



## A Study to Assess The Prevalence and Its Associated Risk Factors for Low Back Pain among Nurses Working in Selected Hospitals at Puducherry

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### ABSTRACT

The main aim was to assess the prevalence and risk factors for low back pain among nurses working in selected hospitals at Puducherry. A cross sectional study design was used to adapt to this study. Totally 230 nurses were selected for the study by using systematic random sampling technique. The study was conducted in selected hospitals at Aarupadai veedu medical college and hospital and A.G. Padmavati hospital puducherry. The data were collected by using self-administered questionnaire regarding personal and occupational risk factors along characteristics of low back pain. The collected data from subjects were compiled and analysis by using descriptive and inferential statistics. Firstly the result of the present study shows that prevalence of low back pain moderately 93.04% (214 nurses) severe level of low back pain 6.52% (15 nurses) and mild level of low back pain 0.43% (1 nurses). Secondly level of risk factors, majority of nurses 46.96% (108 nurses) had low level of risk factors, 31.74% (73 nurses) had moderate level of risk factors and only 21.30% (49 nurses) had high level of risk factors. Hence the mean score of prevalence was  $4.91 \pm 10.08$  with minimum score of 1.0 and maximum score of 8.0 and the mean score of risk factors was  $10.08 \pm 1.61$  with minimum score of 6.0 and maximum score of 15.0. The study was concluded that there was Low back pain is common among nurses and they are at risk for complicated related to low back pain. Periodic screening of nurses for low back pain may help to identify nurses at risk and prevent major physical injury. Regular in service education on body postures, maintenance of physical fitness, and body mechanics may create awareness among nurses to take precautions. Also, good lifestyle practices and food habits are essential to maintain ideal weight which will help in prevention low back pain.

**KEYWORDS:** Low back pain, Prevalence, Risk Factors, Nurses

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### INTRODUCTION

Low back pain or lumbago is a common musculoskeletal disorder affecting 80% of people at some point in their lives. It is a very common human phenomenon which occurs because of trauma, degeneration or any pathology and improper physical activities related to back. It can be either acute, sub-acute or chronic in duration. Low back pain commonly occurs as either in cervical or lumbosacral region. Low back pain results from herniation of the nucleus pulposus in the intervertebral disc. It also occurs due to degeneration of the vertebra, or disc injury from hyperreflexia, herniation or injury results spinal root compression, which leads to following motor and sensory manifestations. Back pain is often difficult to diagnose. This leads to questioning the pain in clients with low back pain. Low back pain is one of the most common complaints necessitating of nurses. It is the most frequent type of musculoskeletal disorders. Approximately more than half of the general population will search for care for low back pain at some point in their lives [1-5].

Nurses carry out a variety of workplace activities that expose them to a variety of factors associated with a greater probability of low back pain development. A variety of workplace and personal factors have been implicated to increase the risk of low back pain among nurses. The reported personal risk factors included age, sex, smoking, obesity and poor health status. On the other hand, the reported workplace factors comprised increased muscular sprains and strains due to intense work activity; prolonged standing, sitting, lifting of heavy objects; and psychosocial stress. Nurses seem to have higher rates of low back pain compared to the general population due to the physical and emotional factors involved in their occupation, such as stress [6-10].

## OBJECTIVES

- 1) To determine the prevalence and associated risk factors for low back pain among nurses working in selected hospitals at Puducherry.
- 2) To find out the association between the risk factors for low back pain with demographic variables among nurses working in selected hospitals at Puducherry.

## ASSUMPTION:

- The nurses have high level of risk factors for low back pain.
- The nurses may have higher rates of low back pain compared to other general population.
- The nurses may have more risk to get low back pain compared to other health care workers.

## DELIMITATIONS:

- This study was delimited to the nurses with low back pain.
- The data collection period was delimited to one week.
- This study was delimited to the nurses those who are available at the time of data collection period.

## MATERIAL AND METHODS

A cross-sectional study design was carried out among the nurses working in selected hospitals at Puducherry. Systematic random sampling technique was used to select the sample. **Inclusion criteria:** Nurses between the age group of 21 to 60 years who could read and write the English, those who have low back pain and those who have given concern for participation were included in the study. **Exclusion criteria:** Nurses those who are not willing to participate, those who are pregnant, who are all underwent spinal cord injury and traumatic injury were excluded.

The instrument used was a self-administered questionnaire which included demographic variables and characteristics of low back pain. The demographic variables are further classified into two categories they are; personal factors and occupational factors. The personal factors which includes age, gender, weight, height, marital status, designation etc. The occupational factors which includes frequent lifting patient, poor body mechanics, frequently carried heavy medical equipment etc. Characteristics of low back pain such as onset, frequency, location, nature, intensity of low back pain etc.

The study was ethically approved by the Institutional Review Committee and Institutional Ethics Committee (Human Studies). The formal written permission was obtained from the Medical Superintendent of the selected hospitals at Puducherry. Informed consent was obtained from the each participant. Participant information sheet contained the details of the study and emphasized voluntary participation. Anonymity and confidentiality of information was obtained. The data analysed by using descriptive and inferential statistics. Descriptive statistics was used to identify the prevalence and risk factors. Inferential statistics was used to find out the association between the risk factors for low back pain and demographic variables [11].

## RESULTS AND DISCUSSION

The findings of the study were;

- The results of the study revealed that, among 230 nurses, 127(55.2%) were aged between >35-50 years, 184(80%) were female, 193(83.9%) were weighing 51 – 100 kg, 138(60%) were in the height range of 151 – 160 cm, 194(84.3%) had a BMI of 18.5-24.9 (Normal), 193(83.9%) were married, 191(83%) were Basic B.Sc Nursing, 123(53.5%) had to children and has bus as mode of transport, 132(57.4%) took 31 – 60 minutes to reach workplace, 200(87%) were staff nurse, 57(24.8%) were working in gynaecology ward, 91(39.6%) had 6 – 10 years of total work experience, 124(53.9%) were working for 41 – 50 hours per week, 178(77.4%) were working in morning shift, 226(98.3%) had no congenital deformity of food and 196(85.2%) were both vegetarian and non-vegetarian.
- The study findings reveals 214(93.04%) of the nurses had moderate level of low back pain, 15(6.52%) of the nurses had high level of low back pain and 1(0.43%) of the nurses had low level of low back pain. The level of risk factors of low back pain among nurses majority 108(46.96%) of nurses had mild level of risk factors of low back pain, 73(31.74%) of nurses had moderate level of risk factors and 49(21.30%) of nurses had high level of risk factors.
- The demographic variables total number of children ( $\chi^2=17.319$ ,  $p=0.027$ ) and total working hours per work ( $\chi^2=15.193$ ,  $p=0.004$ ) had shown statistically significant association with level of risk factors of low back pain among nurses at  $p<0.05$  and  $p<0.01$  level respectively and the other demographic variables had not shown statistically significant association with level of risk factors of low back pain among nurses.
- The study concludes that, majority of nurses had moderate level of low back pain and only 21% (49 nurses) had the high level of risk factors.

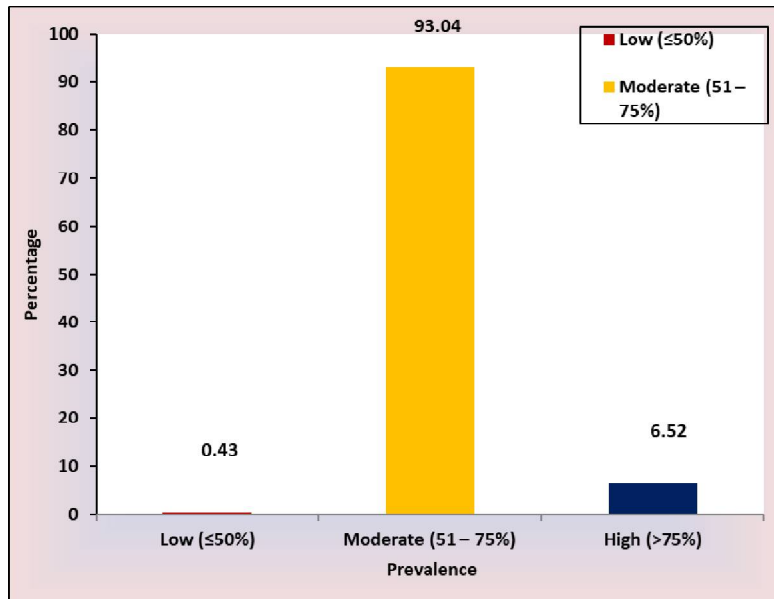


Fig 1. Percentage distribution of prevalence of low back pain among nurses

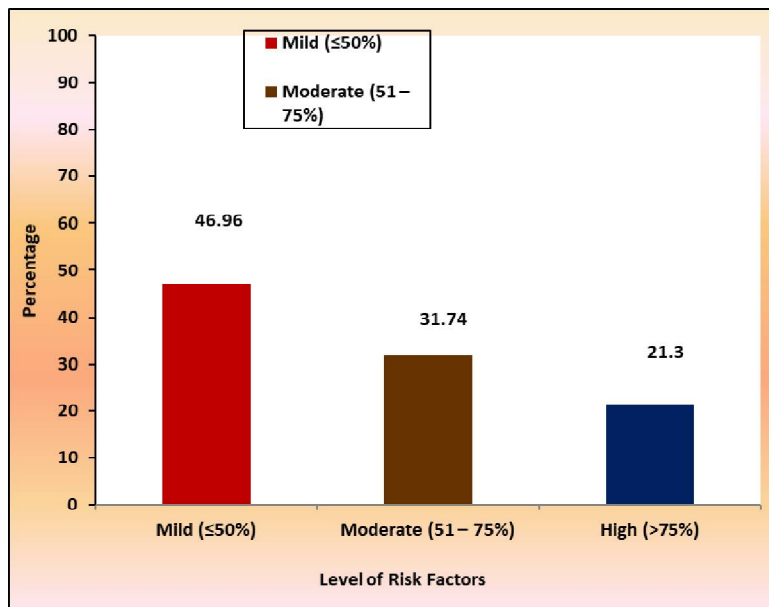


Fig 2. Percentage distribution of level of risk factors of low back pain among nurses

Table 1. Assessment of prevalence and risk factors of low back pain among nurses. (N = 230)

Variables	Prevalence	Risk Factors
Minimum Score	1.0	6.0
Maximum Score	8.0	15.0
Mean	4.91	10.08
S.D	1.82	1.61

The table portrays that the mean score of prevalence was  $4.91 \pm 1.82$  with minimum score of 1.0 and maximum score of 8.0

The mean score of risk factors was  $10.08 \pm 1.61$  with minimum score of 6.0 and maximum score of 15.0

Table 2. Association of level of risk factors of low back pain among nurses with their selected demographic variables (N = 230)

Demographic Variables	Mild		Moderate		High		Chi-Square Value
	No.	%	No.	%	No.	%	
<b>Age</b>							$\chi^2=6.644$ d.f=4 p = 0.156 N.S
21 - 35 years	44	19.1	24	10.4	19	8.3	
>35 - 50 years	61	26.5	40	17.4	26	11.3	
>50 - 60 years	3	1.3	9	3.9	4	1.7	
<b>Gender</b>							$\chi^2=3.581$ d.f=2 p = 0.467 N.S
Male	27	11.7	10	4.3	9	3.9	
Female	81	35.2	63	27.4	40	17.4	
<b>Weight (in kg)</b>							$\chi^2=3.410$ d.f=4 p = 0.492 N.S
<50	14	6.1	10	4.3	2	0.9	
51 - 100	89	38.7	60	26.1	44	19.1	
>100	5	2.2	3	1.3	3	1.3	
<b>Height (in cm)</b>							$\chi^2=2.215$ d.f=6 p = 0.899 N.S
141 - 150	22	9.6	12	5.2	7	3.0	
151 - 160	65	28.3	42	18.3	31	13.5	
161 - 170	18	7.8	17	7.4	9	3.9	
171 - 180	3	1.3	2	0.9	2	0.9	
<b>BMI (Kg/m<sup>2</sup>)</b>							$\chi^2=1.913$ d.f=4 p = 0.752 N.S
Less than 18.5 (Underweight)	5	2.2	6	2.6	5	2.2	
18.5 - 24.9 (Normal)	93	40.4	61	26.5	40	17.4	
25 - 29.9 (Overweight)	10	4.3	6	2.6	4	1.7	
<b>Marital status</b>							$\chi^2=8.151$ d.f=4 p = 0.086 N.S
Married	91	39.6	64	27.8	38	16.5	
Unmarried	16	7.0	6	2.6	11	4.8	
Divorced	-	-	-	-	-	-	
Widow/Widower	1	0.4	3	1.3	0	0	
Separated	-	-	-	-	-	-	
<b>Educational qualification</b>							$\chi^2=2.648$ d.f=6 p = 0.852 N.S
Basic B.Sc. Nursing	88	38.3	62	27.0	41	17.8	
Post Basic Nursing	17	7.4	11	4.8	7	3.0	
M.Sc. Nursing / M.Phil	2	0.9	0	0	1	0.4	
Ph.D Nursing	1	0.4	0	0	0	0	
<b>Total number of children</b>							$\chi^2=17.319$ d.f=8 p = 0.027 S*
Not applicable	17	7.4	7	3.0	11	4.8	
None	4	1.7	1	0.4	1	0.4	
One	16	7.0	12	5.2	16	7.0	
Two	61	26.5	42	18.3	20	8.7	
Three	10	4.3	11	4.8	1	0.4	
<b>Mode of transport (most of the time)</b>							$\chi^2=10.146$ d.f=6 p = 0.119 N.S
Car	14	6.1	6	2.6	3	1.3	
Two Wheeler	46	20.0	20	8.7	14	6.1	
Bus	47	20.4	45	19.6	31	13.5	

Demographic Variables	Mild		Moderate		High		Chi-Square Value
	No.	%	No.	%	No.	%	
By foot	1	0.4	2	0.9	1	0.4	
<b>Duration of travel to reach workplace (in minute)</b>							$\chi^2=0.376$ d.f=2 p = 0.829 N.S
<30	47	20.4	32	13.9	19	8.3	
31 – 60	61	26.5	41	17.8	30	13.0	
<b>Designation</b>							$\chi^2=4.273$ d.f=4 p = 0.370 N.S
Staff nurse	92	40.0	62	27.0	46	20.0	
Charge nurse	8	3.5	8	3.5	2	0.9	
Head nurse	8	3.5	3	1.3	1	0.4	
<b>Place of work</b>							$\chi^2=4.344$ d.f=10 p = 0.930 N.S
General medicine ward	22	9.6	14	6.1	8	3.5	
General surgical ward	24	10.4	16	7.0	12	5.2	
Paediatric ward	17	7.4	10	4.3	7	3.0	
Gynaecology ward	23	10.0	23	10.0	11	4.8	
Outpatient department	14	6.1	7	3.0	8	3.5	
Accident and emergency	8	3.5	3	1.3	3	1.3	
Operating room	-	-	-	-	-	-	
<b>Total work experience (in years)</b>							$\chi^2=12.286$ d.f=8 p = 0.139 N.S
<1 year	7	3.0	2	0.9	0	0	
1 – 5 years	23	10.0	18	7.8	20	8.7	
6 – 10 years	44	19.1	27	11.7	20	8.7	
11 – 20 years	29	12.6	22	9.6	8	3.5	
21 – 40 years	5	2.2	4	1.7	1	0.4	
<b>Total working hours per week</b>							$\chi^2=15.193$ d.f=4 p = 0.004 S**
31 – 40	17	7.4	28	12.2	19	8.3	
41 – 50	69	30.0	34	14.8	21	9.1	
51 – 60	22	9.6	11	4.8	9	3.9	
<b>Mostly on which shift</b>							$\chi^2=3.525$ d.f=4 p = 0.474 N.S
Morning	89	38.7	52	22.6	37	16.1	
Evening	13	5.7	14	6.1	9	3.9	
Night	6	2.6	7	3.0	3	1.3	
<b>Any Congenital Deformity of foot?</b>							$\chi^2=2.050$ d.f=2 p = 0.359 N.S
Yes	1	0.4	1	0.4	2	0.9	
No	107	46.5	72	31.3	47	20.4	
<b>Dietary pattern</b>							$\chi^2=6.002$ d.f=4 p = 0.199 N.S
Vegetarian	1	0.4	0	0	2	0.9	
Non-vegetarian	18	7.8	7	3.0	6	2.6	
Both	89	38.7	66	28.7	41	17.8	

\*\*p<0.01, \*p<0.05, S – Significant, N.S – Not Significant

The table shows that the demographic variable total number of children ( $\chi^2=17.319$ ,  $p=0.027$ ) and total working hours per work ( $\chi^2=15.193$ ,  $p=0.004$ ) had shown statistically significant association with level of risk factors of low back pain among nurses at  $p<0.05$  and  $p<0.01$  level respectively and the other demographic variables had not shown statistically significant association with level of risk factors of low back pain among nurses.

### **NURSING IMPLICATIONS**

The finding of the study has implication in the field of nursing practice, nursing education, nursing administration and nursing research by identifying the prevalence and its associated risk factors and association between the risk factors for low back pain and demographic variables among nurses.

### **NURSING PRACTICE**

The study findings help the nurses to practice in clinical areas to provide health education and take part in health promotion programs. Nursing personnel can be planned to conduct in-service education program regarding the prevention from low back pain will help the nursing personnel to know the prevalence and its risk factors of low back pain among nurses, and know about the prevent from low back pain and helps to improve the knowledge and good body mechanics.

### **NURSING EDUCATION**

Nursing curriculum should stress on the health education by nurses regarding low back pain among nurses. Nursing education needs to be strengthened to enable nursing student to know about current knowledge of low back pain. Conference, workshop, seminar and symposium can be conducted regarding the prevalence and its associated risk factors for low back pain among nurses and prevent from the low back pain among nursing student.

### **NURSING ADMINISTRATION**

The study helps the nurse administrator to organize in-service education program among nurses to update the knowledge regarding on occurrence and prevention of low back pain. Nursing administration should promote necessary of activities and opportunities for nursing staff to overcome their risk factors.

### **NURSING RESEARCH**

The modern world is given prime importance for evidence based practice, so nurse researchers should extent their focus on the prevalence and its associated risk factors among nurses.

### **RECOMMENDATION**

Based on the findings the following recommendation has been made for further study.

- The study can be done on large sample size to generalize the assess the prevalence and its associated risk factors for low back pain.
- The same study can be conducted among other health care professionals like doctors, lab technicians, etc.
- A comparative study can be conducted with private and government hospitals nurses.
- Comparative study can be conducted with the nurses working in urban and rural hospitals.
- Comparative study can be done with male and female nurses separately.

### **CONCLUSION**

The study findings reveal that, Low back pain is common among nurses and they are at risk for complicated related to low back pain. Periodic screening of nurses for low back pain may help to identify nurses at risk and prevent major physical injury. Regular in service education on body postures, maintenance of physical fitness and body mechanics may create awareness among nurses to take precautions. Also, good lifestyle practices and food habits are essential to maintain ideal weight which will help in prevention low back pain. The study findings also reveals that majority of the nurses had moderate level of low back pain(93.04%) and the majority of the nurses (46.96%) had mild level of risk factors of low back pain. Totally 73 (31.74%) of nurses had moderate level of LBP and 49(21.30%) of nurses had high level of risk factors from 230 samples.

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