

Factors Associated with Low Back Pain among Nursing Personnel

Rabins Kumar Sah¹, Shrooti Shah², Dipika Karn³, Gaurav Gupta¹

¹Lecturer, Department of Orthopaedics and Traumatology, National Medical College and Teaching Hospital, Birganj, Nepal

²Hospital Nursing Administrator, Narayani Hospital, Birganj, Nepal

³Lecturer, Department of Women's Health Development, National Medical College and Teaching Hospital, Birganj, Nepal

Corresponding Author: Rabins Kumar Sah

DOI: <https://doi.org/10.52403/ijhsr.20220403>

ABSTRACT

Introduction: Globally low back pain has been found to affect the quality of peoples' health hence affecting work output. Higher prevalence of low back pain is reported among nurses which is neglected and responsible for serious suffering and disability and thus affecting quality of patient care.

Methods: A descriptive cross-sectional study was conducted at National Medical College and Teaching Hospital Birganj, Nepal among 101 nurses. Ethical approval was obtained from Institutional Review Committee, written informed consent was taken and Semi-structured questionnaire was distributed to the participants for data collection. Data was analyzed by descriptive and inferential statistics.

Results: Out of 101 nursing personnel, 79 (78.2%) had experienced low back pain. Half of them 50 (49.5%) had mild pain, 24 (23.8%) had moderate pain whereas only 5 (5%) had severe type of pain. Quebec disability score ranged from 3 to 81 with mean score 25.96 ± 16.41 . Majority of the nurses 69 (87.34%) who experienced low back pain did not seek treatment. There was significant association of low back pain and gender ($P=.019$), performed household work on their own ($P=.050$) and work experience ($P=.007$). There was significant association of low back pain with stressful work environment ($P=.000$) and overtime duties ($P=.005$).

Conclusion: Low back pain is common among nursing personnel, even though most of the nurses did not seek treatment for low back pain which is worrisome and calls for urgent attention to maintain optimal health of these frontline health workers. The factors related to low back pain among nursing professionals is multi-factorial.

Keywords: Factors, Low Back Pain, Nurses, Quebec disability scale

INTRODUCTION

Globally low back pain has been found to affect the quality of peoples' health hence affecting work output. In the global burden of disease low back pain has been declared one of the top causes of disability.¹ It is estimated that over half of the general population will seek medical care for back pain at some point in their lives.² Of all the health care workers, a higher prevalence of LBP is reported among nurses.^{3,4}

Musculoskeletal diseases remain the main cause of injury among hospital work forces, whereas low back pain has been the major reason of absence in nursing staff.^{5,6} It is a neglected health problem responsible for serious suffering and disability among nurse professionals.⁷

Nursing is one of the challenging professions in the health sector. A nurse has to provide 24 hours service in shifts and has to take care of many patients. They are

always at risk for developing many occupational health problems because of physically demanding nature of work i.e., working in the same positions for longer periods, lifting or transferring dependent patients and caring for high number of patients.⁸ Such tasks bring a strenuous effect on the back and leads to nurses to experience different musculoskeletal complaints.⁹ Biomechanical investigations reported that much strenuous activities on the back results in high spinal load.¹⁰

Low back pain not only affects the people suffering from it but also the organizations with which they are associated. It is due to their absenteeism and presenteeism at work. A study in the United Kingdom highlighted that rising absenteeism in the latter half of the 20th century and rising bills for incapacity benefits due to back pain are shared by the United Kingdom and other developed countries. In addition, the quality of patient care is also disrupted that indirectly increases the burden of work on other nurses.¹¹ In addition, it was found that Low back pain can be a financial burden because of the high cost of workers' compensation, insurance to be paid to injured workers, recruitment or training costs, recovery from low back pain being time consuming, and return-to-work rehabilitation.¹²

In our setting, nurses: patient ratio is not as per the standard. Nurses have higher workload which makes them higher risk of developing low back pain and less attention has been paid to the occupational health risks among nurses who are frontline workers in health care system. So, the objective of the study was to determine factors associated with low back pain among nurses.

METHODOLOGY

A descriptive cross-sectional study was conducted in November 2021 at National Medical College & teaching Hospital, Birgunj, Parsa, Nepal. Total enumerative Sampling technique was used for the study. Total 101 nurses working in

different department were included in the study. The nurses who were registered in Nepal nursing council and working at National Medical college and Teaching Hospital, Birganj and willing to participate in the study were included in the study. Participants were excluded who reported to be suffering from LBP as a result of an accident, a deformity, previous spinal injury, pathological backache because of infection, backache because of malignancy, or congenital problems. Those nurses who were pregnant and who had work experience less than 6 months were also excluded from the study.

The research tool comprised of three sections, first section included socio-demographic data of respondents. Second section included questions related to low back pain and work-related factors and third section consisted of Quebec's pain disability scale. Approval from the Institutional Review Committee of National Medical college and Teaching Hospital was obtained. Written administrative approval was obtained from the hospital director of NMCTH to conduct the study. Written informed consent was obtained from each participant before data collection. Data collection was done by distributing questionnaire to the participants. Data was analyzed by descriptive (frequency, percentage, mean, standard deviation) and inferential statistics (Chi Square test). Data processing was done with the help of data analysis software i.e. statistical package for social science 25 version.

RESULT

The age of the participants ranged from 18 years to 40 years with mean 24.47 ± 3.89 years. As shown in Table 1 majority of the nursing personnel 95 (94.10%) were female and most of them 94 (93.1%) were working as staff nurse and remaining of them 7 (6.93%) were working as department incharge. Regarding their qualification, most of them had completed PCL Nursing 65 (64.4%) followed by B.Sc. Nursing 25 (24.7%). Most of the study participants were

working in surgical department 32 (31.7%) followed by maternity department 17 (16.8%) and medicine department 16 (15.8%). The mean duration of work experience of nurses was 25.71 ± 29.93 months. All the nurses in study setting were performing their duty for six hours in morning and evening shift and 12 hours in night shift. Regarding marital status, 21 (20.8%) were married, out of them five nurses had one child and eight nurses had two children. Almost two third 68 (67.3%) of the respondents reported that they performed their household work on their own.

Table 1. Socio-demographic Characteristics of Nursing Personnel, n=101

Characteristics		Frequency	Percentage (%)
Age	≤30 years	94	93.1
	>30 years	7	6.9
Gender	Female	95	94.1
	Male	6	5.9
Qualification	B.Sc. Nursing	25	24.7
	PCL Nursing	65	64.4
	ANM	11	10.9
Working Department	Surgical	32	31.7
	Maternity	17	16.8
	Medicine	16	15.8
	Intensive care unit	11	10.8
	Neonatal intensive care unit	9	8.9
	Pediatric department	5	5.0
Work experience	<24 months	62	61.4
	>24 months	39	38.6
Marital Status	Unmarried	80	79.2
	Married	21	20.8
Children (n=21)	Yes	13	61.9
	No	8	38.1
Number of children(n=13)	1	5	38.5
	2	8	61.5

Out of 101 nursing personnel, 79 (78.2%) had experienced low back pain. Half of them 50 (49.5%) had mild pain, 24 (23.8%) had moderate pain whereas only 5 (5%) had severe type of pain. Quebec disability score among those participants ranged from 3 to 81 with mean score 25.96 ± 16.41 . The mean duration of low back pain was found to be 20.05 ± 17.51 months. Majority of the nursing staffs 69 (87.34%) who experienced low back pain did not seek treatment.

Table 2. Factors Related to Working Condition Contributing to Low Back Pain among Nursing Personnel, n=101

Working condition	Yes	No
	Frequency (Percentage)	Frequency (Percentage)
Assisting in shifting and transferring of surgical patients	85 (84.2%)	16 (15.8%)
Heavy lifting	65 (64.4%)	36 (35.6%)
Standing for prolonged time period	95 (94.1%)	6 (5.9%)
Bending of the body	99 (98%)	2 (2%)
Twisting of the body	89 (88.1%)	12 (11.9%)
Mobilize patient on bed	98 (97%)	3 (3%)
Stressful work environment	94 (93.1%)	7 (6.9%)
Night duty	89 (88.1%)	12 (11.9%)
Overtime duties	82 (81.2%)	19 (18.8%)
Accommodation of quarter inside hospital premises	80 (79.2%)	21 (20.8%)

The study result showed majority of the nurses had exposure to mechanical risk factors and psychological risk factors.

Table 3. Association of Socio-demographic Factors and Low Back Pain among Nursing Personnel, n=101

Socio-demographic factors	Low back pain		Total	P value
	Yes	No		
Age	≤30 years	72(76.59%)	22(23.40%)	.342
	>30 years	7(100%)	0(0%)	
Gender	Female	77(81.05%)	18(18.95%)	.019
	Male	2(33.33%)	4(66.67%)	
Marital status	Unmarried	61(76.25%)	19(23.75%)	.553
	Married	18(85.71%)	3(14.28%)	
Number of children	1	3(60.0%)	2(40.0%)	.050
	2	8(100%)	0(0%)	
Household work performed by self	Yes	57 (83.82%)	11(19.29%)	.050
	No	11(33.33%)	22(66.67%)	
Work experience	≤24 months	43(69.35%)	19(30.64%)	.007
	>24 months	36(92.30%)	3(7.69%)	

P value significant <0.05

There was significant association of gender and low back pain (P=.019). There

was also significant association of low back pain and those participants who performed

household work on their own (P=.050). Low back pain was significantly associated with those who had children. Significant association was found between low back

pain and duration of work experience (P=.007). Whereas, there was no significant association of low back pain with age and marital status.

Table 4. Association of working conditions and low back pain among nursing personnel, n=101

Working conditions	Low back pain		Total	P value	
	Yes	No			
Assisting in shifting and transferring of surgical patients	Yes	69 (81.17%)	16 (18.82%)	85	.109
	No	10 (62.50%)	6 (37.50%)	16	
Heavy lifting	Yes	52 (80%)	13 (20%)	65	.560
	No	27 (75%)	9 (25%)	36	
Standing for prolonged time period	Yes	75 (78.94%)	20 (21.05%)	95	.609
	No	4 (66.66%)	2 (33.33%)	6	
Twisting of the body	Yes	71 (79.77%)	18 (20%)	89	.288
	No	8 (66.66%)	4 (33.33%)	12	
Mobilize patient on bed	Yes	77	21	98	.525
	No	2	1	3	
Stressful work environment	Yes	78	16	94	.000
	No	1	6	7	
Night duty	Yes	68	21	89	.455
	No	1	11	12	
Overtime duties	Yes	69	13	82	.005
	No	10	7	19	
Accommodation of quarter inside hospital premises	Yes	63	17	80	.773
	No	16	5	21	

There was significant association of low back pain with stressful work environment (P=.000) and overtime duties (P=.005), whereas there was no significant association of low back pain with other working conditions such as assisting in shifting and transferring of surgical patients, heavy lifting, standing for prolonged time period, twisting of the body, mobilize patient on bed, night duty and accommodation of quarter inside hospital premises.

DISCUSSION

Out of 101 nursing personnel, 79 (78.2%) had experienced low back pain. Similar findings was reported by study in Nepal by Adhikari S et al in which 78% of nurses were suffering from LBP.¹³ The study results was also supported by Nigerian study by Tinubu et al. which reported low back pain prevalence of 78% among Nigerian nurses.⁸ Comparatively, lower prevalence was reported by study done by Thembelihle Dlungwane et al in South Africa in which the period prevalence of reported current LBP was 59%¹⁴ whereas higher prevalence was reported by study done in Kenya by Diana Kainza Munyao et

al in which Eighty-five percent (85%) of the nurses reported to have experienced back pain.¹⁵ Though the prevalence differs in different countries, low back pain among nursing personnel has been major problem. Half of them 50 (49.5%) had mild pain, 24 (23.8%) had moderate pain whereas only 5 (5%) had severe type of pain. Similar findings were reported on assessment of pain characteristics by Adel Alshahrani in Saudi Arabia which found that a majority (88.2%) had mild to moderate localized back pain.¹⁶ Quebec disability score among those participants ranged from 3 to 81 with mean score 25.96 ± 16.41 . Majority of the nursing staffs 69 (87.34%) who experienced low back pain did not seek treatment. Similar results were found by Kyung Ja June et al in which only 18.3% had received medical treatment for their back pain.¹⁷ This may be because majority of the nursing personnel had mild low back pain, which was relieved on rest and self-medication.

There was significant association of gender and low back pain (P=.019). Study results was consistent with study result by Adel Alshahrani in Saudi Arabia which low back pain was significantly more prevalent among female (60.8%) than male (39.2%)

nurses (* $p < 0.05$).¹⁶ There was also significant association of low back pain and those participants who performed household work on their own ($P=0.050$). Work at hospital and performing household work on their own at home increases physical burden and thus resulting in low back pain. Significant association was found between low back pain and work experience ($P=0.007$). similar finding is reported by study done by Irmala M Emmanuel et al in South India.¹⁸ The influence of work experience on LBP indicates that age related physical problems may significantly affect low back pain. It is the responsibility of the health care setting to ensure regular physical assessment of workers and provision of appropriate care to ensure good physical health of the individual. The study result showed there was significant association of low back pain and number of children. Those participants with two children had more low back pain, this may be because workload increases to take care of their children and working at work place too. Whereas, there was no significant association of low back pain with age, marital status. In contrast, the study done by Thembelihle Dlungwane et al in South Africa the prevalence of LBP was high (56%) among those who have been in the nursing profession between 21 and 30 years.¹⁴

There was significant association of low back pain with stressful work environment ($P=0.000$) and overtime duties ($P=0.005$). It is necessary health care setting should provide conducive environment for the frontline workers and duration of working hour should be within limit. Whereas there was no significant association of low back pain with other working conditions such as assisting in shifting and transferring of surgical patients, heavy lifting, standing for prolonged time period, twisting of the body, mobilize patient on bed, night duty and accommodation of quarter inside hospital premises. In contrast, the study results by Thembelihle Dlungwane et al Bending and

twisting ($p = 0.002$), prolonged sitting ($p = 0.03$), transferring patients ($p = 0.004$) and pushing and pulling ($p = 0.04$) were strongly associated with current LBP.¹⁴ Different study results may be because of comparatively small sample size in our study.

CONCLUSION

Low back pain is common among nursing personnel, even though most of the nurses did not seek treatment for low back pain which is worrisome and calls for urgent attention to maintain optimal health of these frontline health workers. The factors related to low back pain among nursing professionals is multi-factorial. Among the socio-demographic factors, gender, having children, performing household work on their own, duration of work experience and number of children has significant association with low back pain. Significant working conditions related factors included stressful working environment and overtime duties.

Acknowledgement: None

Conflict of Interest: None

Source of Funding: None

Ethical Approval: Approved

REFERENCES

1. Wang, B. and P. Zhao. Worldwide research productivity in the field of back pain: A bibliometric analysis. *Medicine*. 2018; 97(40).
2. Deyo RA, Tsui-Wu YJ. Descriptive epidemiology of low-back pain and its related medical care in the United States. *Spine (Phila Pa 1976)*.1987;12(3):264–268.
3. Maul H, Laubli T, Klipstein. Course of low back pain among nurses: A longitudinal study across eight years. *Occupational and Environmental Medicine*.2003; 60: 497–503.
4. Yassi A, Lockhart K. Work-relatedness of low back pain in nursing personnel: A systematic review. *International Journal of*

- Occupational and Environmental Health. 2013;19: 223-244.
5. Videman T, Ojajarvi A, Riihim aki H, Troup JD. Low back pain among nurses: a follow-up beginning at entry to the nursing school. *Spine*. 2005; 30:2334e41.
 6. d'Errico A, Viotti S, Baratti A, Mottura B, Barocelli AP, Tagna M, et al. Low back pain and associated presenteeism among hospital nursing staff. *J Occup Health*. 2013; 55:276e83.
 7. Kamper SJ, et al. Multidisciplinary biopsychosocial rehabilitation for chronic low back pain: Cochrane systematic review and meta-analysis. *Br Med J*. 2015; 350:444.
 8. Tinubu BMS, Mbada CE, Oyeyemi AL, Fabunmi AA. Work-Related Musculoskeletal Disorders among Nurses in Ibadan, South-west Nigeria: A Cross-sectional Survey. *BMC Musculoskeletal Disorders*. 2010; January 11(12).
 9. Tanui BC. Assessment of Work-Related Musculoskeletal Disorders among Nurses in Mombasa County, Kenya. 2015.
 10. Tate RB, Yassi A, Cooper J. Predictors of time loss after Back injury in nurses. *Spine (Phila Pa 1976)*. 1999; 24:1930–5.
 11. Moore, A. Edwards, J. Barden, J. McQuay, H. Back Pain. In *Bandolier's Little Book of Pained*. Oxford University Press: Oxford. UK, 2014;245–255.
 12. Menzel, N.N.; Lilley, S.; Robinson, M.E. Interventions to reduce back pain in rehabilitation hospital nursing staff. *Rehabil. Nurs*. 2006; 31(138–147).
 13. Adhikari S, Dhakal G. Prevalent Causes of Low Back Pain and its Impact among Nurses Working in Sahid Gangalal National Heart Centre. *J Nepal Health Res Council*. 2014 Sep-Oct;12(28):167-71.
 14. Dlungwane, T, Voce, A., Knight, S. Prevalence and factors associated with low back pain among nurses at a regional hospital in KwaZulu-Natal, South Africa. *Health SA Gesondheid*. 2010; 23(2)
 15. Diana Kainza Munyao, Lucy Wankuru Meng'anyi, Factors Contributing to Back Pain among Nurses in a Maternity Ward at a Level 5 Hospital, Kenya. *International Journal of Nursing Science*. 2020; 10(2): 33-38.
 16. Alshahrani A. Prevalence of Low Back Pain among Nursing Staff in Najran, Saudi Arabia: A Cross-Sectional Study. *Med. Sci*. 2020; 8: 45.
 17. Kyung Ja June, Sung-Hyun Cho. Low back pain and work-related factors among nurses in intensive care units. *Journal of clinical nursing*. 2011; 20(3) :479-487
 18. Emmanuel NM, Ezhilarasu P, Bheemaroo AB. Low Back Pain among Nurses in a Tertiary Hospital, South India. *J Osteopor Phys Act*. 2015;3: 161.

How to cite this article: Sah RK, Shah S, Karn D et.al. Factors associated with low back pain among nursing personnel. *Int J Health Sci Res*. 2022; 12(4): 27-32. DOI: <https://doi.org/10.52403/ijhsr.20220403>
