

repeated movements and vibrations.

Working in the healthcare sector requires an excess of dedication, patience and physical endurance because not only are the patients who are being cared for dependent on that care but also the service continues throughout 24 hours in hospitals. In aiming to present a healthcare service to the community, healthcare personnel are exposed to professional risks and workplace accidents due to characteristics of the service. In both national regulations and also in related literature, the healthcare sector is stated to be at much higher risk of workplace accidents and work-related diseases.

Nurses who are providing a service to protect or improve a patient's health are faced with risks of mechanical trauma and physical, chemical, biological and psychosocial risks related to the work or the working environment while carrying out their work. Work-related injuries and disabilities occur associated with these risks and most of these are in the musculoskeletal system [25], [34].

Various studies conducted in our country have reported that healthcare personnel are a risk group in terms of low back pain. The most important risk factors have been determined as lifting heavy weights, remaining standing for long periods or in incorrect positions, shift work, bad working habits, bad sitting posture and long working hours [34]. Defining these risks and the precautions to be taken is important in respect of both enabling right to work under health and safety conditions as a basic right and in maintaining services [10]. Importance must be given to practices which protect and improve the personal health of nurses, who play an important role in the protection, maintenance and improvement of individuals' health, so that they are able to be productive and are able to provide nursing care.

The aim of this study was to determine the prevalence of low back pain among nurses which are working in a private hospital and to compare demographic data and classifications according to the Oswestry Back Pain Scale (OBPS).

2. Material and Methods

The study group comprised nurses working at a private hospital in Bursa, Turkey. A questionnaire was sent to the chief nursing officer of the hospital and distributed to all the 215 nurses working there within a specified time period. The completed form was returned from 188 nurses, which was a return rate of 87.44%. The Oswestry Back Pain Scale, developed by Fritz et al. [9] to evaluate functional inadequacy, was used for data collection. It has 10 questions. The questionnaire comprised 7 questions related to socio-demographic characteristics of the nurses and 10 questions to be answered with a 6-point Likert scale. Validity and reliability of the scale in Turkish had previously been applied by Yakut et al. [32].

This scale measures daily activities in 10 different aspects; severity of pain, personal care, lifting, walking, sitting,

standing, sleeping, change in degree of pain, social life, travelling. For each section there are 6 alternatives to give points between 0-5. 0-4 points are evaluated as no problem, 5-14 points mild, 15-24 points moderate, 25-34 points severe and 35-50 points as complete functional disability. The minimum points from the scale are 0 and the maximum 50. Interpretation is made according to the percentage values obtained.

For example;

- 0% - 20% – low back pain does not create a significant problem in the person's daily life.
- 20% - 40% – low back pain limits the person's daily life to a mild degree.
- 40% - 60% – low back pain limits the person's daily life to an advanced degree.
- 60% - 80% – the person's daily life is completely restricted by low back pain
- 80% -100% – the person is bed-bound (or symptoms are exaggerated) [9].

All statistical analyses were made using SPSS software. As a result of normal distribution analysis, the values were determined to be distributed normally (K-S:1.085 $p>0.05$). Accordingly, the Independent Sample T-test was used in the analysis of gender and marital status, the Pearson Correlation Test for age and length of service and the OneWay Anova Test for education and department to research the relationship between back pains.

3. Results

Detailed information related to the demographic characteristics of the participants is shown in Table 1.

Table 1: Demographic Variable

<i>Gender</i>	<i>N</i>	<i>(%)</i>
Female	150	79.8
Male	38	20.2
<i>Marital Status</i>		
Married	101	53.7
Single	87	46.3
<i>Education</i>		
High school	53	28.2
Associate's degree	49	26.1
Bachelor's degree	45	23.9
Master degree	41	21.8
<i>Department</i>		
Emergency service	20	10.6
Service	28	14.9
Polyclinic	42	22.3
Operating room	22	11.7
Delivery Room	17	9.0
X-ray	9	4.8
Angio	8	4.6
Other	32	17.0

As seen in Table 1, 80% of the participants were female. The healthcare sector is known to be staffed more heavily by females. Of the participants, 53.7% were married, 43.6% had high school level of education, 8.7% were aged 25 years or

younger, 41.9% were aged 25-34 years, 34.2% between 35 and 44 years and 15.2% were 45 years or older. When the length of service was examined, it was seen that 67% had still not completed 5 years of work, 14% had 5-10 years of nursing work experience and 19% more than 10 years. When the departments where the participants worked were examined, the most common was the polyclinic department (22%).

The classification values according to the back pain scale are shown in Table 2. When all the participants were considered, a mean prevalence of low back pain of 18.24 over 100 was reached. This is shown in the average of the first 20% slice.

Table 2: Prevalence of Back Pain

Prevalence of Back Pain	N	(%)
Up to 20% - no problem (0-4 score)	113	60.1
Up to 40% - mild (5-14 score)	64	34.0
Up to 60% - moderate (15-24 score)	11	5.9
Up to 80% - severe (25-34 score)	0	0
Up to 100% - complete/advanced (35-50)	0	0

According to this result, back pain problems of the participants can be evaluated as 'low back pain does not create a significant problem in the daily life of the participants'.

Table 3: Result of the Independent Sample t Test and One Way Anova Analysis

Variables	Tests	Value of test	Significant
Gender	Independent Sample t Test	-0.206	0.837
Marital Status	Independent Sample t Test	-0.189	0.851
Education	One Way Anova	2.613	0.053
Department	One Way Anova	0.877	0.526

According to the analysis results, the mean low back pain was calculated as 18.15 for females and as 18.63 for males. Although, the mean low back pain of males was mathematically higher than that of females, the difference was not statistically significant ($p > 0.05$). In other words, the gender variable was not an effective variable in the definition of the difference in low back pain.

In terms of marital status, the mean low back pain was calculated as 18.44 for the single participants and as 18.08 for the married nurses, but the difference was not statistically significant ($p > 0.05$). In a study by Nas et al [16] rates of back pain were found to be higher in married hospital staff than in single staff. The findings of the current study do not conform to those of literature in this respect.

In terms of educational status, the level of low back pain was greatest at 20.80 in those with high school education and lowest at 13.52 for those with higher education. When all the educational statuses were compared, this difference was not statistically significant ($p > 0.05$).

The group experiencing the most pain were those working in the delivery suite (23.20) followed by radiography (23), angiography (20), emergency department (19.67) and operating theatres (19). The least low back pain was experienced by those in the polyclinics (17.65) and the service departments (13.22). As in the other analyses, this difference was not statistically significant ($p > 0.05$). The correlation of age, years in work and the mean back pain scale values are shown in Table 4.

Table 4: Pearson Correlation Test

Pearson Correlation	Age	Work years
Age	1	
Work years	0.561 **	1
Mean of Oswestry	0.002	0.168*

**significance at $p < 0.01$, * significance at $p < 0.05$.

According to this, there was a strong, positive relationship between the years in work and age, which was statistically significant ($r = 0.56$, $p < 0.01$). This result was expected. On the other hand, no statistically significant difference was found between age and the mean back pain scale value ($p > 0.05$).

4. Discussion

Different studies in Turkey and throughout the world have indicated different results on the subject of work-related low back pain. Aiken et al. [1] emphasized that the health of 88% of nurses was affected by back injuries and work-related stress because precautions were not taken against the existing threats and risks in hospitals [20]. Although there are no statistical results in Turkey related to the prevalence of low back pain which can be generalized for all nurses, there are results of studies made with specific groups. In studies which have been conducted in Turkey, it has been determined that nearly half of hospital healthcare workers have experienced low back pain problems. For example, in a study by Yılmaz and Ozkan [34] of 163 nurses working at Balıkesir State Hospital using the same scale (Oswestry), 39.9% of the nurses stated that they had experienced low back pain. Of those, 53.8% reported that they had experienced the pain repeatedly four or more times and 50.8% reported that it had been ongoing for 1-5 years. Karadag et al. [12] reported rates of low back pain in nurses of 68.6%. Again according to Karadag and Yıldırım, low back pain was determined in 72% of nurses working in different clinics by Ozabacı and Pektekin and in 81% of intensive care unit nurses by Karadag [12]. In a study by Diracoglu [7] evaluating musculoskeletal system pain in all healthcare personnel, the complaint with the highest rate was reported to be low back pain. In addition, in a study by Kabatas et al. [10] of 167 healthcare workers at Odemis State Hospital in Turkey, complaints of low back pain were determined in 40% of the participants at a mild level and in 3.3% at a severe level. The results of that study showed that the onset of low back pain was more after starting work and it was seen more in nurses than in other healthcare workers.

Another study by Alcelik et al. [2]) of 79 nurses at Duzce Medical Faculty determined 52.9% of participants with low back pain. Faculty members, research assistants and nurses (n=268) were included in a study by Altinel et al [3] and three different scales were used. According to study, Lifetime low back pain prevalence was reported at 47%, yearly low back pain prevalence at 34.3% and chronic low back pain prevalence at 16%. According to a report by the Turkish Nursing Association, low back pain was one of the major health problems experienced by nurses [4]. In some studies conducted in Turkey, the prevalence of low back pain seen in nurses was determined as 87.5% by Karahan et al.[13], as 69% by Tezel [29] and as 40.9% by Nas et al.[16]. This reveals the need for more importance to be paid to ergonomics in nursing.

In a study of 80 hospital workers in a rural area of southeast Nigeria which measured the prevalence of low back pain, prevalence was determined as 46%. The highest prevalence of low back pain was reported at 69 % in nurses, followed by secretaries and administrative staff at 55% and housekeeping staff at 47%. The activities found to have the most effect on the prevalence of low back pain were heavy physical work (45%), bad posture (20%) and standing or sitting for long periods (20%) [18]. In Greece, in a study conducted in two central hospitals, low back pain was determined in 40% of 120 nurses and as a result of analysis, social relationships and systematic sleep patterns were found to have an effect at higher rates than other activities. No statistically significant relationship was determined between age and education variables with the rate of pain of nurses suffering the effect of pain caused by damage to the lumbar area [22].

Although low back pain is seen in nurses of all ages in reports in literature it was seen to be greater in the 20-55 years age group when there is a more active working life and an increase in the prevalence of low back pain has been reported with increasing age [12]. In the current study, although the age variable was not seen to be significant, a positive relationship was found between years in work and back pain. In other words, as an increase in low back pain was determined with increasing years in work, there was seen to be a positive significant relationship between years in work and low back pain ($r=0.16$, $p<0.05$).

In a study by Karadag et al.[12], it was reported that 70% of those working for 10 years or more had low back pain. In a study of nurses by Yilmaz and Ozkan [34], more low back pain occurred as the years of work increased and a statistically significant relationship was determined between the duration of work and the mean back pain score. The findings of the current study are consistent with those in literature in this respect. It is thought that complaints of low back pain in healthcare sector workers will inevitably increase with passing years associated with the working conditions. However, it is wrong to explain this increase by increased years of work only. The loss of muscle agility with advancing age and an increased work load are other reasons explaining increased low back pain.

According to a study conducted by the UK Department of Health, while there was a loss of work force due to low back pain experienced by 69% of the participants, 44% experienced low back pain as a severe problem [24]. Using the Low Back Pain Scale (LBP), a study in Japan of 81 nurses determined low back pain in 90% and at a level of 60% in logistic and construction sector workers, thus demonstrating the importance of the problem of low back pain [11]. Again using the LBP in a study of hospital workers in Kuwait, it was emphasized that 70.9% of the participants had suffered low back pain at some point in their life [15]. According to another study in Ireland using the LBP scale, 52% of the participants were reported to have had low back pain, but no statistically significant relationship was determined between the department in which they worked and the pain experienced [15]. These results show that low back pain is a problem which may be experienced in every department and may show differences.

In the study, 12.5% of participants reported that they worked 55 hours or more per week and 9% stated that they did not have sufficient rest. In a study of nurses by Karadag et.al.[12], low back pain was determined in 65.7% of those working 40-50 hours per week and in 73.7% of those working more than 50 hours per week. The current study results showed that 64 (34%) participants reported a mild level of restriction on daily life because of low back pain and only 6% reported low back pain at a level of 60%.

According to the results obtained in the current study, the problem of low back pain does not constitute a significant problem in daily life for 60% of nurses. This result is not consistent with literature. The basic reason for this contrary situation is thought to be that the current study was conducted in a newly-established private hospital, which was staffed by many newly-qualified very young nurses. The results of this study confirm the idea that low back pain increases with an increasing number of years in work.

5. Conclusion and Recommendations

That working life affects an individual and an individual affects working life is reality. Nurses who are responsible for and have the important duty related to health protection and improvement, have to protect and improve their own health to be able to be more useful to patients [19].

Nursing is a profession characterized by stress with a heavy work load affected by various negative factors originating from the working environment. Researchers have shown that although they maintain a healthy lifestyle, they experience various health problems and stress symptoms associated with working conditions. It has been reported that not enough importance is attached to preventative measures implemented to protect nurses from the health risks originating in the working environment [3] [26] [27]. Despite the spread of technology nowadays, reduced body movements can be considered to have resulted in an increase in the prevalence of low back pain.

An increase in the quality of working life would be reflected in an increase in the quality of patient care. Moreover, the working environment affects not only the health of the workers themselves but also the people to whom they are rendering service. If those giving the healthcare are healthy, the health and quality of life of the field of healthcare will improve [21]. To achieve this:

- a) Occupational risks for the hospital workers originating in the working environment must be determined and monitored,
- b) Training related to health in the form of in-service training seminars must be given on the protection against health risks and body mechanics to achieve awareness of posture and correct techniques for lifting, and the information learned from this in-service training should be useful for changing behaviour [18].
- c) Various improvements and changes must be made in the working environment to eliminate low back pain, severe and chronic pain [28].
- d) The guidelines of '*Occupational Health and Safety in the Workplace when carrying and lifting*' issued on 24.07.2013 in the Official Gazette Cod. No 28717 in the context of the Occupational Health and Safety Law, Article No 6331, which came into effect in 2012, foresee the elimination of risks with a pro-active approach [35] [36]. Under this management, training on correct posture and lifting procedures must be increased in all hospitals, without any differentiation of state or private sector.
- e) '*The Regulations on the Principles and Procedures of the Occupational Health and Safety Training for Employees*' published in the Official Gazette No 28648 on 15.05.2013, state very clearly that employees engaged in procedures in areas classified as very dangerous must have 16 hours of training. Hospitals are classified as very dangerous areas. Within the 19 main areas of administration, the basic training subjects of greatest importance for healthcare workers can be said to be;
 - Causes of work-related illnesses
 - Lifting and carrying,
 - The application of the principles of disease protection and prevention techniques
 - Biological and psychosocial risk factors.
- f) In addition, it can be recommended that these types of studies are conducted at specific intervals to define the factors causing the complaints of low back pain in nurses, and ergonomic improvements are made in the working environment, attention is given to body mechanics in in-service training and by emphasizing the importance of exercise, a program of protective exercises for low back health is planned.

Study limitations

The sample in our research was gathered from a single hospital. Given the cross-sectional study design and the collection of data by self-report, these findings must, however, be interpreted with caution, because self-report may reflect denial, deception, or difficulty in recall [30].

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