African Journal of Health, Nursing and Midwifery
ISSN: 2689-9418
Volume 8, Issue 2, 2025 (pp. 86-93)
www.abjournals.org

PREVALENCE OF WORK-RELATED MUSCULOSKELETAL DISORDERS AND ITS ASSOCIATION WITH PERCEIVED STRESS AMONG UNDERGRADUATE NURSING STUDENTS IN NIGERIA

Olusegun O. Ojedoyin[1,2*], Emmanuel Abobarin[1],

Niyi David Akintayo[1], and Deborah F. Onisile[3]

[1]Department of Physiotherapy, Faculty of Basic Medical Sciences, Redeemer's University, Ede, Osun State, Nigeria.

[2]Harvard Medical Rehabilitation Hospital, Ikorodu, Lagos, Nigeria.

[3]Department of Nursing Science, Faculty of Basic Medical Sciences, Redeemer's University, Ede, Osun State, Nigeria.

[*]Corresponding Author's Email: olusegunojedoyin@gmail.com, ojedoyins@run.edu.ng
[*]Tel.: +2347080070703 and +234 8072915034

Cite this article:

Ojedoyin, O. O., Abobarin, E., Akintayo, N. D., Onisile, D. F. (2025), Prevalence of Work-Related Musculoskeletal Disorders and its Association with Perceived Stress Among Undergraduate Nursing Students in Nigeria. African Journal of Health, Nursing and Midwifery 8(2), 86-93. DOI: 10.52589/AJHNM-OBDHJWO1

Manuscript History

Received: 23 May 2025

Accepted: 26 Jun 2025

Published: 22 Jul 2025

Copyright © 2025 The Author(s). This is an Open Access article distributed under the terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0), which permits anyone to share, use, reproduce and redistribute in any medium, provided the original author and source are credited.

ABSTRACT: *Background: Pain and impediments to the activities of daily living are common symptoms of work-related musculoskeletal disorders (WMSDs) that individuals experience from work-related activities. The occurrence of musculoskeletal disorders (MSDs) triggers the body system and there is a heightened perception of stress, which could be associated with the musculoskeletal disorders or other psychosocial factors. Aim: The study aimed to determine the prevalence of work-related musculoskeletal disorders (WMSDs) and the level of perceived stress and investigate the association between work-related musculoskeletal disorders (WMSDs) and perceived stress. Method: A cross-sectional study design was employed. And participants for the study were recruited using a consecutive sampling technique, with criteria for the study such as 200-500 level undergraduate nursing students. Participants were required to complete questionnaires assessing the work-related musculoskeletal disorders (WMSDs) prevalence and perceived stress. Questionnaires were distributed by hand and collected via the same means with assistance from level representatives. Data obtained were analyzed using SPSS software, version 27.0. Chi square test was used to determine the association between work-related musculoskeletal disorders (WMSDs) and Perceived Stress among undergraduate clinical nursing students, while descriptive statistics were used to summarize the data. Results: A high proportion of undergraduate nursing students reported work-related musculoskeletal disorders (WMSDs) in at least one body region, the lower back being the most affected area. With a 12-month prevalence of 95.8%. A moderate level of perceived stress (74.1%) was the most reported in the study population. There is a significant association with Shoulder MSD ($X^2 = 4.473$, $p = 0.037$), Upper Back ($X^2 = 5.066$, $p = 0.036$) and Lower Back MSD ($X^2 = 6.127$, $p = 0.018$), and Hip/Thighs MSD ($X^2 = 5.995$, $p = 0.021$). The other body regions (Neck, Elbow, Wrist/Hand, Knees, Ankles) were not statistically significant when associated with perceived stress across the study population. Conclusions: There is a high prevalence of MSDs (95.8%) among undergraduate nursing students. 30.5%, 25%, 16.2%, and 24.1% of undergraduate nursing students at the 500, 400, 300, and 200 levels reported having musculoskeletal complaints respectively in that order. Despite the high prevalence of work-related musculoskeletal disorders (WMSDs), the study found a significant association with perceived stress.*

KEYWORDS: Musculoskeletal disorders, work-related Musculoskeletal disorders, Stress, Undergraduate nursing students.

Article DOI: 10.52589/AJHNM-OBDHJWO1
DOI URL: https://doi.org/10.52589/AJHNM-OBDHJWO1

African Journal of Health, Nursing and Midwifery
ISSN: 2689-9418
Volume 8, Issue 2, 2025 (pp. 86-93)
www.abjournals.org

INTRODUCTION

Soft tissue injuries (blood vessels, peripheral nerves, joints, ligaments, tendons, and muscles) caused or exacerbated by employment or the workplace are known as work-related musculoskeletal diseases (WMSDs) (Korhan et al., 2019). According to Korhan et al. (2019), work-related musculoskeletal disorders (WMSDs) are a general term used to describe changes in normal health that impact the human body's musculoskeletal system, particularly at the bones, spinal discs, tendons, joints, ligaments, cartilage, nerves, and blood vessels.

Work-related musculoskeletal disorders (WMSDs) are complex and have a wide range of personal, psychosocial, environmental, and biomechanical contributing factors that result in functional impairment and pain (Saraceni et al., 2020). Work-related musculoskeletal disorders (WMSDs) are caused by exposure to biomechanical forces that physically load the contractile and non-contractile tissues and spinal discs (Lu et al., 2022). The resultant effect is an injury to micro-level structures in the tissue and then the biological response of edema, inflammation, and degeneration occurs primarily (Lu et al., 2022).

Pain, a typical symptom of musculoskeletal disorders (MSDs), has been found to be influenced by psychological behaviors in addition to biomechanical aspects (Saraceni et al., 2020). Work-related musculoskeletal diseases (WMSDs) are a growing public health concern and a significant contributor to the normal health of professionals in the workplace (Olutende et al., 2022).

Pain and muscle stiffness are common symptoms of musculoskeletal disorders, which are caused as a result of sustained muscular tension leading to muscle ischemia (Motaqi et al., 2019). Studies have shown that there is an association existing between sustained muscular tension and physiological stress (Ekpenyong et al., 2013; Morais et al., 2021; Lu et al., 2022 Abdullah et al., 2017). The definition of stress, according to Hans Selye, ‘the father of stress,’ is the non-specific response of the body to any work demand (Fink et al., 2017).

Among healthcare professionals and students worldwide, WMSDs have been reported to be high (Sun et al., 2023; Moodley et al., 2022; Tinubu et al., 2010; Akodu et al., 2019). One of the primary causes of disability at work is work-related musculoskeletal diseases (WMSDs) (Coggon et al., 2013). The high frequency of WMSDs, which can develop gradually following exposure to unfavorable working conditions over a period of days, weeks, months, or even years, is attributed to the imbalance between occupational expectations and ability to work (Amin et al., 2014; Burton et al., 2017). Among the main risk factors for WMSDs are repetitive tasks, heavy lifting, bending, twisting, accelerating, manual handling, unpleasant postures, and static situations.
There is a gap in the literature about the relationship between undergraduates WMSDs and occupational stress and health-related outcomes. The goal of the current study was to find out how common WMSDs are among undergraduate clinical nursing students and how they relate to occupational perceived stress.

Hence, this study provided answers to the following research questions:

1. What would the prevalence of work-related musculoskeletal disorders among Undergraduate Clinical Nursing Students in Redeemer’s university be?

Article DOI: 10.52589/AJHNM-OBDHJWO1
DOI URL: https://doi.org/10.52589/AJHNM-OBDHJWO1

2. What would be the level of perceived stress among Undergraduate Clinical Nursing Students in Redeemer's university?

3. Is there a significant association between work-related musculoskeletal disorders and perceived stress among Undergraduate Clinical Nursing Students in Redeemer's university.

Research Design

The research design for this study is a cross-sectional study.

Sampling Technique/Sample size

A consecutive sampling technique was used for this study.

The sample size for this study was determined by the formula provided by Taro Yamane (1965).

The sample size was 200 participants.

Procedure

Ethical approval was sought and obtained from the ethical review committee of Redeemer's University before the commencement of this study. A written informed consent was sought and obtained from the participants. The consent form explained the aims of the study and emphasized the confidentiality of the filled-out information. Participants who were not interested in participating were able to withdraw from the study.

The student-level representatives of the 500, 400, 300 and 200 levels were informed about the need for data collection in each level. The printed questionnaires were shared during break periods with the assistance of the student representatives and the researcher, and measurements were recorded for participants who were not aware of their anthropometric characteristics.

RESULTS

Table 1: Sociodemographic variables of participants

Variables	Frequency (n)	Percentage (%)
AGE		
16-20	113	52.3
21-25	99	45.8
25-30	4	1.9
GENDER		
Male	43	19.9
Female	173	80.1
LEVEL OF STUDY		
200 Level	54	25.0
300 Level	37	17.1
400 Level	58	26.9

Article DOI: 10.52589/AJHNM-OBDHJWO1
DOI URL: https://doi.org/10.52589/AJHNM-OBDHJWO1

500 Level	67	31.0
BODY MASS INDEX		
Underweight	34	15.7
Normal	130	60.2
Overweight	39	18.1
Obese	13	6.0

Table 2: Prevalence of Musculoskeletal Disorders

Prevalence of MSD	Frequency(n)	Percentage (%)
7 DAYS PREVALENCE		
People with Pain	175	81.0
People without Pain	32	14.8
12 MONTHS PREVALENCE		
People with Pain	207	95.8
People without Pain	9	4.2

Table 3: Level of Perceived Stress

Level Of Perceived Stress	Frequency (n)	Percentage (%)
Low Stress	13	6.0
Moderate Stress	160	74.1
High Stress	43	19.9

Table 4: Prevalence of Work-Related Musculoskeletal Disorders according to body region

BODY REGION	PREVALENCE OF MSD	
	Frequency (n)	Percentage (%)
Neck	137	66.2
Shoulders	118	57.0
Elbows	34	16.4
Wrist/ Hands	109	52.7
Upper back	116	56.0
Lower back	151	72.9
Hip/Thighs	84	40.6
Knees	63	30.4
Ankles/Feet	71	34.3

Article DOI: 10.52589/AJHNM-OBDHJWO1
DOI URL: https://doi.org/10.52589/AJHNM-OBDHJWO1

African Journal of Health, Nursing and Midwifery
ISSN: 2689-9418
Volume 8, Issue 2, 2025 (pp. 86-93)
www.abjournals.org

Table 5: Association between Prevalence of Work-Related Musculoskeletal Disorders according to Level of Study

LEVEL OF STUDY	**People with pain**	**People without pain**	(X^2)	P-value
200 LEVEL	52 (24.07%)	2 (0.92%)	0.593	1.000
300 LEVEL	35 (16.20%)	2 (0.92%)	0.409	1.000
400 LEVEL	54 (25%)	2 (0.92%)	1.006	0.580
500 LEVEL	66 (30.5%)	1 (0.46%)	3.843	0.209

Table 6: Associations between Body Mass Index (BMI) and Musculoskeletal Disorders

Variables	Minimum	Maximum	Mean	Standard Deviation	P-value
BODY MASS INDEX	15.0	37.8	22.342	4.0363	**0.011***
HEIGHT	1.3	1.9	1.662	0.0808	——
WEIGHT	40	100	61.888	11.857	——

Table 7: Association between Work-Related Musculoskeletal Disorders and Perceived Stress

Body Region	Perceived Stress		
	(X^2)	Df	P-value
Neck	1.369	1	0.277
Shoulder	4.473	1	0.037*
Elbow	0.264	1	0.642
Wrist/Hands	1.808	1	0.226
Upper Back	5.066	1	0.036*
Lower Back	6.127	1	0.018*
Hip/Thighs	5.995	1	0.021*
Knees	0.209	1	0.708
Ankles	2.798	1	0.104

Article DOI: 10.52589/AJHNM-OBDHJWO1
DOI URL: https://doi.org/10.52589/AJHNM-OBDHJWO1

DISCUSSION

This study showed that there is a significant association between perceived stress with Shoulder MSD (X^2 = 4.473, p = 0.037), Upper Back (X^2 = 5.066, p = 0.036) and Lower Back MSD (X^2 = 6.127, p = 0.018), and Hip/Thighs MSD (X^2 = 5.995, p = 0.021). The other body regions (Neck, Elbow, Wrist/Hand, Knees, Ankles) were not statistically significant when associated with perceived stress across the study population. Ekechukwu et al. (2020), in a previous study, reported that perceived level of stress had a significant relationship with each Shoulder MSD (r = 0.145, p = 0.041), Elbow MSD (r=0.160, p=0.024), Hip/Thigh MSD (r=0.146, p=0.04) and ankle/foot MSD (r=0.158, p=0.025) (Ekechukwu et al., 2020). A study by Morais et al. (2021) reported the perceived stress level of the study participants, which included undergraduate nursing students, to have a statistically significant association with musculoskeletal pain in the vertebral column (p=0.002).

According to the 12-month and 7-day prevalence, this study identified the body parts most frequently impacted by work-related musculoskeletal disorders in the sample group. According to this survey, 84.5% of nursing students reported experiencing musculoskeletal pain within the previous seven days, and 95.8% of nursing students reported experiencing musculoskeletal pain within the previous 12 months. Similarly, Hassan et al. (2018) reported the frequency of musculoskeletal pain in the past 12 months and associated factors among medical students having a frequency of 88.5% and non-medical students with a frequency of 64.9% in their previous study (Hassan et al., 2018). Moodley and colleagues reported a 12-month prevalence of work-related musculoskeletal disorders among undergraduate nursing students at the University of Johannesburg (Moodley et al., 2020).

Association between the prevalence of work-related musculoskeletal disorders across the year of study was also observed and it was observed that the prevalence was not statistically significant in the various years of study (200 level: X^2= 0.593, p= 1.000; 300 level: X^2 = 0.409, p= 1.000; 400 level: X^2 = 1.006, p = 0.580; 500 level: X^2 = 3.843, p= 0.209). The prevalence of work-related musculoskeletal disorders across the year of study was most reported to be highest in 500 level (30.5%), followed by 400 level (25%), 200 level (n=52, 24.07%), and 300 level (n=35, 16.20%).

The most common site of the musculoskeletal pain reported by the study participants was the lower back, followed by the neck and then the shoulder; this could have been prolonged sitting. These results were like the cross-sectional study carried out by Moodley and colleagues; the most common affected site among their study population was the low back with 81.1%, followed by the neck with 65.9% (Moodley et al., 2020). This high prevalence of musculoskeletal disorders observed across different studies has been associated with clinical activities during supervision, ward rounds, sitting in classes for lectures and libraries, and prolonged smartphone use, all of which apply mechanical force on the body tissues and keeping the sustained force for a long period of time on the little surface area damages the internal structure of the tissue (Shaygan et al., 2022; Moodley et al., 2020; Elsayed et al., 2019).

Article DOI: 10.52589/AJHNM-OBDHJWO1
DOI URL: https://doi.org/10.52589/AJHNM-OBDHJWO1

CONCLUSION

The frequency of MSDs among nursing undergraduates is significant (95.8%). Most people reported feeling moderately stressed. Lastly, among undergraduates, there is a substantial correlation between perceived stress and musculoskeletal diseases in the shoulder, upper back, lower back, and hip/thigh regions.

REFERENCES

Abdullah, N.H., Abdul Hamid, N.A., Wahab, E., & Shamsuddin, A. (2017). Investigating the Associations between Musculoskeletal Discomforts and Perceived Stress among Production Operators. DOI: 10.1051/matecconf/201713500051

Akodu, A. K., Ashalejo, Z. O. (2019). Work-related musculoskeletal disorders and work ability among hospital nurses. Journal of Taibah University Medical Sciences, 14(3), 252–261. https://doi.org/10.1016/j.jtumed.2019.02.009

Amin. (2014): Relationship between Psychosocial Risk Factors and Work-Related Musculoskeletal Disorders among Public Hospital Nurses in Malaysia. Annals of Occupational and Environmental Medicine 2014 26:23 https:// doi:10.1186/s40557-014-0023-2

Health Organization study on global aging and adult health (SAGE) Wave 1',

BMC Musculoskeletal Disorders 18(1), 271. https://doi.org/10.1186/s12891-017-1624-z

Burton J.F. (2017). Is The Work-Related Test Desirable for All Disease That Disable Workers? https://workerscompresources.com/

Coggon, D., Ntani, G., Palmer, K, T. (2013). Disabling musculoskeletal pain in working populations: Is it the job, the person, or the culture? http://dx.doi.org/10.1016/j.pain. 2013.02.008

Ekechukwu E.N.D., Aguwa E. N., Okeke T. A., Iroezindu I. C., Onyia S.U., Abaraogu D.O., Ekwo A. C., Ohiagu C., Ekechukwu N. I., Mgbeojedo U. G., Ekediegwu E. C., Uduonu E. M., Ezema C. I. and Utti V. A (2020). Prevalence, correlates and risk factors of musculoskeletal disorders among Nigerian physiotherapy and architecture undergraduates. DOI: 10.5897/JNSP2020.0001 Article Number: 1C2524165496

Ekpenyong C.E., Daniel N.E., Aribo E.O (2013). Associations Between Academic Stressors, Reaction To Stress, Coping Strategies And Musculoskeletal Disorders Among College Students. PMCID: PMC3742887 PMID: 23950626

Elsayed, A.A. (2019). Work-Related Musculoskeletal Disorders among Nursing Students during Clinical Training. American Journal of Nursing Research, 2019, Vol. 7, No. 6, 952-957

Available online at http://pubs.sciepub.com/ajnr/7/6/7 Published by Science and Education Publishing. DOI:10.12691/ajnr-7-6-7

Fink, G. (2017). Stress: Definition and history. DOI: 10.1016/B978-008045046-9.00076-0

Hasan, M.M.,Yaqoob, U., Ali, S.S. and Siddiqui, A.A. (2018) Frequency of Musculoskeletal Pain

and Associated Factors among Undergraduate Students. Case Reports in Clinical Medicine, 7, 131-145. https://doi.org/10.4236/crcm.2018.72011

Korhan,O.(2019).Work-Related Musculoskeletal Disorders. April. https://doi.org/10.5772/intechopen.85479

Article DOI: 10.52589/AJHNM-OBDHJWO1
DOI URL: https://doi.org/10.52589/AJHNM-OBDHJWO1

Lu, M., Lowe, B. D., Howard, N. L., & Meyers, A. R. (2022). Work-related Musculoskeletal Disorders (Issue January 2023). https://doi.org/10.2174/9789815049138122010018

Moodley, M., Ismail, F., & Kriel, A. (2020). Work-related musculoskeletal disorders amongst undergraduate nursing students at the University of Johannesburg. *Health SA Gesondheid*, *25*, 1–9. https://doi.org/10.4102/hsag.v25i0.1460

Morais BX, Dalmolin GL, Pedro CMP, Bresolin JZ, Andolhe R, Magnago TSBS (2021). Perceived stress and musculoskeletal pain among undergraduate health students. Texto Contexto Enferm [Internet]. 2021 [cited YEAR MONTH DAY]; 30: e20200076. https://doi.org/10.1590/1980-265X-TCE-2020-0076

Motaqi, M., & Ghanjal, A. (2019). Musculoskeletal Disorders: Definition, Causes, Risk Factors, and Prevention. 4(1), 127–131. http://dx.doi.org/10.52547/ijmpp.4.1.127

Olutende, M. O., Wangui, A. M., Kaniaru, D., & Mse, E. (2022). Prevalence of Work-Related Musculoskeletal Disorders among Nurses in Kakamega County, Kenya. 9, 1–12. https://doi.org/10.4236/oalib.1108561

Saraceni, N., Kent, P., Ng, L., Campbell, A., Straker, L., & O'Sullivan, P. (2020). To flex or not to flex? Is there a relationship between lumbar spine flexion during lifting and low back pain? A systematic review with meta-analysis. Journal of Orthopaedic and Sports Physical Therapy, *50*(3), 121–130. https://doi.org/10.2519/jospt.2020.9218

Shaygan M, Tehranineshat B, Mohammadi A, Foruhi Z. A National Survey of the Prevalence of Chronic Pain in Nursing Students and the Associated Factors. Invest. Educ. Enferm. 2022; 40(1):e09. DOI: https://doi.org/10.17533/udea.iee.v40n1e09.

Sun, W., Yin, L., Zhang, T., Zhang, H., Zhang, R., & Cai, W. (2023). Prevalence of Work-Related Musculoskeletal Disorders among Nurses: A Meta-Analysis. *52*(3), 463–475. Iran J Public Health, Vol. 52, No.3, Mar 2023, pp.463-475 Available at: http://ijph.tums.ac.ir

Tinubu, B. M., Mbada, C. E., Oyeyemi, A. L., & Fabunmi, A. A. (2010). Work-Related Musculoskeletal Disorders among Nurses in Ibadan, South-west Nigeria: a cross-sectional survey. BMC Musculoskeletal Disorders, 11(1), 12. https://doi.org/10.1186/1471-2474-11-12

Article DOI: 10.52589/AJHNM-OBDHJWO1
DOI URL: https://doi.org/10.52589/AJHNM-OBDHJWO1