Table 4: Cross-tabulation and Chi-Square Analysis: LBP Status vs. Awareness of Physiotherapy

LBP Status	Aware of Physiotherapy: No	Aware of Physiotherapy: Yes	Total
LBP: No	31 (100%)	0 (0%)	31
LBP: Yes	27 (75.0%)	9 (25.0%)	36
Total	58 (86.6%)	9 (13.4%)	67

$\chi^2 = 7.10$ (Yates' continuity corrected), df = 1; Fisher's Exact Test p = 0.008.

Expected cell frequencies: LBP Yes & Aware Yes = 4.84; LBP Yes & Aware No = 31.16; LBP No & Aware Yes = 4.16; LBP No & Aware No = 26.84.

DISCUSSION

This study investigated the prevalence of LBP and awareness of physiotherapy among welders in Nnewi North L.G.A. The 12-month LBP prevalence of 53.7% aligns with previous findings among Nigerian industrial workers and artisans, where rates ranging from 44.7% to 65.5% have been documented.[8] This high prevalence is attributable to the occupational demands of welding — specifically, prolonged standing, sustained trunk flexion, and repetitive lifting — which collectively increase mechanical loading on the lumbar spine and predispose workers to musculoskeletal injury.[9]

The finding that only 13.4% of welders were aware of physiotherapy is strikingly low and is consistent with reported awareness deficits in other comparable groups of Nigerian informal sector workers. For instance, Odebiyi et al.[10] reported that physiotherapy awareness was under 20% among artisans and market traders in Lagos, while Akinpelu et al.[7] documented similarly poor awareness among members of the general Nigerian public without formal health education. The present study extends these findings specifically to welders in the Southeast, a group previously unstudied in this context.

The exclusive sourcing of physiotherapy awareness through family and friends, with no contributions from healthcare professionals or workplace training, reflects a systemic failure in occupational health outreach for informal sector workers. The current study did not specifically survey whether welders' associations in the area were engaged with any health promotion initiatives; this represents an important area for future investigation and targeted intervention. While it is plausible that welders without physiotherapy awareness may rely on self-medication or traditional remedies — a pattern widely documented in the Nigerian informal sector[11] — this study

did not directly measure health-seeking behaviour for LBP, and caution is warranted in making that causal attribution from awareness data alone.

A significant association ($\chi^2 = 7.10$, $p = 0.008$) was found between experiencing LBP and awareness of physiotherapy, suggesting that awareness is reactive — driven by personal pain experience and the search for relief — rather than arising from proactive occupational health education. This finding is consistent with Ojukwu et al.,[12] who observed that artisans in Enugu typically seek rehabilitation services only after conventional and informal treatments fail. It is noteworthy that the study design (cross-sectional) does not allow causal inference from this association; the directionality — whether pain precedes or follows awareness — cannot be established from these data.

The clinical and public health implications are substantial. Low awareness contributes to delayed presentation, the progression of acute LBP to chronic disabling conditions, reduced work capacity, and lost economic productivity.[13] Given that 40.3% of respondents reported that LBP limited their activities of daily living and 23.9% lost 8–30 workdays, the functional and economic burden on individual welders and their households is considerable. Early physiotherapy intervention — including exercise prescription, ergonomic advice, and manual therapy — has been demonstrated to reduce disability and prevent chronicity in work-related LBP.[6]

Study Limitations

This study has several limitations. The sample was restricted to one L.G.A. and comprised only 67 participants, which constrains generalisability to welders in other Nigerian states or regions. The use of purposive sampling, while appropriate for this exploratory study, introduces selection bias. The cross-sectional design precludes any causal inference between LBP experience and physiotherapy awareness. Additionally, the study did not assess health-seeking behaviour directly, nor did it engage welders' associations prior to data collection to assess existing health promotion activities. Future studies should employ larger, multi-regional, probability-based samples and incorporate qualitative components to explore health-seeking behaviours, barriers to physiotherapy utilization, and the role of informal occupational networks in health information dissemination.

CONCLUSION

Low back pain is highly prevalent among welders in Nnewi North L.G.A., Anambra State, yet awareness of physiotherapy interventions is critically low. Among the small proportion who were aware of physiotherapy, no meaningful knowledge of the profession's scope or the conditions it manages was demonstrated. Awareness is predominantly reactive, occurring in the context of personal pain experience rather than structured occupational health education. There is an urgent need for targeted physiotherapy outreach, integration

of physiotherapy into accessible primary healthcare services, and structured health education programmes directed at informal sector workers.

Recommendations

1. Physiotherapy professional bodies and councils should design and deploy community-based outreach and ergonomic training programmes within welding clusters and informal trade hubs.
2. The Federal and State Ministries of Health should expand physiotherapy services within primary healthcare facilities to ensure accessibility for informal workers.
3. Future researchers and implementers should establish formal partnerships with welders' associations and occupational health bodies prior to intervention design, to understand existing health knowledge, practices, and association structures.
4. Mass media, social media, and peer-health education strategies should be leveraged to raise public awareness of physiotherapy's role in managing work-related musculoskeletal disorders, targeting artisan communities specifically.

Conflict of Interest: None declared.
Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.
Acknowledgments: The author thanks the welders of Nnewi North L.G.A. for their participation

REFERENCES

1. Hoy D, Bain C, Williams G, March L, Brooks P, Blyth F, et al. A systematic review of the global prevalence of low back pain. Arthritis Rheum. 2012;64(6):2028–37.

2. Wu A, March L, Zheng X, Huang J, Wang X, Zhao J, 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. 2020;8(6):299.

3. Kahere M, Ginindza T. A cross-sectional hospital-based study of correlates of disability in patients with chronic low back pain in KwaZulu-Natal, South Africa. BMC Musculoskelet Disord. 2022;23(1):1–11.

4. Bello B, Bello Adebayo H. A systematic review on the prevalence of low back pain in Nigeria. Middle East J Rehabil Health. 2017;4(2):e45262.

5. Bamidele EF, Okebalama VC, Sodeinde JK, Ogunkoya JO, Oshinaike A, Adefala NO, et al. The prevalence of musculoskeletal symptoms among welders and non-welders in Ikenne, Ogun State, Nigeria: a comparative cross-sectional study. West Afr J Med. 2023;40(9):943–9.

6. Tikhile P, Patil DS. Unveiling the efficacy of physiotherapy strategies in alleviating low back pain: a comprehensive review of interventions and outcomes. Cureus. 2024;16(3):e56013.

7. Akinpelu AO, Gbiri CA, Oyewole OO. Knowledge, perception and utilization of

physiotherapy services among the general public in Nigeria. Afr J Physiother Rehabil Sci. 2011;3(1):8–13.

8. Mbada CE, Ayanniyi O, Adedoyin RA, Johnson OE, Akosile CO. Prevalence and patterns of low back pain among artisans in Nigeria. J Back Musculoskelet Rehabil. 2014;27(4):381–9.

9. Zinabu FS, Getie K, Takele MD, Chanie ST, Abich Y, Shibabaw YY, et al. Lower back pain and associated factors among weavers working in Bahir Dar City, Northwest Ethiopia: a cross-sectional study. Front Public Health. 2024;12:1400312.

10. Odebiyi DO, Adegoke BOA, Oyeyemi AL. Knowledge, perception and health-seeking behavior related to physiotherapy services in Nigeria. Niger J Med Rehabil. 2009;14(2):10–5.

11. Omokhodion FO. Low back pain in a rural community in South Western Nigeria. West Afr J Med. 2013;32(2):103–7.

12. Ojukwu CP, Anyanwu GE, Eze B, Chukwu SC, Agba IC, Okemuo AJ. Prevalence, pattern and correlates of work-related musculoskeletal disorders among informal sector workers in Enugu, Nigeria. J Occup Health. 2018;60(6):468–78.

13. Foster NE, Anema JR, Cherkin D, Chou R, Cohen SP, Gross DP, et al. Prevention and treatment of low back pain: evidence, challenges, and promising directions. Lancet. 2018;391(10137):2368–83.