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Dr. Rahul S Nair
Research Scholar, Department of
Orthopaedics, Yenepoya Medical
College, Mangalore, Karnataka,
India

Dr. Janardhana Aithala P
Professor and Unit Head,
Department of Orthopaedics,
Yenepoya Medical College,
Mangalore, Karnataka, India

Prevalence and risk factors associated with low back pain among nurses in a tertiary care hospital in south India

Dr. Rahul S Nair and Dr. Janardhana Aithala P

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Abstract

Background: Low back pain (LBP) is an important public health problem affecting the nurses population worldwide and is one of the most important cause of work-related disability. Low back pain will result in serious physical, cognitive, sensory, emotional, mental and developmental obstacles for nurses. Prevalence and risk factors for low back pain among nurses in a tertiary care hospital in Indian context is unclear. Knowing the risk factors contributing to the prevalence of low back pain at the hospital will assist the nursing and hospital managers to plan appropriate interventions to minimize the occurrence. Hence this study was undertaken to assess the Prevalence and Risk Factors Associated with Low Back Pain among Nurses in a Tertiary care Hospital in South India.

Methods: 84 Nurses working in a tertiary care teaching hospital were included in the study and data was collected using a validated backache assessment questionnaire and severity of backache was assessed by Oswestry disability index (ODI). Data was analysed using SPSS Software Version 22, mean SD was repeated for necessary outcome variable, Fishers exact test p was performed to check whether there is any significance between low back pain and factors affecting it.

Results: The prevalence of low back pain among nurses was 73.8%, however 83.3% among these have minimum disability as per ODI score. The activities that cause LBA in the order of decreasing frequency are standing for long duration of time (66.7%, correlation with ODI score p value=0.023), lifting patients (61.9%, p value=0.001), Moving trolley (47.6%, p value=0.051), long duration of file works (45.2%, p value=0.031) which in turn causes prolonged sitting. The nurses in night shifts with overtime duty has higher incidence of LBP. Height of chair has an effect of low back pain in 40.4% (p value 0.010). Among nurses working in different wards, Medicine, orthopaedics and intensive care unit (ICU) has the greatest prevalence of LBP.

Conclusions: Our study shows that prevalence of low back pain is high among nurses. Standing for long duration of time, lifting patients, moving of trolley, sitting for long duration in high height chair for file work, and activities that involves bending or twisting are associated with increased prevalence of low back pain. The nurses who are working in areas like Medicine, Orthopaedics and ICU had higher prevalence of low back pain.

Keywords: Low back pain, oswestry disability index

Introduction

Low back pain (LBP) is considered to be one of the most common health problem and a major cause of disability with challenge for the treating doctor ^[1, 2]. Occupational low back pain is high among nursing category ^[1, 2] with incidence rate of 40 to 90% worldwide, hence it is considered to be an occupational hazard ^[3, 4]. LBP among working nurses will affect the performance in the clinical area, because of the fact that nurses play an important role in the workplace and they constitute approximately one-third of the working force at any hospital, LBP is believed to have a substantial impact on their attendance and work restrictions ^[10]. As a fallout to the rapidly increasing prevalence of LBP among nurses, the nurses themselves are becoming more worried that their LBP condition may affect their performances ^[11].

This study was done to understand the LBP prevalence and risk factors in a developing country like India as we lack such studies. Information about this will assist nursing and hospital managers to plan appropriate interventions to minimize the occurrence.

Corresponding Author:
Dr. Rahul S Nair
Research Scholar, Department of
Orthopaedics, Yenepoya Medical
College, Mangalore, Karnataka,
India

Materials and Methods

84 Nurses working in a tertiary care medical college hospital were included in the study. The sample size was determined using appropriate statistical tests ($N = Z_{1-\alpha/2}^2 \cdot pq/d^2$, $Z_{1-\alpha/2}$ = standard normal variant at 5% level of significance = 1.96, $p = 0.68$, $q = (1 - p) = 0.32$, $d = 0.10$ (10% marginal error) $n = (1.96)^2 \times (0.68)(0.32)/0.01 = 83.59$, $n = 84$)^[12]. University ethics committee approval was obtained (Protocol No YEC2/173). Informed consent was obtained from all participants. 84 nurses working both on day and night shifts in various inpatient wards were given backache assessment questionnaire which was structured and self administered one containing nine main headings and associated questions which can be answered with a tick mark, yes/no or one word answer (Appendix 1). After validation from experts (2 spine surgeons and 2 public health consultants), a pilot study was conducted with purposive sample of 20 nurses to ensure clarity of questions asked through the questionnaire. Nurses who are working in different in patient departments who are willing to participate in the study was included, while nurses with lower back pain as result of an accident, previous spinal injury; pathological backache due to infection; backache due to malignancy; and congenital problems, Student nurses were excluded

Results

There were 84 participants and base line data of included participants is given below.

The age of nurses who participated in the study was between

21 and 30 years, in which 75% comes under age group of 21 to 25 years. The prevalence of LBP among nurses was found to be 73.8% with 58.3% having low back pain in the past 6 months (Table 1)

Table 1: Base line Data

		Number of participants
Age	21-25	63(75%)
	26-30	21(25%)
	Total	84(100%)
Gender	F	78(92.9%)
	M	6(7.1%)
	Total	84(100%)
LBP before working as nurse	Yes	33(39.3%)
	No	51(60.7%)
	Total	84(100%)
LBP in career as nurse	Yes	62(73.8%)
	No	22(26.2%)
	Total	84(100%)
LBP in past 6 months	Yes	49(58.3%)
	No	35(41.7%)
	Total	84(100%)
Days of absence	None	49(100%)
	Total	49(100%)

The main activities that cause LBP are standing for long duration of time (66.7%, p value=0.023), lifting patients (61.9%, p value=0.001), Moving trolley (47.6%, p value=0.051), long duration of file works (45.2%, p value=0.031) (Table-2)

Table 2: Activities that cause your Low back pain and correlation of ODI score with activities.

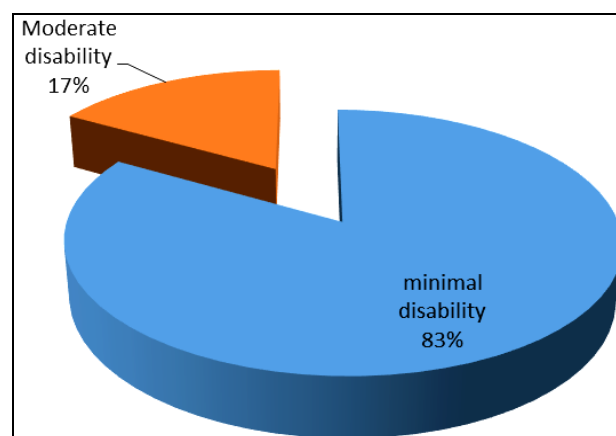
Sl. no	Activities	Frequency of activities that cause low back pain and P value
1	Q1-Bending or Twisting	44% (0.001)
2	Q2-Lifting patients	61.9% (0.001)
3	Q3-Standing for long period of time	66.7% (0.023)
4	Q4-Sitting for long period of time	26.2% (0.026)
5	Q5-Reaching or working away from the body	34.5% (0.182)
6	Q6-Transferring patients from bed to trolley or vice versa	36.9% (0.266)
7	Q7-Pushing or pulling trolley	47.6% (0.051)
8	Q8-Long duration of file works,	45.2% (0.031)
9	Q9-Not enough rest breaks during the day	36.9% (0.266)
10	Q10-Unanticipated sudden movement or fall by a patient	19.0% (0.082)
11	Q11-Assisting patient during gait activities	20.2% (0.395)
12	Q12-Carrying/lifting or moving heavy materials and equipment,	36.9% (0.613)
13	Q13-Inadequate training in injury prevention	35.7% (31.000)

Height of chair has an effect on low back pain in 40.5% and most of them thinks that height is too high that makes them more prone for LBP. (Table 3)

Table 3: Effect of LBP on height of chair, correlation with ODI score

Height of the chair/Type of chair P Value (Correlation with ODI score)			
Height of chair	Yes	34	40.5% 0.010
	No	50	59.5%
	Total	84	100.0%
High	Yes	33	97.1% 0.003
	No	1	2.9%
	Total	34	100.0%
Low	Yes	4	11.8% 0.116
	No	30	88.2%
	Total	34	100.0%

disability and 17% had moderate disability. (Graph 1)



Graph 1: ODI SCORE

According to the ODI score 83% of nurses has minimal disability and 17% had moderate disability. (Graph 1)

0% to 20%: minimal disability, 21%-40%: moderate

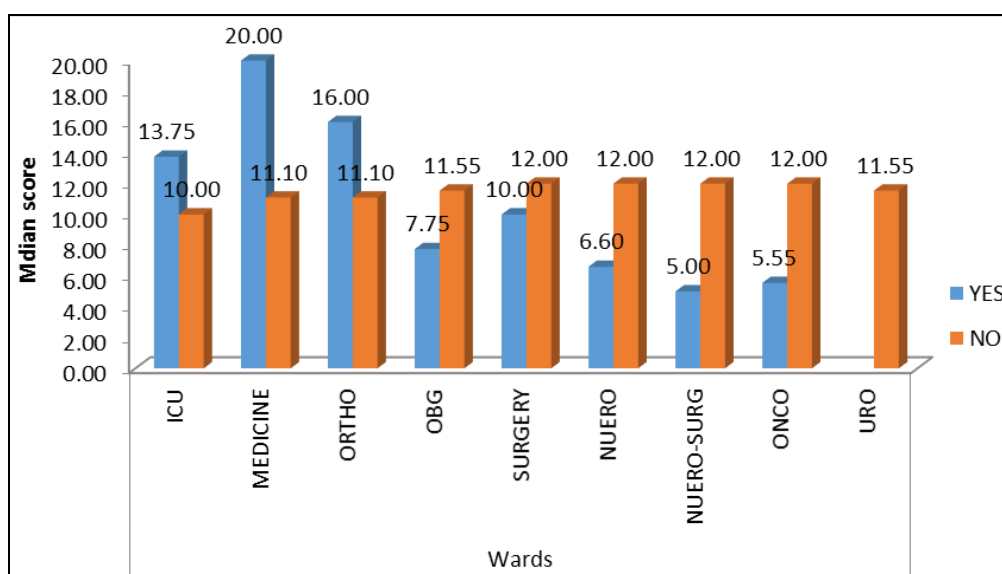
disability, 41%-60%: severe disability 61%-80%: crippled, 81%-100%: These patients are either bed-bound or exaggerating their symptoms^[33] 71.4% of nurses in the age

group between 21-25 years has moderate disability according to ODI score. 92.7% who developed LBP in past 6 months had moderate disability (Table-4)

Table 4: Correlation of ODI score with age, gender and participants having low back pain.

		ODI Score				P value
		Minimal disability		Moderate disability		
		Count	Column N %	Count	Column N %	
Age	21 - 25	53	75.7%	10	71.4%	0.735
	26 - 30	17	24.3%	4	28.6%	
	Total	70	100.0%	14	100.0%	
Gender	F	64	91.4%	14	100.0%	0.256
	M	6	8.6%	0	.0%	
	Total	70	100.0%	14	100.0%	
A. Low back pain (LBP) history		
LBP before working as nurse	YES	24	34.3%	9	64.3%	0.036
	NO	46	65.7%	5	35.7%	
	Total	70	100.0%	14	100.0%	
LBP in career as nurse	YES	48	68.6%	14	100.0%	0.015
	NO	22	31.4%	0	.0%	
	Total	70	100.0%	14	100.0%	
LBP in past 6 months	YES	36	51.4%	13	92.9%	0.004
	NO	34	48.6%	1	7.1%	
	Total	70	100.0%	14	100.0%	
Days of absence	NONE	36	100.0%	13	100.0%	
	Total	36	100.0%	13	100.0%	

The nurses who are working in medicine, orthopaedics and ICU has the maximum prevalence of LBP (Graph-2).



Graph 2: Correlation of mean ODI score and Place of work.

Discussion

Nurses are the major work force in a health care system, they play an important role in improving patient's health^[10]. Nurses should provide importance for their own health also, so that the nursing care which they are providing will be of good quality^[32]. Low back pain being one of the serious health problem is affecting nurses to give quality care for patients, so this study is conducted to know the prevalence of low back pain among nurses and the factors which are contributing for the same. There are only few studies conducted in the same field in our country for reference and knowing the risk factors that causes low back pain among nurses will help the hospital administration to take prompt action and help in minimising the risk^[32].

The main occupational risk factors associated with LBA among nurses are standing for long duration, Lifting and

moving patients, Frequent twisting and bending, sustained posture, Job design, Anxiety, Depression, Stress, Low social support at work, Poor job satisfaction, Shortage of staff and poor working conditions^[5, 6]. The nature of work has a high influences for the prevalence of LBP among nurses. Nurses working in areas requiring strenuous physical activity especially in ICU are more prone for LBP. Improper postural mechanics also has a direct effect on the prevalence of LBP. Patient lifting poses a high risk to nurses in a hospital environment^[7]. Especially in the developing countries like India the lack of lifting aids forces the nurses to strain during shifting of patients. It is reported that poor knowledge of back care ergonomics and unavailability of lifting equipment are major predisposing factors to LBP among nurses^[8]. Overweight and obesity also seem to worsen the situation further^[9].

The prevalence of low back pain among nurses in our study was 73.8% which is very high and is comparable to the studies conducted by Ozlem *et al.* (2013) ^[13] which was 84.2%, Chan Siok Gim (2017) ^[12] -68.2%, Abdulrahman A Qareeballa *et al.* (2018) ^[14]-73.5%. The P value is 0.015 which shows it is significant. Since the prevalence is almost same in different parts of the world, nursing profession carries a serious risk of LBA and the cause of LBA has to be found and measures should be taken to prevent it. 75% of nurses in the age distribution 21-25 years suffered from low back pain in our study. In a study conducted by Nirmala M Emmanuel *et al.* ^[15] the age distribution was between 20-35 years has LBA. We are not able to comment on relationship between low back pain and age distribution because in our study the nurses included were young nurses who are more involved in physical activities.

The main activities that cause LBA among nurses in our study in the decreasing order of frequency are, standing for long duration (66.7%), lifting patients (61.9%) and moving trolley (47.6%). Repetitive spine movements, improper working posture and excessive use of force for lifting are the three major factors that lead to musculoskeletal problems and LBA (Buker *et al.*, 2006) ^[16]. All these factors lead to excessive use of tendons, ligaments and muscles, static muscle loading and fatigue, which increase the likelihood of low back pain. Performing duties related to carrying the patient or shifting the patient without getting support or any supportive equipment may also result in LBP (Buker *et al.*, 2006; Yilmaz, Sahin & Kuran *et al.* 2006) ^[16,17]

Long working hours, excessive work load, inadequate breaks, standing up for long periods of time, working in wrong posture, disruptions of sleeping cycle and eating habits due to shifts are among the occupational risk factors that may result in LBP for nurses (Ovayolu *et al.*, 2014; Pinar, 2010; Selvi *et al.*, 2010) ^[18,19,20]. This is in par with our study which shows that bending and twisting, lifting patients and standing for long duration is statistically significant (p value is 0.001, 0.001, 0.023). American Nurses Association (ANA) stated that the duties of nurses that require carrying patients are related with LBP, which is similar to our study (Akcapinar & Inceboz, 2016; Akinci *et al.*, 2014 ^[21, 22]). The study conducted on surgical nurses (Hinmikaiye & Bamishaiye, 2012) ^[23] found that carrying a patient to another bed/stretchers is the main cause of LBA. It was also found in studies conducted by Al-Samawi & Awad (2015) ^[24] and Wong *et al.* (2012) ^[25] that carrying heavy medical equipment and patients are the major causes of LBP.

Optimal breaks has to be given for nurses for avoiding the long duration of standing, the major problems with shifting of patients can be solved to some extent with the help of shifting aids and involving more people in the process of shifting.

Type of ward that nurses work in can contribute to high low back pain rates. In our study we found that Nurses working in medicine, orthopaedics and intensive care units had more low back pain as compared to nurses in other wards. The reasons for this may be nurses in these wards are caring for people that are normally bedridden and helpless and require more assistance with transfers and handling ^[26, 27, 28].

In our study we found that shift of duties contribute to LBA. Maximum number of nurses has LBA in overtime duties and night shift. The correlation between the shift of duty and low back pain has been established in some studies ^[28, 29]. Working at night leads to sleep deprivation which can result in muscle strain. There are usually fewer nurses at night for

duties and it is one of the cause for LBA at night as they required to do heavy patient transfers with minimal assistance at the night ^[28, 29].

Height of chair has a positive effect on low back pain (p value: 0.010) and using chairs having more height makes nurses more prone for low back pain (p value: 0.033). We were not able to find any study which has shown that there is a positive effect of low back pain and height of chair, the long duration of sitting for file works in a chair which has more height and improper posture will give enormous strain to the back and can lead to LBA

Contrasting evidence was found in the literature on the influence of smoking and alcoholism causing low back pain, but in our study as none of the participants were alcoholic or smoker we are not able to comment on the relation between them. Despite conflicting results on the influence of smoking on low back pain, it is generally agreed that smoking is harmful to one's health ^[30].

Regular training for the staff for lifting the patient and then transferring them, Physical and mental exercise programs, Learning the art of relaxation, Use of mechanical devices for shifting the patient, regular change in the ward, Improved working conditions, good life style practices and healthy food habits will help in preventing low back pain ^[30].

This study has some limitations, Psychological factors like Anxiety, Depression, Stress is not evaluated in the study which may be one of the main reason for low back pain. Low social support at work, Poor job satisfaction due less payment, Shortage of staff and poor working conditions may contributing factors for low back pain which has to be studied in detail. The lack of lifting aids forces the nurses to strain during shifting of patients, the availability of aids in the ward was not included in the study, which may be a single factor which has contributed to the maximum back pain. The low back pain can have a correlation with age but the present study was unable to explain the differences in prevalence amongst different age groups, because the sample size was too small to stratify according to nursing category, further research will need to be conducted with a larger sample. Even though this study has some limitation we are able to find the high prevalence of low back pain among nurses, the main risk factors to which they are exposed in our institution which will help us in addressing this issues and provide a better working atmosphere for the nurses

Conclusion

Prevalence of low back pain is high among nurses. Standing for long duration of time, lifting patients, moving of trolley, sitting for long duration in high height chair for file work, and activities that involves bending or twisting are associated with increased prevalence of low back pain. The nurses who are working in areas like Medicine, Orthopaedics and ICU had higher prevalence of low back pain.

References

1. Branney J, Newell D. Back pain and associated healthcare seeking behaviour in nurses: A survey. *Clinical Chiropractic*. 2009; 12(4):130-143.
2. Mitchell T, O Sullivan PB, Burnett AF, Straker L, Rudd C. Low back pain characteristics from undergraduate student to working nurse in Australia: A cross-sectional survey. *International Journal of Nursing Studies*. 2008; 45(11):1636-1644.
3. Attar SM. Frequency and risk factors of musculoskeletal pain in nurses at a tertiary centre in Jeddah, Saudi Arabia:

- A cross sectional study. BMC Res Notes. 2014; 7:61.
4. Yassi A, Lockhart K. Work-relatedness of low back pain in nursing personnel: A systematic review. Int J Occup Environ Health. 2013; 19:223-44.
 5. Niedhammer I, Lert F, Marne MJ. Back pain and associated factors in French nurses. International Archives Occupational. Environmental Health [abstract]. 1994 [cited 2009 May 24]
 6. Smedley J, Egger P, Cooper C, Cogoon D. Prospective cohort study of predictors of incident low back pain in nurses. BMJ 1997 [cited 2008 March 20]; 314:1225.
 7. Omokhodion FO, Umar US, Orgunnowo BE. Prevalence of low back pain among staff in a rural hospital in Nigeria. Occupational Medicine. 2000; 50:107-110.
 8. Sikiru L, Hanifa S. Prevalence and risk factors of low back pain among nurses in a typical Nigerian hospital. African Health Sciences. 2010; 10:26-30.
 9. Biglarian A, Seify B, Bakhshi E. Low back pain prevalence and associated factors in Iranian population: Findings from national health survey. Pain Research and Treatment 1-4, 2012.
 10. Attar SM. Frequency and risk factors of musculoskeletal pain in nurses at a tertiary centre in Jeddah, Saudi Arabia: A cross sectional study. BMC Res Notes. 2014; 7:61.
 11. Abedini S, Morowatisharifabad MA, Enjezab B, Barkhordari A, Fallahzadeh H. Risk perception of nonspecific low back pain among nurses: A Qualitative approach. Health Promot Perspect. 2014; 4:221-9
 12. Chan Siok Gim. Factors Associated with Low Back Pain Among Nurses in Critical Care Units, Hospital University Sains Malaysia Open University Malaysia, Kelantan, Malaysia December, 20, 2017.
 13. Owayolu O, Owayolu N, Genc M, Col-Araz N. Frequency and severity of low back pain in nurses working in intensive care units and influential factors. Pak J Med Sci, 2014.
 14. Qareeballa AA, Alhamdan OA, Almutawaa AA, Alsayed IM, Kamal FA, Al Abdrabbuh DS *et al.* Prevalence of Low Back Pain among Female Nurses Working in Secondary and Tertiary Healthcare, Kingdom of Bahrain. Int J Med Sci Public Health. 2018; 7(3):183-187.
 15. Nirmala M Emmanuel*, Punitha Ezhilarasu, Anu, Low Back Pain among Nurses in a Tertiary Hospital, South India, Journal of Osteoporosis and Physical Activity, 3(4).
 16. Buker N, Aslan E, Altug F, Cavlak U. Investigation of the effects of morale status and depression level on functional status in aged people living at home and community. University Science Institute Journal. 2006; 10:163-170.
 17. Yilmaz F, Sahin F, Kuran B. Work related musculoskeletal disorders and therapy. Nobel Medicus. 2006; 2(3):15-22.
 18. Owayolu O, Owayolu N, Genc M, Col-Araz N. Frequency and severity of low back pain in nurses working in intensive care units and influential factors. Pakistan Jour of Medical Sciences. 2014; 30:70-6.
 19. Pinar R. Work-related musculoskeletal disorders in Turkish hospital nurses. Turkish Journal of Medical Sciences. 2010; 30(6):1869-75.
 20. Selvi Y, Ozdemir PG, Ozdemir O, Aydin A, Besiroglu L. Influence of night shift work on psychological state and quality of life in health workers. The Journal of Psychiatry and Neurological Sciences. 2010; 23:238-43
 21. Akcapinar M, Inceboz T. Occupational Diseases and causes in the delivery room: Izmir Instance. Journal of Dokuz Eylul University Medical Faculty. 2016; 30(1):1-8.
 22. Akinci AC, Dereli E, Sert H. Low back pain among nurses working in Kırklareli and the associated factors. Journal of the Acıbadem University of Health Sciences. 2014; 1:70-76.
 23. Hinmikaiye CD, Bamishaiye EI. The incidence of low back pain among theatre nurses: a case study of university of Ilorin and Obafemi Awolowo University Teaching Hospital. International Journal of Nursing Science. 2012; 2(3):23-28.
 24. Al-Samawi MAG, Awad HMAA. Prevalence of low back pain among nurses working in Elmak Nimer University Hospital-Shendi-Sudan 2015. International Journal of Research-Granthaalayah. 2015; 3(9):108-121.
 25. Wong TS, Teo N, Kyaw MO. Prevalence and risk factors associated with low back pain among health care providers in a district hospital. Malaysian Orthop Journal. 2010; 4(2):23-28.
 26. Sikiru L, Hanifa S. Prevalence and risk factors of low back pain among nurses in a typical Nigerian hospital. African Health Sciences. 2010; 20(1):26-30.
 27. Tezel A. Musculoskeletal Complaints among a group of Turkish nurses. International Journal of Neuroscience. 2005; 115:871-880.
 28. June JK, Cho S. Low Back Pain and Work Related Factors among Nurses in Intensive Care Units. Journal of Clinical Nursing, 2009, 1-8.
 29. Eriksen W, Bruusgaard D, Knardahl S. Work Factors as Predictors of Intense or Disabling Low Back Pain: a Prospective Study of Nurses' Aides. Occupational Environmental Medicine. 2004; 61:398-404.
 30. Kwa Zulu Natal Department of Health. Guide on the Retention Strategy of Employees in the Department. South Africa, 2010 [cited 2010 April 14]
 31. Ipek Kose Tosunoz, PhD *et al.* International Journal of Caring Sciences September-December. 2017; 10(3):1728.
 32. Thembelihle Dlungwane, dissertation submitted to the Department of Public Health Medicine Nelson R. Mandela School of Medicine, University of KwaZulu-Natal Durban, South Africa, November, 2010.
 33. Davidson M, Keating J. A comparison of five low back disability questionnaires: reliability and responsiveness. Physical Therapy, 2001, 2002; 82:8-243.

Appendix-1

Low back pain research questionnaire

Please answer the following questions. Where there is a choice of responses, please circle the correct response or tick the correct box, answer in one word.

Age: _____

Gender: Male/Female

A. Low back pain (LBP) history

1.	Have you suffered from LBP in the past 6 months?	YES	NO
2.	Have you suffered from LBP in the past (chronic back pain)	YES	NO
3.	Have you ever experienced LBP in your career as a nurse?	YES	NO
4.	Did you ever suffer from LBP before working as a nurse?	YES	NO
5.	Days of absence from work due to LBP in last one year		

B. Activities that cause your Low back symptoms

1.	Bending or Twisting
2.	Lifting patients
3.	Standing for long period of time
4.	Sitting for long period of time
5.	Reaching or working away from the body
6.	Transferring patients from bed to trolley or vice versa
7.	Pushing or pulling trolley
8.	Long duration of file works
9.	Not enough rest breaks during the day
10.	Unanticipated sudden movement or fall by a patient
11.	Assisting patient during gait activities
12.	Carrying/lifting or moving heavy materials and equipment
13.	Inadequate training in injury prevention.
14.	Others please specify

C) Shift work details

1.	Day shift
2.	Night shift
3.	Day and night shift
4.	Over time duty

D) History of smoking and alcohol consumption

1.	Currently smoke cigarettes	Yes	No
2.	History of smoking	Yes	No
3.	Currently drink alcohol	Yes	No
4.	History of alcoholism	Yes	No

E) Current low back pain history

1.	Currently are you suffering from LBP	Yes	No
2.	Do you believe your LBP is connected to your occupation?	Yes	No
3.	Did LBP exaggerated by nursing activities?	Yes	No
4.	Has the LBP affected your activities of daily living?	Yes	No

F) Height of the chair

1.	Too high	Yes	No
2.	Too low	Yes	No
3.	Neither too high or low	Yes	No
4.	Do you think height of chair has any connection with your LBA	Yes	No

G) Which term best describes the frequency of your LBP?

Please tick what applies

1.	Never
2.	Infrequent (1-2 days/wk)
3.	Frequent (3-5 days/wk)
4.	Constant (Daily pain)

H) Ward you were working when your current low back pain occurred (please tick)

1.	ICU
2.	Medicine
3.	orthopaedics
4.	Obs and gynecology
5.	Surgery
6.	Numerology
7.	Nuro -surgery
8.	Oncology
9.	Urology