ISSN NO. 2320-5407

Journal homepage: http://www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH

RESEARCH ARTICLE

Prevalence of low back pain and knowledge on body mechanics among the staff nurses in a tertiary care hospital.

Sandhya R V[1], M J Kumari[2], Dr.Gopisankar[3], Angeline Mary Sheela[4]

1. Msc Nursing, College of Nursing, Jawaharlal Institute of Post Graduate Medical Education and Research, Puducherry-6, India.sandhyarv89@gmail.com.Ph:8281077574

2. Vice Principal cum Principal (Ag), College of Nursing, JIPMER, Puducherry-6, India

3. Assisstant professor, Department of Orthopaedics, JIPMER, Puducherry-6, India

4. Sister Tutor, College of Nursing, JIPMER, Puducherry-6, India

Manuscript Info

Manuscript History:

Received: 15 July 2015
Final Accepted: 22 August 2015
Published Online: September 2015

Key words:

low back pain, knowledge on body mechanics, staff nurses

Corresponding Author

Sandhya R V

Abstract

Back ground: Low back pain is a common work related injury. Nursing is a profession with a greater risk for the development of low back pain. The purpose of the present study is to assess the prevalence of low back pain and knowledge on body mechanics among the staff nurses. **Materials and methods:** Descriptive cross sectional study in which convenience sampling technique was used to select 384 staff nurses. Data collection was done using a validated self-administered questionnaire.

Results: Among 384 staff nurses 285 (74.2%) nurses had low back pain. Among the low back pain cases, 18 (4.7%) cases were diagnosed by health care professionals and 15 (3.9%) cases were on regular treatment. Severe pain was found among 16 (4.2%) samples. 162 (42.2%) staff nurses experienced pain on lumbar region. The study findings showed that low back pain was associated with age, BMI, exercise pattern, qualification, number of children, type of delivery, number of lift, stressful work environment, over all standing time, area of posting and nurse patient ratio. About half of the study participants had good knowledge regarding body mechanics with a mean score of 15.02. Knowledge of staff nurses was significantly associated with qualification and area of posting.

Conclusions: Even though nurses had good knowledge on body mechanics they rarely follow it. Appropriate interventions at initial stages can reduce the incidence of low back pain. Hence can improve the quality of life of nurses.

INTRODUCTION

In the present world, musculoskeletal disorders are one among the serious health problems that are related to working environment. Intensification of work, rising demands on employees add additional pressure and stress on individuals. Low back pain (LBP) is one among the common work- related injury involving all occupations. The employees are opened to inappropriate postures, lifting techniques, heavy weight and repetitive activities. Nursing is a profession with a leading risk for the development of back pain and related deficits. LBP prevalence will alter amidst different countries.

Sound body mechanics is the use of intact and competent methods to raise and move patients or heavy objects. Many of the nursing procedures need co-ordinated utilization of muscles. Body mechanics will be more effective if the nurses have sound knowledge on it.

With this in the background, this study was conducted among the staff nurses with the following objectives: 1.To assess the prevalence of Low back pain among staff nurses. 2. To assess the knowledge regarding body mechanics

among staff nurses. 3. To identify the determinants associated with low back pain among staff nurses. 4. To identify the determinants associated with knowledge on body mechanics among staff nurses.

Materials and methods

A descriptive cross-sectional design was used. The study was conducted in Jawaharlal institute of postgraduate medical education and research (JIPMER) with a daily average out-patient attendance of 6000 and annual patient admission of more than 70,000. The institutional ethical clearance was taken before the study. The study setting included casualty, intensive care units, operation theatre, medical wards, surgical wards, women and children hospital and regional cancer Centre. Population included all the nurses working in JIPMER.

Sample

The sample size estimated was 384. Sample size was estimated with an expected prevalence of low back pain among nurses as 50% at 5% absolute precision and 95% Confidence interval. Both male and female staff nurses were included in the study. Those nurses who were not involving in direct patient care and who were on long leave during the period of data collection were excluded. The data was collected using a self-administered questionnaire. The data collection required 30 minutes per sample.

Description of the tool

The instrument consisted of two parts. Part one with four sections and part two with a knowledge assessment questionnaire. Section A consists of socio demographic variables of the staff nurses which include age, sex, weight, height, BMI, exercise pattern, educational qualification, marital status, type of delivery and age of menopause. Section B consists of work related variables of staff nurses which included approximate number of lifts in a day, whether the staff nurses follow body mechanics during their activities, whether the working environment stressful, number of years of work experience, over all standing time in duty, area of posting, nurse patient ratio and the use of vehicles. Section C consists of clinical variables of staff nurses which include the history of road traffic accidents, falls, spinal problem and any other systemic disorders. Section D consists of the perception of low back pain. The presence of low back pain was confirmed by a question "whether you have back pain?" with yes or no options. The other characteristics of low back pain include when the nurses experience low back pain, whether low back pain is related to work, the frequency of low back pain, whether they took sick leave for low back pain, whether they consult doctor and take treatment for low back pain. The pain severity was found using simple descriptive pain scale with three options mild, moderate and severe. Figure was provided to mark the area of low back pain. Structured questionnaire on knowledge regarding body mechanics consists of 25 questions with multiple responses to assess the knowledge on body mechanics.

Statistical analysis

Both descriptive and inferential statistics were used. The baseline characteristics were presented as mean with standard deviation or frequencies and percentages whichever appropriate. The determinants of low back pain and knowledge on body mechanics were found using Chi-square.

Results

Demographic variables of study participants showed that among 384 staff nurses, 177 (26.1%) belonged to the age group 26-30 years and only 33 (8.6%) belonged to the age group 36-40 years. Out of all participants 252 (65.6%) were female. 96 (25%) sample followed exercise regularly. About educational qualification 285 (74.2%) had degree qualification. 169 (44%) were married and among them 48 (12.55) underwent LSCS and 43 (11.25) underwent normal delivery.

Table 1: Work related variables of staff nurses

(N=384)

Variable	Category	Frequency (N)	Percentage (%)
Average number of lift in a shift	One-five	211	54.9
	Six-ten	115	29.9
	>10	58	15.1

Follow principles of body mechanics	Not at all	56	14.6
	Rarely	236	61.5
	Always	92	24
Stressful working environment	Yes	276	71.9
	No	108	28.1
Work experience	One to five	246	64.1
	Six to ten	92	24
	Eleven to fifteen	42	10.9
	More than sixteen	4	1
Over all standing time	Eight hours	241	62.8
	More than eight hours	143	37.2
Nurse patient ratio	1:5-1:10	175	45.6
	1:11-1:20	208	54.2
	>1:21	1	0.3
Daily driving of vehicle	No	172	44.8
	Yes	212	55.2

Table 1 showed that 211 (54.9%) staff nurses used to lift/shift 1-5 per day. 236 (61.5%) nurses rarely followed principles of body mechanics. About the working environment stress; 276 (71.9%) nurses experienced stress during the working hours. 246 (64.1%) sample had work experience of 1-5 years and only four (1%) had experience more than 16 years. Considering the overall standing hour's 241 (62.8%) nurses answered as 8 hours.

Table 2: Distribution of clinical variables of staff nurses

(N=384)

Variable	Category	Frequency (N)	Percentage (%)
History of road traffic accident	Yes	102	26.6
	No	282	73.4
History of fall	Yes	148	38.5
	No	236	61.5

spinal problem	Yes	9	2.3
	No	375	97.7
Systemic disease	Yes	10	2.6
	No	374	97.4

Table 2 shows that, 102 (26.65%) participants had the history of road traffic accident. Nine (2.3%) nurses had the history of spinal problem, which include IVDP (Inter Vertebral Disc Prolapse). In the case of systemic disorders, 10 (2.6%) had systemic disorders which include Hypothyroidism, Hyperthyroidism, Asthma, Rheumatic Heart Disease and Vitamin D deficiency.

Table 3: Distribution of low back pain perception variables of staff nurses

(N=384)

Perception of low back pain	Category	Frequency (N)	Percentage (%)
Presence of low back pain	Yes	285	74.2
	No	99	25.8
Occurrence of low back pain	No pain	94	24.5
	Before work	8	2.1
	After work	282	73.4
Relation of back pain and work	No pain	94	24.5
	Related to work	264	68.8
	Not related to work	26	6.8
Frequency of low back pain	No pain	94	24.5
	Daily	77	20.1
	Weekly	127	33.1
	Monthly	86	22.4
Sick leave for low back pain	Yes	23	6
	No	361	94
Diagnosed cases of low back pain	Yes	18	4.7
	No	366	95.3
Treatment of low back pain	Yes	15	3.9
	No	369	96.1
Severity of low back pain	No pain	94	24.5
	Mild	135	35.2
	Moderate	139	36.2
	Severe	16	4.2
	No pain	94	24.5
	Lumbar	162	42.2

Location of pain	Sacral	87	22.7
	Lumbar, sacral and legs	28	7.3
Onset of pain	No pain	94	24.5
	1-5 year	229	59.6
	6-10 year	56	14.6
	10-15 year	3	0.8
	>15 year	2	0.5

Table 3 shows that among 384 staff nurses 285 (74.2%) participants experienced low back pain. 282 (73.4%) samples experienced pain after work. About the frequency of low back pain, 127 (33.3%) study participants experienced weekly low back pain. Among the staff nurses with low back pain only 23 (6%) staff nurses took sick leave for the reason of low back pain. Among the participants 18 (4.7%) cases had been diagnosed by health care provider and 15 (3.9%) participants seek treatment for low back pain. Only 16 (4.2%) cases experienced severe low back pain. About the location of low back pain 162 (42.2%) cases had pain on lumbar region. Regarding the onset of pain 229 (59.6%) participants had pain with an onset less than 5 year.

Table 4: Distribution of level of knowledge of staff nurses regarding body mechanics

N=384

Level of knowledge	Frequency (N)	Percentage (%)
Poor Knowledge (<40%)	43	11.2%
Adequate Knowledge (>44%)	159	41.4%
Good Knowledge (>64%)	160	41.7%
Excellent Knowledge (>80%	22	5.7%

Table 4 depicts that out of 384 staff nurses 43 (11.2%) had poor knowledge, 159 (41.4%) had adequate knowledge, 160 (41.7%) had good knowledge and 22 (5.7%) had excellent knowledge on body mechanics.

The mean score of knowledge about body mechanics among 384 staff nurses was 15.02 and the standard deviation was 3.249.The minimum score secured by staff nurses was 7 and the maximum score was 23.

Table 5: Association of low back pain with selected demographic variables of staff nurses.

N=384

Variables	Category	Low back pain		P value
		Yes	No	
Age	20-25 year	60	48	Chi-square=36.180 P=0.000*
	26-30 year	134	43	
	31-35 year	60	6	
	36-40 year	31	2	
BMI	14-18 kg/m2	12	9	P=0.006*
	19-23 kg/m2	161	60	
	24-28 kg/m2	101	29	
	29-33 kg/m2	11	1	
Exercise pattern	Regular	59	37	Chi-square=11.99 P=.002*
	Irregular	147	45	
	Not involved	79	17	
Type of delivery	None	205	88	Chi-square=12.435 P=.002*
	Normal	36	7	
	LSCS	44	4	
Average number of lift in a shift	One-five	138	73	Chi-square=19.093 P=0.000*
	Six-ten	97	18	
	>10	50	8	

Stressful working environment	Yes	215	61	Chi-square=6.945 P=.0.008
	No	70	38	
Work Experience	One to five	162	84	P=0.000*
	Six to ten	79	13	
	Eleven to fifteen	40	2	
	More than sixteen	4	0	
Over all standing time	Eight hours	162	20	Chi-square=16.567 P=0.000*
	More than eight hours	123	79	
Area of posting	Ward	136	74	Chi-square=21.711 P=0.000*
	Operation theatre	58	9	
	Intensive care unit	91	16	
Nurse patient ratio	1:5-1:10	150	25	P=0.000*
	1:11-1:20	134	74	
	>1:21	1	0	

*P< 0.05

Table 5 shows that low back pain is significantly associated with age, BMI, exercise, type of delivery, average number of lift, stressful work environment, work experience, overall standing time and nurse patient ratio .

Table 6: Association between level of knowledge and selected demographic variables of staff nurses.

N=384

Variables	Category	Level of knowledge				P value
		Poor	Adequate	Good	Excellent	
Qualification	GNM	8	23	24	2	P=0.004*
	Bsc	32	124	116	13	
	Msc	3	12	20	7	
Area of posting	Ward	16	86	94	14	P=0.002*
	Operation theater	12	24	28	3	
	Intensive care unit	15	49	38	5	

*P<0.05

Table 6 shows that level of knowledge is significantly associated with qualification and area of posting.

Discussion

The result of the present study (low back pain prevalence = 74.2%) was supported by a cross sectional study done by Sikiru et al. (2010) in which the prevalence of low back pain was 73.53%. Similarly a cross-sectional study conducted by Wong et al. (2010) suggested the cumulative life time prevalence of low back pain as 72.5% and 56.9% as yearly low back pain prevalence. The study was conducted in Malaysia among health care providers. Another study conducted by Lin et al. (2012) concluded the life time prevalence of low back pain as 82.03% and the point prevalence as 43.78%. The study was conducted among 217 nurses in Taiwan.

A cross sectional study done by Jaafar (2013) in which 68.2% were aware about the importance of practicing body mechanics, which was consistent with the current study findings. The study finding was supported by Ayiesah and Ismail (2007), who conducted a study to assess the nurse's awareness of care of back. The findings of the study revealed that out of 80 samples 72 samples were aware about the care of back and body mechanics can reduce low back pain.

A Similar study conducted by Wong and Teo (2010) found out that job satisfaction, stressful working environment and adapting poor body mechanics and frequent lifting were the factors associated with low back pain. These

findings were consistent with the current study findings. Another study conducted by Mehrdad et al. (2010) on Iran. The study concluded that musculo skeletal symptoms were more associated with psychological factors especially stress. These findings were consistent with the present study in which 71.9% of the sample experienced that the working environment were stressful.

Conclusions

The findings of the study suggest that even though nurses have good knowledge on body mechanics they rarely follow the principles of body mechanics. The prevalence of low back pain is high among staff nurses due to stress, work load, inadequate nurse patient ratio and so on. Hence appropriate interventions should be taken at early stages to reduce LBP. Through appropriate interventions for low back pain one can improve the quality of life of nurses and thereby can improve the quality of patient care.

Conflict of interest: Nil

Source of funding: No funding was received for the study.

Acknowledgement :

We would like to extend our gratitude to Dr. Jagadesh Menon, Head, Dept. of orthopaedics, JIPMER Mr.Harichandrakumar K.T, lecturer, Dept. of Biostatistics, JIPMER and the entire JIPMER family.

References

1. Ayiesah, R., Ismail, D. (2007)Backcare awareness among nurses in hospital kota kinabalu. Journal of Community Health., 13(1)
2. Berman, J.A., Snyder, S. Fundamentals of Nursing.9th edition.Noida:Pearson education: 1141-1148.
3. Gomes, H. Annual Reports of European Working Conditions Observatory (EWCO). In: Michalos AC, editor. Encyclopedia of Quality of Life and Well-Being Research [Internet]. Springer Netherlands; 2014 [cited 2015 Mar 14]. p. 187–9. Available from: http://link.springer.com/referenceworkentry/10.1007/978-94-007-0753-5_90.
4. Injury cases by injury type for fiscal year (2005-2006). In: Oficina Central (CFSE)
5. Jaafar, N. MGA. (2013) Knowledge and Practice of Body Mechanics Techniques Among Nurses in Hospital Kluang, Johor, Malaysia.
6. Kyaw, M. O., Teo, N., Wong, T .S. (2010)Prevalence and risk factors associated with low back pain among health care providers in a district hospital . Malaysian orthopaedic J.,2:23-27.
7. Lin, P.H., Tsai, Y.A, Chen WC., Huang, S.F.(2012) Prevalence, characteristics, and work-related risk factors of low back pain among hospital nurses in Taiwan: a cross-sectional survey. Int J Occup Med Environ Health.,25(1):41-50.
8. Mehrdad, R., Dennerlein, J.T., Haghighat, M., Aminian, O. (2010)Association between psychosocial factors and musculoskeletal symptoms among Iranian nurses. Am J Ind Med.,53(10):1032–9.
9. Sikiru, L., Hanifa, S. (2010) Prevalence and risk factors of low back pain among nurses in a typical Nigerian hospital. Afr Health Sci., 10(1):26–30.
10. Woolf, A.D., Pfleger ,B. (2003) Burden of major musculoskeletal conditions. Bull World Health Organ.,81(9):646–56.