Prevalence of Low Back Pain and its Effects among Nurses Working in Saudi Arabia: A Cross-Sectional Study

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ABSTRACT

Background: Lower back pain (LBP) is frequently seen among nurses and is frequently linked to their jobs. Above the gluteal fold and behind the 12th rib is where LBP appears. The primary physical activity that is linked to back issues in nurses is lifting and transferring patients. **Aim of the study:** This study done to determine the prevalence of low back pain and its effects on nurses who were working in Saudi Arabia. **Subjects and methods: Research design:** cross-sectional study design was used. **Setting:** This study was conducted at Buraydah central hospital in Saudi Arabia. **Subjects:** 57 of nurses who were working on Saudi Arabia took part in the study. **Tools of data collection:** The data were collected by using a semi-structured online questionnaire. **Results:** With an average age of 22 (38.6%) and a range of 35 to 44 years, they are primarily female. It was discovered that low back pain was strongly correlated with height, years of experience, and height. **Conclusion:** According to the findings, the primary risk factors for low back discomfort are height, weight, and years of experience. **Recommendations:** According to the study, decision makers should provide features such as the height of the chair's seating surface according to the individual bio-mechanical requirements of each user and provide guidance to allow for pleasant surface usage without creating spinal pain. However, there did not seem to be a significant correlation between the incidence of LBP and the usage of a chair with an adjustable sitting surface or back support. It has been demonstrated that using chairs with back support reduces the incidence of lower back pain.

Keywords: Effects, Low Back Pain, Nurses, Prevalence, Saudi Arabia.

Introduction

In medical settings, pain is sometimes referred to as the "fifth vital sign." Pain is an unpleasant emotional and sensory experience that is like that linked to actual or prospective tissue damage. Even though they provide first-line treatment, nurses might have pain, and the most common kind among them is low back pain (LBP) **(Elmannan et al, 2021)**. The prevalence of LBP ranges from 15% to 45% worldwide. LBP is one of the most frequent ailments requiring medical attention as a kind of musculoskeletal disorder (MSD) that occurs most frequently.

LBP is common among nurses and has a major negative influence on their work performance and quality of

life. Nurses are six times more likely than other health professionals to experience back pain, and work-related illnesses and injuries are more common in healthcare settings than in the general population **(Alnaami et al., 2019).**

Furthermore, a lack of physical activity exacerbates the issue, resulting in deconditioning and increased pain susceptibility. These factors combined impair nurses' capacity to regulate their lower back movements, which has a detrimental effect on their professional activities and general efficacy in patient care. Impaired patient care, missed workdays, and increased costs for healthcare institutions are all possible outcomes **(Taulaniemi et al., 2019).** Moreover, musculoskeletal disorders, especially those affecting the lower back, are influenced by elements including workload, psychological stress, and ergonomic difficulties. Furthermore, there is a substantial correlation between LBP and variables like working in uncomfortable postures and manually lifting weights greater than 10 kg **(Mijena et al., 2020).** Female gender, advanced age, smoking, income, education, high body weight, physical activity level, and previous medical history as particularly bouts of low back pain are additional risk factors linked to LBP **(Parreira et al., 2018).**

Nurses frequently move patients and heavy goods by hand, which may be very taxing on the lower back. Furthermore, there is a considerable correlation between LBP and variables including working in uncomfortable postures and manually lifting weights greater than 10 kg. Female gender, advanced age, smoking, income, education, high body weight, physical activity level, and previous medical history, particularly bouts of low back pain, are additional risk variables linked to LBP **(Alizadeh et al., 2020).**

Nurses often engage in manual lifting of patients and heavy objects, which can lead to compressive and shear pressures on the lower spine, a primary cause of LBP, even though higher-educated nurses tend to use mechanical patient-lifting apparatus, reducing their back pain levels **(Gonzalez, 2021; Gilchrist and Pokorná, 2021).** For example, the overall prevalence of LBP remains high in King Abdulaziz University Hospital, affecting up to 85.5% of nurses over their lifetime, with surgical ward nurses showing a higher prevalence **(Almaghrabi and Alsharif, 2021).** In Najran, Saudi Arabia, 88.2% of participants reported mild to moderate localized back pain affected by work environment factors, leading to job changes, medical attention, and hospitalization **(Alshahrani, 2020).**

Each year, thousands of nurses worldwide experience low back pain (LBP), which affects their productivity and results in medical reports, early retirement, and a lower standard of living and at work. As nurses make up around one-third of hospital personnel and are vital to the healthcare system, LBP can impair their clinical efficacy and impact their work restrictions and attendance. Because LBP is so severe, it is the primary cause of disability, absenteeism, sick leave, job loss, changes in work settings, health care resource utilization, and limits in social and everyday activities. Other nurses on the same ward are put under more strain, which has an indirect effect on the standard of patient care **(Gaowgzeh, 2019).**

In addition to improving patient assistance and boosting productivity and performance, nurses have a fundamental right to work in a safe and healthy environment by preventing LBPs. The use of ergonomic techniques and psychosocial support is essential for reducing the effects of LBP in nurses **(Gaowgzeh, 2019).** So, this study conducted to determine the prevalence of low back pain and its effects on

nurses who were working in Saudi Arabia.

Significance of the study

LBP is a serious health problem that affects nurses' well-being and productivity. The nature of their work, prolonged standing for certain processes, and repetitive motions can all lead to LBP and poor posture, including bending or twisting postures. It is estimated that LBP, a very prevalent illness worldwide and the primary cause of functional impairment, affects about 90% of the world's population. Moreover, LBP is among the most prevalent musculoskeletal disorders affecting working individuals in both developed and developing countries **(Shahu, 2016).** Furthermore, the quality of care provided to patients and, ultimately, their health may be impacted when nurses' health deteriorates.

Aim of the study

This study done to determine the prevalence of low back pain and its effects on nurses who were working in Saudi Arabia.

Research questions

- What is the prevalence of LBP among nurses?
- What are the effects of LBP among nurses working in Saudi Arabia?

Subjects and methods

Research design

cross-sectional study design was used.

Study setting

This study was conducted at Buraydah central hospital in Saudi Arabia.

Study subjects

The study population target nurses who were working Buraydah central hospital in Saudi Arabia during the time of data collection which started from December 2023 to January 2025. The following criteria were used in the selection of sample: Nurses who were working in all departments, Nurses level of education was BCS and above, Nurses level of experiences more than 6 months, Nurses who were agreeing to be a part of this study**.**

Tools of data collection

The data were collected by using a semi-structured online questionnaire. The questionnaire was adapted from a validated and reliable instrument. Similarly, to ensure cultural acceptance. The survey consisted of four sections, as follows. **Section (1)** The demographic data (which included nine items) included closed ended questions age, gender, weight, height, body mass index, marital status, unit, year of experience, regular excurse engagement. **Section (2)** The prevalence of low back pain (about 5 questions about present of low back pain in present, present of low back pain in last 12 months, duration of low back pain, severity of low back painted, **Section (3)** Effect of Low Back Pain on Duty Performance (which consist of 5 questions included identify factor which associated with low back pain :carrying patient frequencies, standing for long time, bending and twisting frequent, working in awkward position and heavy loads of working). **Section (4)** about effect of low back pain on duty and performance which included 4four question about the effect of low back pain on absence from work, carrying of patient effectively, change place of work, quit from working as a nurse).

Content validity and reliability

It has been established for face and content validity by a panel of five expertise that revised the tools for clarity, relevance, applicability, comprehensiveness, understanding, and

ease for implementation. The study materials were then updated to include the recommended changes. Furthermore, Cronbach's alpha values were calculated, and the value for the adapted tool was 0.87, which indicates high internal consistency.

Field work

The following study was conducted by researcher.

The extensive data collection procedure took place between January 2024 to April 2024, for a total of almost four months. This prolonged duration allowed the researcher to efficiently gather information from the subjects and guarantee the precision and dependability of the results. The researcher was always available to answer any questions or concerns. The researcher assessed the participants throw online link which was shared and distributed to nurses it took about 4-5 minutes. The total number of nurses was 57 included. After gathering the data, the researcher greeted the nurses who participated in the study.

Pilot study

6 nurses from the previously described context participated in a pilot trial that was carried out before the main study was underway. As a result, these participants were not included in the primary study sample, and the required modifications were made. It helped the researcher to estimate how long it would take participants to finish the forms and offer insightful information about the questionnaire administration procedure.

Administration and ethical consideration

First, the study proposal was accepted by the regional research committee of Qassem University, Saudi Arabia cluster latter no 2883/45/607. Participant provided their informed consent to participate. Participants were given the right to refuse participation and were informed that they could withdraw at any time while filling out the questionnaire. they were given the assurance that the information would be kept confidential and used only for research.

Statistical analysis

Data collected, entered, coded, and analyzed by the Statistical Package for Social Sciences version (26). Using descriptive statistics frequency and percent for factors that are associated with LBP and chi squire and p value for correlation between these factors and socio demographic data considering 0.01 as significant correlations.

Results

Figure (1) shows that about 54.0% aged 25–34 and 39.0% aged 35-44. Only 7% are aged 45 or above.

Table 1 clarifies that most of participants were female 50(87.7%), their wt. 23(40%),16(28.1%),18(31,5%) respectively. Mean of Weight 59.5 ± 11.6, while their mean height was 156.4± 13.9. Majority of them are married 39(68.4%), their experience in nursing 18(31.6%), 14(24.6%), 11(19.2%) respectively.

Table (2) illustrates that there was significant relation between Weight and Height of socio demographic data and absenteeism due to back pain (p value = 0.01)

Table (3) demonstrates that there was significant relation between Years of experiences of socio demographic data and dissatisfied about working as a nurse in this facility (p value = 0.1).

Table (4) clarifies that there was significant relation between demographic data and Prevalence of Low Back Pain among Nurses.

Table (5) clarifies that there was significant correlation between factor of bending or twisting frequently while

working and Height, same correlation with Heavy workloads in work experience Carrying patients frequently and Smoking, all these factors have significant correlation with participants height.

Discussion

This is a descriptive cross-sectional hospital-based study of 57 nurses enrolled in the study. Our results indicate a significant correlation between LBP and years of experience, height, and weight, which is supported by Southeast study. 262 (61.4%) of the participants had worked in a pediatric ward, gynecological and obstetric ward, operating room, or medical ward for a year, according to Ethiopia's findings **(Ayane et al., 2023).**

Research indicates that nursing has one of the highest incidences of back issues connected to their jobs. Due to the physical demands of their duties, the nurses experienced back discomfort and difficulties. Incidence rates are still increasing, and it is estimated that back damage to nurses' costs 20 billion dollars year, both directly and indirectly **(Ross et al., 2021).** According to a Saudi Arabian study, half of nurses with LBP had an episode that lasted one week or less, whereas 13% had an episode that lasted more than 30 days (although not daily pain). The fact that around half of the nurses with LBP had to reduce their work and leisure activities during the previous 12 months supports our results that greater work experience promotes LBP **(Rasha et al., 2021).** LBP as the main reason for absenteeism in our results and contrast our results (38%) with those of different research that included years of experience and weight, where absenteeism varied from 15% to 26.1% **(Boughattas et al., 2017).**

A research carried out in Palestine found that 41% (n = 83) of nurses took sick leave because to LBP **(Zaitoon et al., 2024).** Studies consistently demonstrate a considerable frequency of LBP among nurses, although this variation. Additional indicators that support our findings include years of work experience, high workloads, and prolonged standing **(Qareeballa et al., 2018).**

Conclusion

According to the findings, the primary risk factors for low back discomfort are height, weight, and years of experience. To enable comfortable usage of the surface without causing spinal pain, the researcher recommends that decision makers provide training and amenities such as adjusting the chair's sitting surface height to each user's specific biomechanical demands. However, it did not seem that using a chair with an adjustable sitting surface or one with back support was substantially linked to the occurrence of LBP. It has been demonstrated that utilizing chairs with back supports can reduce the prevalence of lower back pain

Recommendations

- Ensure that seating furniture includes adjustable height features to meet the individual biomechanical needs of users.
- Offer ergonomic training and support to promote safe and comfortable use of work surfaces, minimizing the risk of spinal discomfort.
- Promote the use of chairs with adequate back support as a preventive measure against lower back pain.
- Encourage further large-scale research to explore the contributing factors and impacts of low back pain more comprehensively.

Authors' contributions

F.S.O.A; played a key role in a research study. She was responsible for organizing references, manuscript design, and journal submission. She contributed significantly to data collection and conclusion development, supervised all stages of the research, prepared the first draft of the manuscript, and served as the corresponding author.

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Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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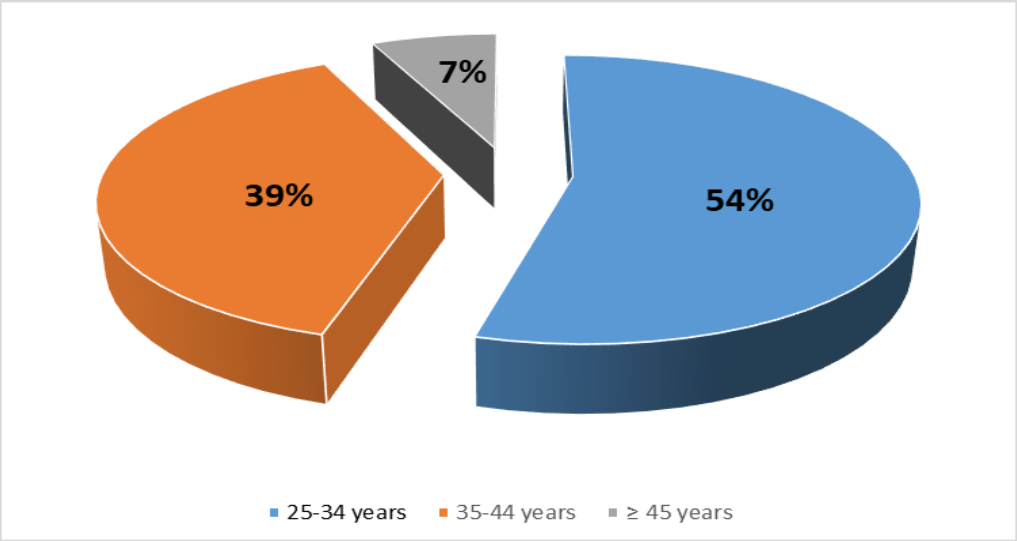

Figure 1: Distribution of nurses according to age (n=57)

Table (1) Distribution of demographic data of nurses (n = 57)

Variables	**No.**	**%**
Mean of age 33.7 ±7.3		
Gender		
Male	7	12.3
Female	50	87.7
Weight		
45-54 kg	23	40.4
55-64 kg	16	28.1
≥ 65 kg	18	31.5
Mean of Weight= 59.5 ± 11.6		
Height		
150-159 cm	37	64.9
160-169 cm	13	22.8
≥ 170	7	12.3
Mean of height= 156.4 ± 13.9		

Marital status		
Single	17	29.8
Married	39	68.4
Widow	1	1.8
Years of experience in nursing		
0-5 years	18	31.6
6-10 years	14	24.6
11-15 years	14	24.6
16 and above years	11	19.2
Years at present hospital		
0-5 years	32	56.1
6-10 years	14	24.6
11-15 years	2	3.5
16 and above years	9	15.8
Total of sample	57	100%

Table (2): Cross tabs between demographic data and prevalence of low back pain among nurses (did you absent from your work because low back pain) (n=57)

Data	**Did you absent from your work because low back pain**				**P-value**
Age	No	%	Yes	%	
25-34 years	26	45.6%	5	8.7%	0.4
35-44 years	17	29.8%	5	8.7%	
≥ 45 years	4	7%	0	0%	
Gender					
Male	4	7%	3	5.2%	0.1
Female	43	75.4%	7	12.2%	
Marital status					
Single	14	24.5%	3	5.2%	0.8
Married	32	56.1%	7	12.2%	
Widow	1	1.7%	0	0%	
Years of experiences					
0-5 years	13	22.8%	4	7%	0.1
6-10 years	14	24.5%	0	0%	
11-15 years	12	21%	2	3.7%	
16 and above years	8	14%	3	5.2%	
Years of presence in the hospital					
0-5 years	26	45.6%	5	8.7%	0.6
6-10 years	12	21%	2	3.7%	
11-15 years	1	1.7%	1	1.7%	
16 and above years	8	14%	1	1.7%	
Weight					
45- 54 kg	21	36.8%	2	3.7%	0.01*
55- 64 kg	15	26.3%	1	1.7%	
≥ 65	11	19.2%	6	10.5%	
Height					
150 – 164 cm	34	59.6%	3	5.2%	0.03*
165-174 cm	7	12.2%	6	10.5%	
≥ 175 cm	6	10.5%	1	1.75	

Table (3): Cross tabs between demographic data and prevalence of low back pain among nurses (are you dissatisfied about working as a nurse in this facility) (n=57)

Data	Are you dissatisfied about working as a nurse in this facility				P-value
	No	%	yes	%	
Age					
25-34 years	16	28%	15	26%	0.4
35-44 years	15	26%	7	12.2%	
≥ 45 years	2	3.5%	2	3.5%	
Gender					
Male	3	5.2%	4	7%	0.3
Female	30	52.6%	20	11.4%	
Marital status					
Single	10	17.5%	7	12.2%	0.5
Married	22	38.5%	17	29.8%	
Widow	1	1.7%	0	0%	
Years of experiences					
0-5 years	7	12.2%	11	19.2%	0.1
6-10 years	11	19.2%	3	5.2%	
11-15 years	9	15.8%	5	8.7%	
16 and above years	6	10.5%	5	8.75	
Years of presence in the hospital					
0-5 years	18	31.5%	14	24.5%	0.2
6-10 years	10	17.5%	4	7%	
11-15 years	0	0%	2	3.5%	
16 and above years	5	5.7%	4	7%	
Weight					
45- 54 kg	15	26.3%	8	14%	0.3
55- 64 kg	9	15.8%	6	10.5%	
≥ 65	9	15.8%	9	15.8%	
Height					
150 – 164 cm	23	40.4%	14	24.5%	0.2
165-174 cm	5	8.7%	8	14%	

Table (4): Cross tabs between demographic data and prevalence of low back pain among nurses (have you ever had low back pain) (n=57)

Data	Have you ever had low back pain				P-value
	No	%	Yes	%	
Age					
25-34 years	2	3.5%	29	50.8%	0.09
35-44 years	5	8.7%	17	29.8%	
≥ 45 years	1	1.7%	3	5.2%	
Gender					
Male	2	3.5%	5	8.7%	0.2
Female	6	10.5%	44	77.1%	
Marital status					
Single	3	5.2%	14	24.5%	0.5
Married	5	8.7%	34	59.6%	

Widow	0	0%	1	1.7%	
Years of experiences					
0-5 years	2	3.5%	16	28%	0.3
6-10 years	1	1.7%	13	22.8%	
11-15 years	4	7%	10	17.5%	
16 and above years	1	1.7%	10	17.5%	
Years of presence in the hospital					
0-5 years	4	7%	28	49.1%	0.5
6-10 years	2	3.5%	12	21%	
11-15 years	1	1.7%	1	1.7%	
16 and above years	1	1.7%	8	14%	
Weight					
45- 54 kg	4	7%	19	33.3%	0.5
55- 64 kg	1	1.7%	15	26%	
≥ 65	3	5.2%	15	26%	
Height					
150 – 164 cm	1	1.7%	36	63.1%	0.003
165-174 cm	4	7%	9	15.5%	
≥ 175 cm	3	5.2%	4	7%	

Table (5): Correlation between demographic data and factors associated with low back pain among the nurses (n=57)

Data	Age	Gender	Marital status	Years of experience in nursing	Years at present hospital	Weight	Height
Carrying patients frequently	0.5	0.000	0.8	0.4	0.2	0.2	0.001
Standing for a long time, while working	0.1	0.1	0.9	0.2	0.9	0.2	0.007
Bending or twisting frequently, while working	0.4	0.003	0.9	0.4	0.1	0.4	0.001
Working in awkward position	0.7	0.7	0.4	0.6	0.9	0.4	0.4
Heavy workloads in your work experience here as a nurse	0.7	.03	0.5	0.7	0.8	0.6	0.000
Smoking	0.01	0.01	0.3	0.2	0.05	0.04	0.1

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