

Occupational back pain among rehabilitation nurses in Taif Rehabilitation center

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ABSTRACT

Introduction: Despite numerous efforts and significant resources being allocated to developing strategies to reduce lower back pain in the workplace, no strong evidence for the efficacy of any specific intervention has been documented. This study aimed to assess the prevalence of lower back pain among Rehabilitation Nurses working in rehabilitation centers and their health care-seeking measures taken in the management of LBP. **Materials and Methods:** Responses from nurses were collected using an online questionnaire. Rehabilitation Nurses currently employed in one Rehabilitation center in Taif Province were the study sample. The questionnaire recorded the annual prevalence of LBP and its severity on a four-point scale. Practices related to patient handling and occupational LBP were also assessed using appropriate items. A logistic regression model was used to predict the risk factor for the development of LBP among the sample of nurses. **Results:** The annual prevalence of LBP was found to be 96.5%. Among those who experienced LBP, 48.8% had moderate pain and 9.8% had severe pain. Nurses aged >36 years were found to be independently associated with a higher prevalence of LBP. The majority of the nurses (96.5%) knew how to use an assistive device and 77.6% performed special exercises to protect the back. **Conclusion:** Our study demonstrated a high prevalence of LBP among rehabilitation nurses and highlighted the necessity for an interventional program to reduce the prevalence of LBP. This will help the health care organization to identify factors responsible for LBP development and facilitates them to plan focused preventative measures.

Keywords: Rehabilitation, occupational hazard, back pain, patient-care.

1. INTRODUCTION

Due to the nature of nursing, musculoskeletal diseases (MSDs) are a common health concern for nursing staff. Lower back, neck and shoulder pain are the most often reported MSDs among nursing staff (Alexopoulos et al., 2003; Freimann et al., 2016). Musculoskeletal problems frequently have a substantial negative impact on the quality of life of nurses and are a potential source of workplace restrictions, poor attendance and the desire to quit the nursing profession (Rathore et al., 2017; Soylar and Ozer, 2018). In addition, nursing efficiency and caring behaviors are negatively impacted by MSDs, which can

have a profound impact on care quality, patient satisfaction and both staff and safety. The latest report estimates the percentage of nurses quitting the field owing to MSD is 3.5% (Ryall et al., 2015), which results in a substantial loss in a profession that already struggles with recruiting and retention worldwide (Gilworth et al., 2007). Annually, 764,000 working days are missed due to back pain, accounting for 16.2% of all sick days lost (Stubbs et al., 1983). As a result, sick leave, compensation benefits and medical expenses add up to a significant expenditure for Saudi Arabia's healthcare system (Elabd et al., 2020). The loss of experienced employees is another additional burden that has not been estimated.

Rehabilitation is a vital healthcare therapy for acute, sub-acute and long-term diseases and medical problems (Bickenbach, 2011). Rehabilitation trains disabled persons to control their health and adapt to their situations to maximize performance (Wade, 2020). Teamwork drives rehabilitation. Doctors, nurses, physiotherapists, occupational therapists and psychotherapists are involved in this process (Franz et al., 2020; Paxino et al., 2022). Nurses are crucial to the rehabilitation process and have multiple tasks (Gutenbrunner et al., 2022). Nurses assist patients with basic requirements since they cannot undertake daily activities (Çol and Purut, 2018) and also assist patients in psychological, spiritual and social areas (Aadal et al., 2021; Gutenbrunner et al., 2021). According to Cunningham et al., (2006) LBP is the most major reason for early retirement among nursing due to the grounds of deteriorating health, sick leaves, career changes and a decline in working efficiency and pace.

The number of published articles investigating the prevalence and risk factors of LBP among nursing staff in various regions of Saudi Arabia has increased rapidly in recent years, with studies revealing widely varying LBP prevalence rates. However, there are no studies identified yet in the literature that measured the prevalence of LBP among the nursing staff and their healthcare-seeking behaviors for these conditions. Several types of medical therapies are available in Saudi Arabia for those suffering from MSDs. These include general practice, physiotherapy; osteopathy and chiropractic care (Alhowimel et al., 2021). Multiple studies suggest that individuals treated by chiropractors for LBP recover and return to work faster than those treated by medical practitioners (Baldwin et al., 2001). Therefore, this research is aimed to examine the prevalence of LBP among rehabilitation nurses in Saudi Arabia and to determine what healthcare service they utilize for their managing their pain and to what degree this may assist return to work.

2. MATERIALS AND METHODS

A survey using a questionnaire was conducted among rehabilitation nurses employed at an Armed Forces Center for Health Rehabilitation, Taif. A pre tested and validated questionnaire was utilized for collecting data related to prevalence of LBP and the measures taken by the nurses to manage LBP. We utilized a mixture of convenience and network sampling techniques to collect the data from nurses working in rehabilitation centers in healthcare institutions in Taif city. The study was conducted from September 2022 to November 2022. The ethical approval to conduct the survey was taken from the Research Ethics Committee of the Health Services Department for Armed Forces, Taif. A database of the nurses working in the rehabilitation centers was created and the questionnaire was sent via an online survey link to their email addresses or WhatsApp numbers.

The questionnaire (Appendix 1) consists of opened items, which had included participants' socio-demographic details, work nature, LBP history, LBP treatment history, practices related to LBP, use of LBP preventive measures, health care seeking behavior for LBP, availability of patient handling policy at work place. Nearly all items will be closed for convenience's sake. A convenience sample of 15 nurses from two institutions' rehabilitation wards filled out the questionnaire and provided feedback on its phrasing, length and intrusiveness. Face validity and content validity was checked by three experts (one orthopedician, physiotherapist and biostatistician). Informed consent was taken from the participating nurses and confidentiality was ensured for the information they provide. All the nurses working in rehabilitation centers in the Taif city that gave consent and fulfilled the eligibility criteria (currently employed and not on sick leave) were invited for this survey.

Data Management and Statistical Analysis

The online responses received was downloaded using a Microsoft excel sheet and was checked for duplication. The data was then transferred to Statistical Analysis Software (SPSS Ver 23, IBM Corp. USA). An independent biostatistician analyzed the data in order to minimize the assessment bias. Frequencies and percentages were used as descriptive statistics. Fischer's exact test or Pearson's chi-square test was used to check any possible association between categorical variables. A p-value less than 0.05 at a 95% confidence interval was considered statistically significant.

3. RESULTS

Our analysis included responses from 85 rehabilitative nurses working in Taif provinces. The socio-demographic data showed that 80 (94.1%) were non-Saudi citizens, 55 (64.7%) were aged between 36-45 years and 59 (69.4%) were female nurses. It was reported 20% and 16.5% that they are practicing rehabilitative nursing for more than 6-8 years and \geq nine years, respectively. Chronic disease(s) were reported in 36 (42.4%) of the nurses (Table 1).

Table 1 Socio-demographics detail of nurses

		Frequency	Percent
Nationality	Saudi	5	5.9
	Non-Saudi	80	94.1
Age	<25 years	1	1.2
	26-35	55	64.7
	36-45 years	15	17.6
	45-55 years	14	16.5
Gender	Female	59	69.4
	Male	26	30.6
Years of practice as rehabilitative nurse	<3 years	26	30.6
	3-5 years	28	32.9
	6-8 years	17	20.0
	\geq 9 years	14	16.5
Chronic disease	No	49	57.6
	Yes	36	42.4

It was reported by 96.5% of the nurses that they had experienced lower back pain during their work or after it, where about 47.1% had moderate LBP and 9.4% had severe LBP (Figure 1).

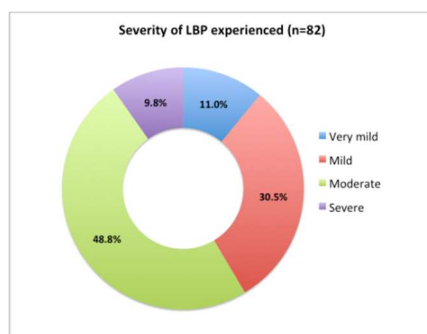


Figure 1 Severity of LBP experienced by the nurses (n=82)

The practices related to handling patients among the nurses (Table 2). It was reported by a majority of the nurses (97.6%) that they take a precaution to reduce LBP before handling a patient and all of them (100%) knew how to handle a patient with a disability. Only one nurse (1.2%) reported that they asked for help to handle patients if needed and only 3 (3.5%) knew how to use an assistive device. It was reported by 19 (22.4%) nurses that they use their body weight to move the patient and 19 (22.4%) reported that they use a specific exercise or a general exercise to protect their back. It was reported by 16 (18.8%) nurses that they practice relaxation techniques to reduce back pain and about 11.8% knew what to do if they have back pain. Only 7 (8.2%) nurses reported that they had had previous training to handle patients with disability.

Table 2 Practices related to patient handling

	No	Yes
Do you take a precaution before you are handling a patient	2 2.4%	83 97.6%
Do you know how to handle a patient	0	85

with disability	0%	100%
Do you ask for help if you need it	1	84
	1.2%	98.8%
Do you know how to use assistive device	3	82
	3.5%	96.5%
Do you use your body weight to move the patient	12	73
	14.1%	85.9%
Do you use a specific exercise or a general exercise to protect your back	19	66
	22.4%	77.6%
Do you practice relaxation technique to reduce your back pain	16	69
	18.8%	81.2%
Do you know what to do if you have a back pain	10	75
	11.8%	88.2%
Do You have previous training how to handle with disability patient	7	78
	8.2%	91.8%

When we assessed the relationship between nurses' practices and the severity of pain experienced, it was found that out of 82 nurses, only one who didn't take a precaution before you are handling a patient had experienced severe LBP ($p=0.025$). Nurses who knew how to use assistive devices significantly showed lesser severity (very mild) compared to others ($p=0.017$). There were no other statistically significant associations observed between practices and LBP severity (Table 3).

Table 3 Nurses' practices and type of LBP experienced

			Lower back pain				Total	P value
			Very mild	Mild	Moderate	Severe		
Take a precaution before you are handling a patient	No	N	0	0	0	1	0.025	
		%	0.0%	0.0%	0.0%	100.0%		
	Yes	N	9	25	40	7		81
		%	11.1%	30.9%	49.4%	8.6%		100.0%
Use your body weight to move the patient	No	N	1	2	7	1	0.511	
		%	9.1%	18.2%	63.6%	9.1%		100.0%
	Yes	N	8	23	33	7		71
		%	11.3%	32.4%	46.5%	9.9%		100.0%
Use a specific exercise or a general exercise to protect your back	No	N	2	6	8	2	0.979	
		%	11.1%	33.3%	44.4%	11.1%		100.0%
	Yes	N	7	19	32	6		64
		%	10.9%	29.7%	50.0%	9.4%		100.0%
Received previous training how to handle with disability patient	No	N	2	3	8	2	0.783	
		%	13.3%	20.0%	53.3%	13.3%		100.0%
	Yes	N	7	22	32	6		67
		%	10.4%	32.8%	47.8%	9.0%		100.0%
Know how to use assistive devices	No	N	2	0	1	0	0.017	
		%	66.7%	0.0%	33.3%	0.0%		100.0%
	Yes	N	7	25	39	8		79
		%	8.9%	31.6%	49.4%	10.1%		100.0%

We performed a logistic regression to assess the risk factors for moderate to severe LBP among our sample of rehabilitative nurses (Table 4). It was found that age >36 years was independently associated with a higher risk of getting LBP among rehabilitative nurses ($OR=3.04$ (1.06-8.73), $p=0.039$).

Table 4 Logistic regression model for back pain

	Odds Ratio (OR)	95% C.I.OR		p value
		Lower	Upper	
Nationality	2.47	0.28	21.99	0.418
Chronic disease	2.26	0.77	6.64	0.140
Gender= Female	2.05	0.64	6.52	0.226
Age>36 years	3.04	1.06	8.73	0.039
Practice <6 years	0.72	0.16	3.17	0.661
Don't take a precaution before handling a patient	1.27	0.03	57.15	0.902
Don't ask for help if needed to handle patient	0.88	0.41	1.92	0.327
Knows how to use assistive device	1.98	0.15	26.08	0.605
Use body weight to move the patient	0.47	0.11	2.12	0.327
Don't use a specific exercise or a general exercise to protect your back	1.64	0.42	6.44	0.479
Don't practice relaxation technique to reduce your back pain	0.63	0.11	3.53	0.598
Don't know how to manage back pain	0.27	0.03	2.30	0.230
Don't have previous training how to handle patients with patient	1.06	0.13	8.47	0.954

4. DISCUSSION

This study acquired reliable data from 85 rehabilitative nurses using a convenience sample. The results show that a large percentage of the nurses in this sample report experiencing LBP. This agrees with findings from research done in other nations (Hou and Shiao, 2006; Menzel et al., 2004; Mohseni-Bandpei et al., 2006; Warnakulasuriya et al., 2012). A review of the scientific literature reveals that the prevalence of LBP in Saudi Arabia ranges from 53.2% to 79.2%, with multiple risk factors including vitamin deficiency, obesity, sprains, stretching and bending activities (Awaji, 2016). Major risk factors for work-related LBP among nurses include the volume of patients, the amount of time spent on patient handling, the quality of care provided to patients and the absence of implementation of "no lift regulations" by health organizations (Shieh et al., 2016). Our sample may have been more representative of nurses who engage in physical handling, which may explain why LBP prevalence is very high in this group. Nevertheless, the observed trend shows that back discomfort should be a subject of worry for hospital managers in Saudi Arabia, possibly even more so than for their overseas counterparts. This study's findings provide credence to the idea that high levels of physical activity and direct patient care pose a risk for developing LBP (Karahan et al., 2009; Retsas and Pinikahana, 2000; Roffey et al., 2010).

The finding of this study showed that age>36 years was found to be an independent risk factor for LBP among nurses. This could be because years of work experience and age-related physical issues may co-actively play a substantial role in developing LBP among nurses. In addition, recent scientific evidence shows a strong association between years of work experience and the prevalence of LBP (Negash et al., 2022).

According to other research findings, nurses who have been in the workforce for comparatively long periods of time are more likely to develop LBP symptoms when compared to nurses who have a shorter amount of work experience. Contrasting findings were given by Mekonnen, (2019) who discovered that nurses with less than five years of experience were more likely to have had back pain issues than those who had more than five years of professional experience. It is possible that nurses who have been employed for a relatively shorter period of time are more likely to lack awareness and skills regarding safety procedures and hazard management mechanisms. As a result, these nurses are frequently at risk for workplace injuries and accidents. A study done in Saudi Arabia by Al-Eisa and Al-Abbad, (2013) reported that 75% of the nurses had LBP. Lack of patient handling policy was independently associated with a higher incidence of LBP OR= 1.4 (1.18, 1.97) whereas doing regular exercise was found to be a protective factor for LBP. A study done among Tunisian nurses showed that obesity, having children, arthritis, being out of shape, sitting at a desk all day, repeatedly using a posture that isn't optimal for the task at hand and the design of the workplace all played a higher incidence of chronic LBP (Boughattas et al., 2017).

Musculoskeletal injuries are most common in patients who are completely reliant on caregivers and they are typically the result of improper manual patient handling. Large forces are required to transfer patients. Thus it is important to know when and how to employ assistive equipment to prevent back injuries (Al-Eisa and Al-Abbad, 2013). However, ergonomic training was found to be

ineffective in preventing back injuries associated with manual patient lifting (Edlich et al., 2004). However, it has been proven that knowledge of transfer procedures, along with physical fitness training, may lessen impairment caused by LBP (Boughattas et al., 2017; Warming et al., 2008). Most of our study's participants agreed that they learned and utilized new handling approaches in their regular work and felt that their knowledge and awareness of these techniques had increased as a result of the training. A more reliable strategy would be to objectively capture the handling skills on video rather than relying on a purely subjective measurement. The educational interventional program can be highly beneficial in minimizing the incidence of LBP among rehabilitation nurses. A recent study done in Saudi Arabia demonstrated rehabilitation nurses' knowledge related to LBP increased after attending an ergonomics workshop and this was the prime reason for markedly reducing the prevalence of LBP among these nurses (Alghadir et al., 2021). In Western nations, LBP is attributed to workers' compensation and disability insurance (Fujii et al., 2012) and LBP is a frequent cause of workers' compensation claims, with high frequency and expense among nursing staff (Engkvist et al., 2000; Jensen et al., 2012). Legislation governing workers' compensation in Saudi Arabia does not consider LBP to be a debilitating condition eligible for benefits. Although Saudi Arabia's lifestyle and disability insurance are substantially different from those of Western nations, this study indicates a high frequency of LBP among nurses, confirming the assumption that LBP is rising in Saudi Arabia (Al-Arfaj et al., 2003; Al-Faraj and Al-Mutairi, 2003).

Due to the fact that all respondents were nurses, this study may have been affected by the response bias inherent in studies of this nature that include physical patient handling. Furthermore, the prevalence of low back pain may be underestimated in cross-sectional surveys. Studying the occurrence of low back pain among nurses who report no symptoms at the outset requires long-term prospective investigations to account for recall bias. To truly understand the impact of organizational policies and well-targeted intervention measures, more prospective studies are necessary. We were also unable to assess the relationship between psychosocial variables and LBP.

5. CONCLUSION

The prevalence of lower back pain among our sample of rehabilitation nurses was very high. The findings also showed that nurses with ages >36 years were at high risk of getting lower back pain compared to those with lesser age. Only a small percentage of the nurses did relaxation techniques when they experienced back pain during work. The results of our research imply that nurses may not follow patient handling directions if they exist, even if they have received adequate training to do so. We need innovative preventative measures that center on the concepts of risk assessment and management. Promoting an active lifestyle and fitness training, implementing institutional patient handling regulations and providing hands on instruction utilizing biomechanical lifting concepts and equipment are all important components of a low back pain prevention program's design.

Author contributions

The author Shoroug Nawar Algethami was responsible for concepts and design of this research and Kholood Talib Alharti was responsible for data collection and final review of the manuscript.

Ethical Approval

The Research and Ethics Committee of Health Services Department for Armed Forces Scientific Research Center approved this study (H-02-T-078)

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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