

Presence of Musculoskeletal Disorders and Assess the Knowledge and Functional Disability among Nurses with Low Back Pain in A Tertiary Care Hospital

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Received: 25-12-2023 / Revised: 23-01-2024 / Accepted: 26-02-2024

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Conflict of interest: Nil

Abstract:

Musculoskeletal diseases (MSDs) are injuries to the muscles, nerves, tendons, joints, cartilage, and spinal discs. The current study sought to analyze the presence of musculoskeletal problems among nurses, as well as their knowledge of low back pain and functional impairment, and to link the knowledge and functional disability to chosen background characteristics. A descriptive cross-sectional research was conducted, with 260 nurses from Sri Ramachandra Hospital in Chennai being polled, and 242 responding. Online survey method was adopted for collecting background data and presence for musculoskeletal disorders from the participants through google forms. The data collection tool consisted of background data, Nordic musculoskeletal Questionnaire. Among 236 nurses, 181, 76.6% were affected with low back pain, among the low back pain nurses 61.8% were reported as 12-month prevalence of low back pain, 48.3% were avoided their routine house hold works, 25.4% were took medical treatment, 61.8% were had trouble in the last 7 days and about 14.8% were had the trouble in last 7 days alone. There was no correlation identified between knowledge and functional impairment and the other characteristics studied. The study's findings revealed that low back pain was the most common musculoskeletal ailment among nurses. The majority of the nurses had good understanding of low back pain, and modest disability had experience with low back pain. Regular in-service educational programmes on ergonomics practice may help in improvement of knowledge and prevention of disability in their routine professional activities and thereby improves the quality of life, which reflects in quality care.

Keywords: Musculoskeletal disorder, Low back pain, knowledge on low back pain, functional disability.

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Introduction

Musculoskeletal diseases (MSD) relate to injuries or ailments that affect the muscles, nerves, tendons, joints, cartilage, and spinal discs.

Musculoskeletal diseases associated to the workplace that are caused by factors such as job performance and surroundings, or that worsen or prolong a condition that already exists, are known as work-related musculoskeletal disorders (WRMSD).

It is well known that working in nursing is physically taxing and that there is a constant danger of WRMSD. Personnel working in the nursing sector are particularly vulnerable to WMSDs. Unusual work posture and an excessive workload was the risk factors for WMSDs.

Background of the study: It is been referred to as "an epidemic in nursing" that nurses most frequently suffer from musculoskeletal diseases with low back pain, and that they are more likely to do so than other healthcare professionals and the general public.

Among the nursing category, low back pain (LBP) is regarded as one of the most prevalent health issues and a significant contributor to incapacity. The overall population's prevalence of LBP varies from 15% to 45% worldwide. According to statistics, the overall incidence of LBP in Saudi Arabia (SA) is 18.8%, while work-related disorders and injuries are more frequent in healthcare settings than in the general population. 85.7% of nurses in England, 62% in Italy, 80.9% in Hong Kong,

63.6% in Africa, and 54.3% in Qatar have been documented to have LBP. Among healthcare workers, LBP is a serious problem, especially for nurses [1]. 1.2 million strong military troops are cared for by the majority of the 1.5 million registered nurses working in India's healthcare system. India's nurses had a high rate of MSD, with the lowest percentage of musculoskeletal discomfort reported in the low back (67.0%) [2].

According to a Nigerian study, the 12-month prevalence of LBP was higher among nurses and was more prevalent in women (68%) than males (32%). 77.33% of nurses with LBP had never heard of back care ergonomics, compared to 74% of nurses without LBP who had. Nurses who are knowledgeable of back care ergonomics had a significantly lower incidence of low back pain ($P < 0.05$). Additionally, it was shown that the primary risk factor for low back pain is inadequate back care ergonomics [3].

In Karnataka, 73.8% of nurses reported having low back pain, and 83.3% of them had minimal disability. They also reported that standing for extended periods of time, lifting patients, moving trolleys, spending a lot of time in high-elevated chairs for file work, and bending or twisting are the activities that cause LBP [4].

Due in large part to the nature of their profession and working hours, nurses were involved in patient management, which contributed to the development of LBP. The lower back injuries caused by prolonged exposure to high-intensity labor, such as moving large objects. Nurses' manual handling practices play a significant role in the development of LBP. In addition to lifting patients, nurses frequently handle patients by bending at the waist and keeping an awkward posture while they face the other side of the bed or chair. Back discomfort is more likely to occur in this position [5].

Health care professionals, particularly professional nurses, are frequently affected by work-related musculoskeletal diseases (WMSDs), which can result in long-term medical care requirements, permanent disability, and lost work hours. Nurses make up around 33% of hospital personnel and are a high-risk category, accounting for 60% of all reported occupational injuries. Each year, an estimated 12% of nurses leave their positions, with 52% citing significant lower back pain [6]. The primary reason for the decline in working

efficiency is thought to be the yearly incidence of WMSDs, which can reach 50% in nurses and have a lifetime prevalence of 35–80%. It has been suggested that WMSDs affect nurses' quality of life and are the leading cause of absenteeism among nursing workers [7].

Employers bear significant expenditures from musculoskeletal problems due to worker's compensation, higher health care, disability, and absenteeism, as well as decreased productivity. Compared to the typical nonfatal injury or sickness, MSD instances are more severe. In the US, musculoskeletal diseases are responsible for around 70 million doctor visits each year, as well as an estimated 130 million trips to hospitals, emergency rooms, and outpatient clinics. According to the Institute of Medicine, the yearly economic cost of WMSDs is estimated to be between \$45 and \$54 billion, taking into account missed earnings, productivity, and compensation expenditures [8].

Aim:

To detect the existence of musculoskeletal problems and measure knowledge and functional impairment among nurses experiencing low back pain in a tertiary care facility.

Objectives:

The research aims to

1. Investigate the prevalence of musculoskeletal illnesses among nurses.
2. Assess nurses' understanding of low back pain.
3. Evaluate functional impairment among nurses with low back pain.
4. Link knowledge and functional impairment with specific background characteristics.

Methodology: This chapter describes the methodology that was followed to determine the presence of musculoskeletal disorder and assessment of knowledge and functional disability among nurses experiencing low back pain in a tertiary care hospital.

Research approach: The quantitative research technique was best suited for achieving the study's aims.

Research design: This study was conducted using a descriptive cross-sectional approach, as shown in Figure 1.

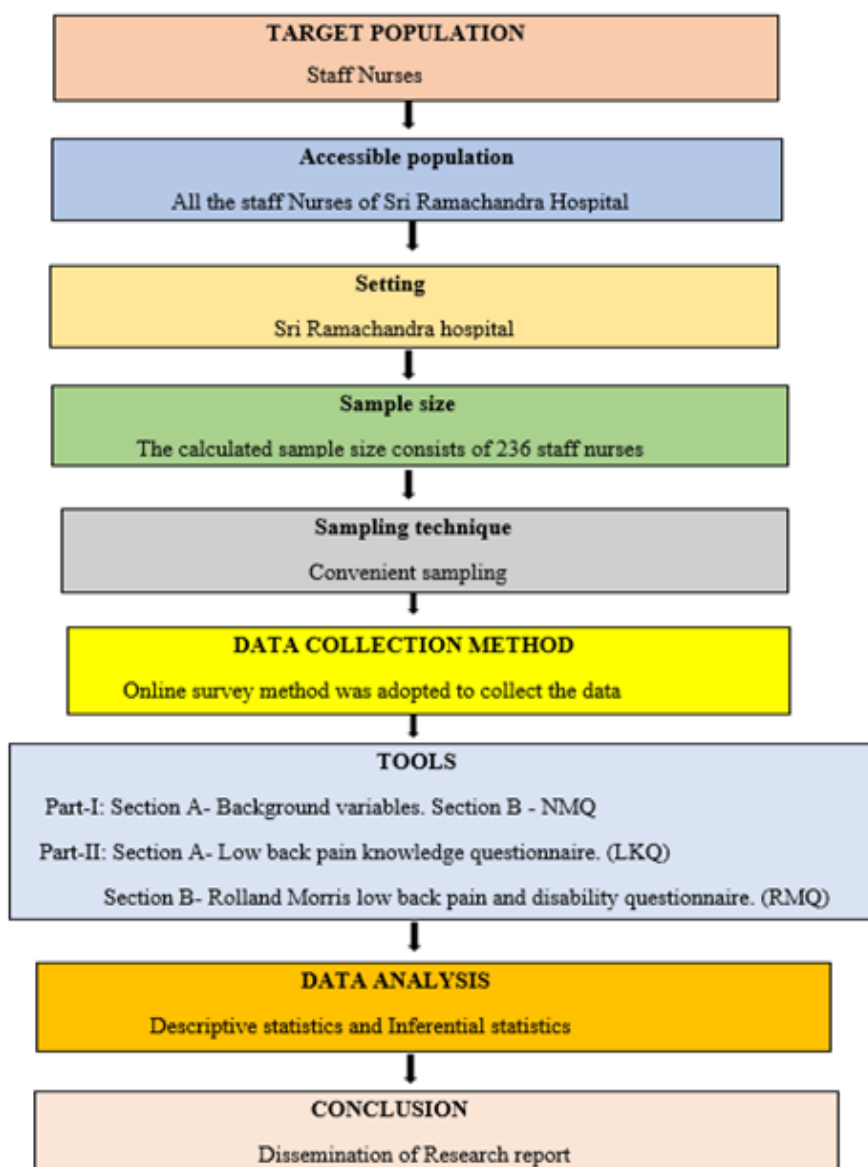


Figure 1: Schematic representation of research design

Variables: Low back pain, knowledge and functional disability were the variables assessed during the study.

Setting of the study: The study was conducted at Sri Ramachandra Hospital. It is a Multi-specialty hospital with total of 1220 beds and more than 500 nurses were working in various departments. The ethical committee reference no of SRIHER. REF: CSP/21/JAN/89/70.

Population:

Target population: Staff nurses.

Accessible population: All the staff nurses working in Sri Ramachandra Hospital.

Sample: Staff nurses with low back pain.

Sample size: Sample size was 236 and was calculated based on the literature⁹. It has a

prevalence rate of 89%, with the power of alpha error 4%.

Inclusion criteria: Nurses included were, those who were

- Registered nurse
- Age group from 23 -60 years.
- Working experience more than six months.
- Working in the in-patient department.
- Willingness to participate in the study.

Exclusion Criteria: Nurses excluded were, those who were

- on long leave
- pregnant

Results:

Section A: Majority of the nurses 122 (51.7%) belonged to the age group of 23-30 years, majority

213 (90.3%) of the participants were females and only 23 (9.7%) were male. 130 (55.1%) nurses hold the baccalaureate degree in nursing (B. Sc Nursing) and majority 158 (66.9%) of them were staff nurses and 11% of them were ward In charges. With regard to the years of experience, 99 (41.9%) of them had 1-5 years of experience, whereas 84 (36.4%) had 6 to 10 years of experience and most of them 75 (31.8%) had experience in the medical wards. Related to mode of travel, majority 90 (38.3%) of the nurses were travelling by walk and 71(30.2%) of them were travelling by two-wheeler daily. With regard to the duration of travelling time, 213 (90.7%) nurses travelled less than one hour, whereas 23 (9.3%) of them were more than one hour per day. With regard to BMI majority 132 (55.9%) of

the nurses were overweight, the mean weight (kgs) was 60.8 ± 8.8 and the mean height (cm) of the participants was 151.8 ± 6.8 only 27(11.5%) of them had co-morbid illness such as PCOD, thyroid problem. Around 64 (27.1%) had previous surgical history whereas majority 172 (72.9%) of them had no such events. Table 1, Figure 2 revealed that majority (76.6%) of the nurses had low back pain and (73.7%) of them had problems related to knee joint. Around (72.4%) of the nurses had problems related to ankles or feet, (69%) of them had upper back pain, (64.8%) of them had shoulder related problem. About (73.7%) of the nurses had skeletal problem related to hip joint and thighs and (60.2%) of them had neck pain, whereas the problems related to elbows, hands and wrist were less than (18%).

Table 1: The prevalence and percentage distribution of musculoskeletal problems among nurses (N=236)

Body region (anatomical parts)	Yes		No	
	(n)	%	(n)	%
Neck	142	60.2	94	39.8
Shoulders	153	64.8	83	35.2
Upper Back	163	69.1	73	30.9
Elbows	42	17.7	194	82.2
Wrist/Hands	43	18.2	193	81.8
Lower Back	181	76.6	55	23.3
Hip/Thigs	159	67.3	77	32.6
Knees	174	73.7	62	26.3
Ankles/Feet	171	72.5	65	27.54

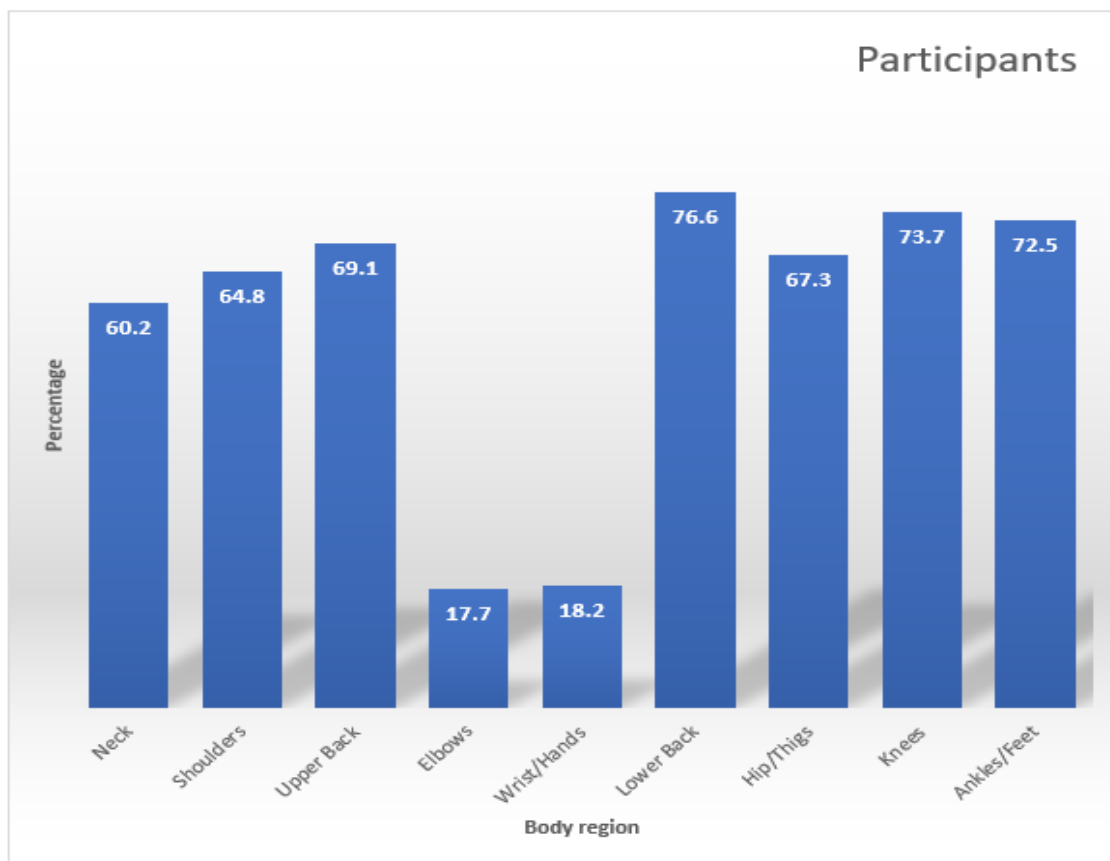


Figure 2: Percentage distribution of presence of musculoskeletal disorders among nurses

Table 1, Figure 2 depicted that out of 236 participants 146 (61.8%) of them had low back pain and reported as discomfort at the lower back for about 12-months. Around 114 (48.3%) of the participants were not able to perform their routine house hold work due to their low back pain. About 60 (25.4%) were on medical treatment and

absented for their work for some period of time approximately 2-3 days per month due to back pain. Nearly 146 (61.8%) of the nurses experienced the low back pain previously and only 35 (14.8%) of the nurses had pain in the lower back for the last 7 days.

Table 2: The prevalence and percentage distribution of low back pain among nurses (N=236)

S. No	Low Back Pain	Yes		No	
		(n)	%	(n)	%
1.	Have you at any time during the last 12 months had trouble (such as ache, pain, discomfort, numbness etc)	146	61.8	90	38.1
2.	During the last 12 months have you been prevented from carrying out normal activities (eg. Job, household, hobbies because of this trouble)	114	48.3	122	51.6
3.	During the last 12 months have you seen a physician for this condition	60	25.4	176	74.5
4.	During the last 7 days have you had a trouble in low back	146	61.8	90	38.1
5.	During the last 7 days had trouble in low back and never had before and after	35	14.8	201	85.1

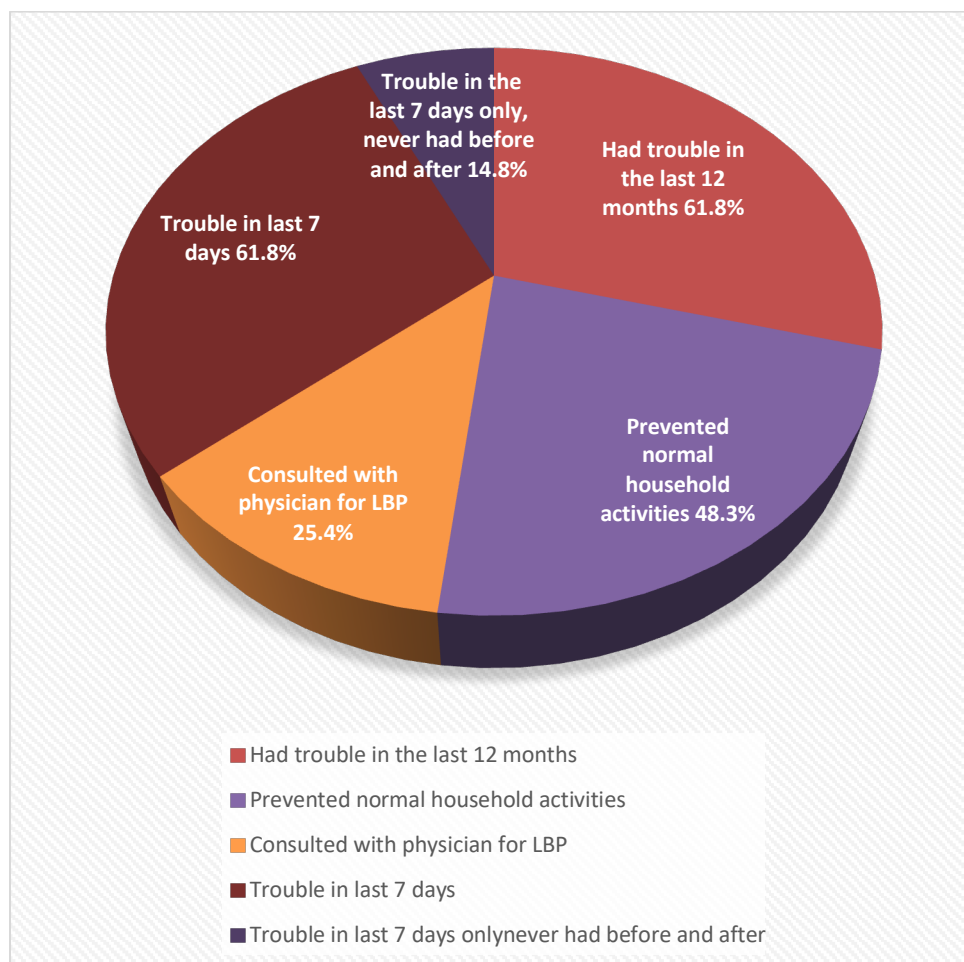


Figure 3: Percentage distribution of presence of low back pain among nurses (N=236)

Table 2, figure 3 depicted that out of 236 participants 146 (61.8%) of them had low back pain and reported as discomfort at the lower back for about 12-months. Around 114 (48.3%) of the participants were not able to perform their routine house hold work due to their low back pain. About 60 (25.4%) were on medical treatment and

absented for their work for some period of time approximately 2-3 days per month due to back pain. Nearly 146 (61.8%) of the nurses experienced the low back pain previously and only 35 (14.8%) of the nurses had pain in the lower back for the last 7 days.

Section B: The frequency and percentage distribution of knowledge about low back pain among nurses suffering from low back pain.

Figure 4, revealed that majority 84 (57.5%) of the nurses had adequate knowledge on low back pain,

around 53 (39.7%) of the them had poor knowledge on low back pain, about 4 (2.7%) of them had good knowledge on low back pain, and none (0%) of them had excellent knowledge on low back pain.

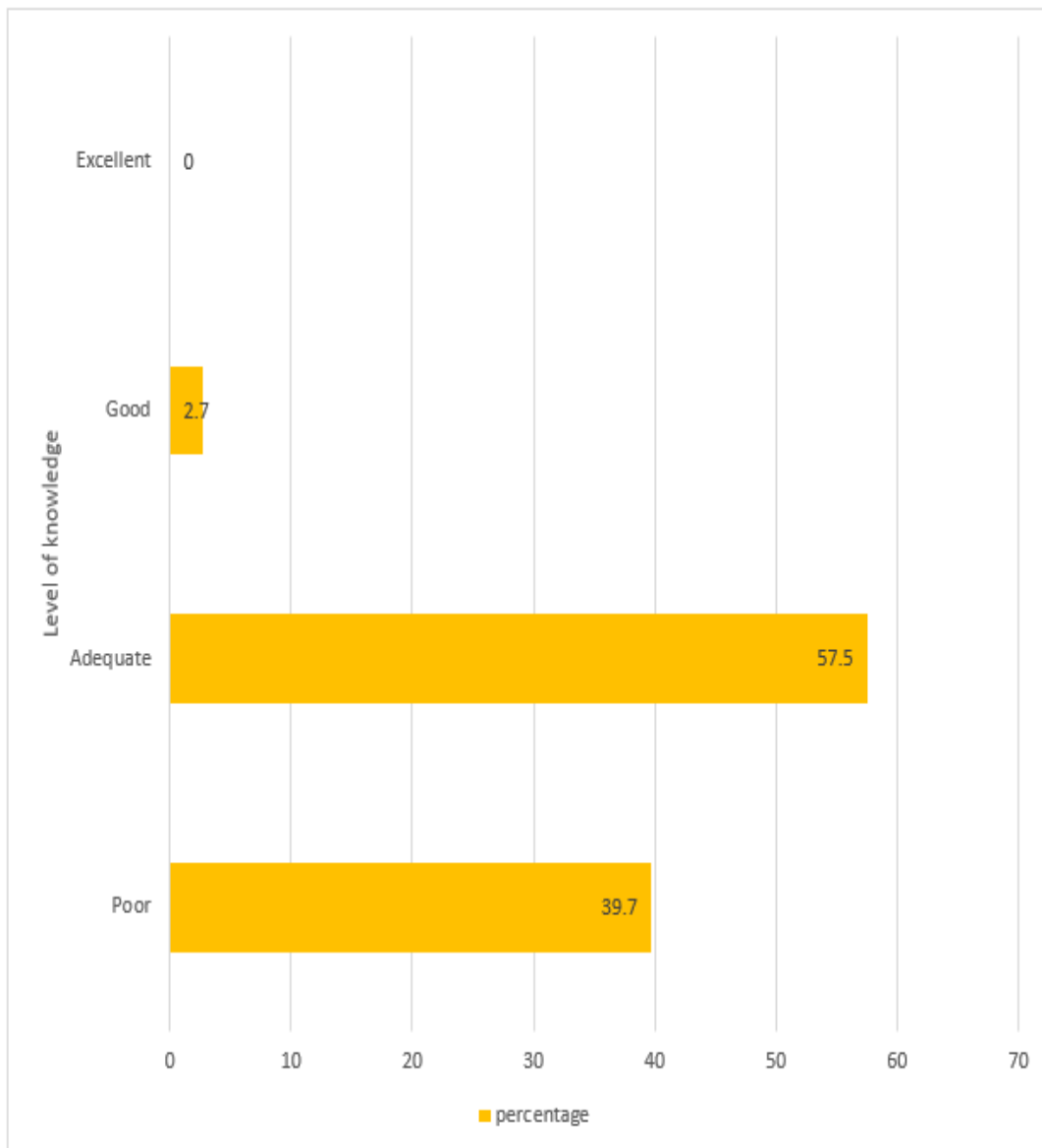


Figure 4: Percentage distribution of level of knowledge on low back pain among nurses (N=146)

Table 3: Frequency and percentage distribution of functional disability among nurses experiencing low back pain (n=146)

Functional disability	(n)	(%)
No disability	0	0
Low disability	56	38.4
Mild disability	72	49.3
Moderate disability	18	12.3
Severe disability	0	0

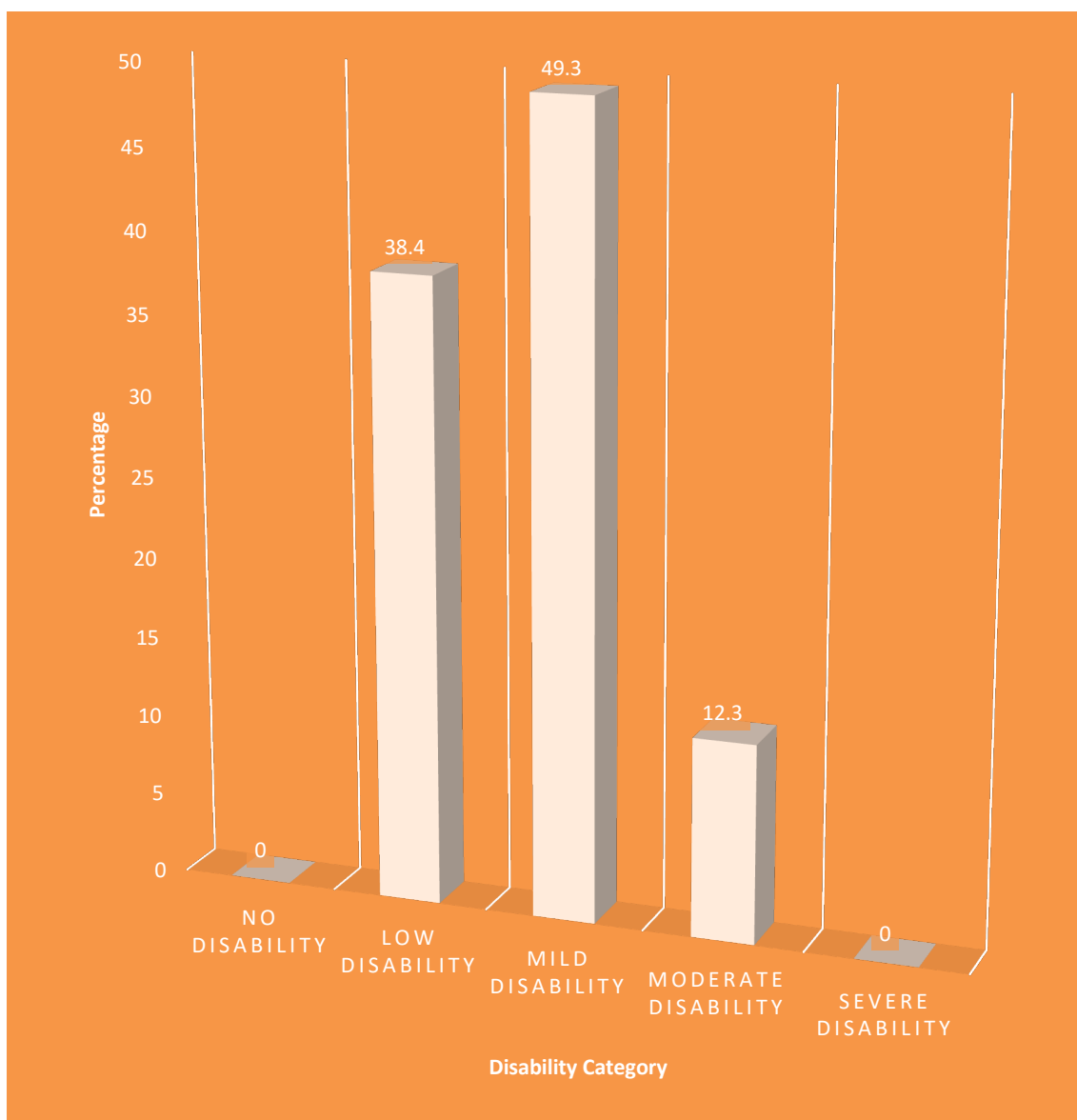


Figure 5: Percentage distribution of functional disability among nurses. (N=146)

Table 3, figure 5 depicts that majority 72 (49.3%) of the nurses had mild functional disability, around 18 (12.3%) of the nurses had moderate functional disability and about 56 (38.4%) of them had no functional disability and none (0%) of them had severe functional disability.

Table 4: Association of knowledge on low back pain among nurses experiencing low back pain

Background variables	Knowledge						Chi-square test (χ^2) p value
	Poor		Adequate		Good		
	n	%	n	%	n	%	
Age in years							$\chi^2=37.12$ p=0.001 (S)
23-30	23	39.7	28	33.3	1	25.0	
31-40	30	51.7	45	53.6	2	50.0	
41-50	5	8.6	11	13.1	0	0.0	
051-55	0	0.0	0	0.0	1	25.0	
Gender							$\chi^2=0.43$ p=0.80(NS)
Male	4	6.9	7	8.3	0	0.0	
Female	54	93.1	77	91.7	4	100.0	
Education							$\chi^2=3.25$ p=0.51(NS)
DGNM	15	25.9	29	34.5	2	50.0	
B.Sc. (N)	33	56.9	37	44.0	37	44.0	
P.B. B.Sc. (N)	10	17.2	18	21.4	1	25.0	

Designation							$\chi^2=5.74$ $p=0.4145(NS)$
Staff Nurse	34	58.6	44	52.4	2	50.0	
Shift-In charge	13	22.4	24	28.6	0	0.0	
Ward-In charge	9	15.5	12	14.3	1	25.0	
Nursing Supervisor	2	3.4	4	4.8	1	25.0	
Years of Experience							$\chi^2=5.79$ $p=0.44(NS)$
1-5	14	24.1	20	23.8	2	66.7	
6-10	27	46.6	38	45.2	0	0.0	
11-20	17	29.3	23	27.4	1	33.3	
>20	0	0.0	3	3.6	0	0.0	
Area of experience							$\chi^2=32.05$ $p=0.004(S)$
Medical Ward	23	39.7	25	29.8	2	50.0	
Surgical ward	2	3.4	22	26.2	0	0.0	
ICU	11	19.0	11	13.1	0	0.0	
OBG ward	1	1.7	3	3.6	0	0.0	
Operation room/Theatre	19	32.8	17	20.2	0	0.0	
Oncology ward	0	0.0	1	1.2	0	0.0	
Paediatric ward	1	1.7	1	1.2	0	0.0	
Others	1	1.7	3	3.6	1	25.0	
BMI (Kg/m²)							$\chi^2=7.25$ $p=0.29(NS)$
Underweight	4	6.9	2	2.4	0	0.0	
Normal	14	24.1	29	34.9	1	25.0	
Overweight	35	60.3	38	45.8	3	75.0	
Obese	5	8.6	14	16.9	0	0.0	
Mode of travel							$\chi^2=7.02$ $p=0.13(NS)$
Two-wheeler	17	29.3	34	40.5	1	25.0	
Bus	25	43.1	29	34.5	0	0.0	
By walk	16	27.6	21	25.0	3	75.0	
Duration of travelling time							$\chi^2=1.21$ $p=0.54(NS)$
< 1 hour	5	8.6	11	13.1	0	0.0	
≥1 hour	53	91.4	73	86.9	4	100.0	
Co-morbid illness							$\chi^2=5.86$ $p=0.04(S)$
Yes	3	5.3	16	19.0	1	25.0	
No	54	94.7	68	81.0	3	75.0	
Previous surgical history							$\chi^2=0.34$ $p=0.84(NS)$
Yes	23	39.7	31	36.9	2	50.0	
No	35	60.3	53	63.1	2	50.0	

Table 4 shows the association between knowledge with background variables among nurses. It revealed that age, area of experience and co-morbid illness were significantly associated with knowledge $p=0.001$, $p=0.004$ and $p=0.04$ ($P<0.05$) respectively and there was no statistically significant association found between knowledge with other background variables.

Table 5: Association of functional disability among nurses with low back pain (N=146)

Background variables	Functional Disability						Chi-square test (χ^2) p value
	Low		Mild		Moderate		
	n	%	n	%	n	%	
Age in years							$\chi^2=17.07$ $p=0.009 (S)$
23-30	27	48.2	20	27.8	5	27.8	
31-40	23	41.1	46	63.9	8	44.4	
41-50	6	10.7	6	8.3	4	22.2	
051-55	0	0.0	0	0.0	1	5.6	
Gender							$\chi^2=1.68$ $p=0.43(NS)$
Male	5	8.9	6	8.3	0	0.0	
Female	51	91.1	66	91.7	18	100.0	
Education							$\chi^2=6.18$ $p=0.18(NS)$
DGNM	16	28.6	24	33.3	6	33.3	
B.Sc. (N)	31	55.3	35	48.6	5	27.8	

P.B. B.Sc. (N)	9	16.1	13	18.1	7	38.9	
Designation							$\chi^2=7.68$
Staff Nurse	33	58.9	42	58.3	5	27.8	$p=0.26(NS)$
Shift-In charge	13	23.2	18	25.0	6	33.3	
Ward-In charge	7	12.5	10	13.9	5	27.8	
Nursing Supervisor	3	5.4	2	2.8	2	11.1	
Years of Experience							$\chi^2=8.45$
1-5	20	35.7	14	19.4	2	11.8	$p=0.20(NS)$
6-10	22	39.3	36	50.0	7	41.2	
11-20	13	23.2	21	29.2	7	41.2	
>20	1	1.8	1	1.4	1	5.9	
Area of experience							$\chi^2=15.30$
Medical Ward	19	33.9	23	31.9	8	44.4	$p=0.35(NS)$
Surgical ward	12	21.4	12	16.7	0	0.0	
ICU	7	12.5	12	16.7	3	16.7	
Obstetrics and gynaecology ward	1	1.8	1	1.4	2	11.1	
Operation room/Theatre	11	19.6	21	29.2	4	22.2	
Oncology ward	1	1.8	0	0.0	0	0.0	
Paediatric ward	2	3.6	2	2.8	0	0.0	
Others	3	5.4	1	1.4	1	5.6	
BMI (Kg/m²)							
Underweight	3	5.4	3	4.2	0	0.0	
Normal	16	28.6	22	31.0	6	30.0	$\chi^2=2.26$
Overweight	29	51.8	36	50.7	11	61.1	$p=0.89(NS)$
Obese	8	14.3	10	14.1	1	5.6	
Mode of travel							
Two-wheeler	21	37.5	26	36.1	5	27.8	$\chi^2=1.74$
Bus	18	32.1	29	40.3	7	38.9	$p=0.78(NS)$
By walk	17	30.4	17	23.6	6	33.3	
Duration of travelling time							
< 1 year	8	14.3	7	9.7	1	5.6	$\chi^2=1.28$
≥1 year	48	85.7	65	90.3	17	94.4	$p=0.52(NS)$
Co-morbid illness							
Yes	11	19.6	8	11.3	1	5.6	$\chi^2=3.02$
No	45	80.4	63	88.7	17	94.4	$p=0.22(NS)$
Previous surgical history							
Yes	15	26.8	34	47.2	7	38.9	$\chi^2=5.56$
No	41	73.2	38	52.8	11	61.1	$p=0.06(NS)$

Table 5 shows that there was no statistically significant association found between functional disability with background variables except for age in years $p=0.009$ ($p<0.05$).

Discussion

The study aims to identify musculoskeletal illnesses and measure knowledge and functional impairment among nurses experiencing low back pain in a tertiary care hospital. The descriptive cross-sectional study design was used for this investigation. The study was done on staff nurses at Sri Ramachandra Hospital. The samples were 236 and selected by using convenient sampling method that satisfied the inclusion criteria. The conceptual

framework of this research was based on Health Promotion Model developed [10]. The tool consisted of two Parts, under Part- I: Section A- Background variables, Section B- Nordic musculoskeletal questionnaire developed [11, 12] and Part-II: Section A- Low back pain knowledge questionnaire developed [13]. Section B- Rolland-Morris low back pain and disability questionnaire developed [14]. Pilot study was done to confirm the feasibility. The data were analyzed using descriptive statistics (frequency, percentage, mean, and standard deviation) as well as inferential statistics (chi-square).

The Significant Findings of the Study were

1. Majority 57.5% of the participants had adequate knowledge on low back pain, around 39.7% of the participants had poor knowledge on low back pain, about 2.7% of them had good knowledge on low back pain and none (0%) of them had excellent knowledge on low back pain.
2. Majority 49.3% of the participants had mild functional disability, around 12.3% of the participants had moderate functional disability, about 38.4% of them had low functional disability and none 0% of them had severe and no functional disability.
3. Nurses' awareness of low back pain was substantially linked with their age ($p=0.001$; $p<0.05$).
4. Nurses' expertise of low back pain was substantially related to their field of experience ($p=0.004$; $p<0.05$).
5. Co-morbid illness was also significantly associated with the knowledge on low back pain among nurses $p=0.04$ ($p<0.05$) respectively.
6. The age was the only background variable significantly associated with functional disability $p=0.009$ ($p<0.05$) among nurses.

Conclusion

The knowledge on ergonomic practice and health promotion needs to be integrated with the professional practice for nurses. The current study found that the presence of musculoskeletal disorders among nurses is significant, particularly among nurses with low back pain.

The findings of this study can be used as a guide for nursing administration managers and decision-makers to reduce musculoskeletal discomfort among nurses by implementing regular in-service education on body postures, physical fitness maintenance, and body mechanics, resulting in higher quality nursing care.

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