

Investigating the Relationship between Musculoskeletal Disorders and Quality of Work Life in Nursing Staff

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Abstract

Aims: The high prevalence of musculoskeletal disorders caused by work is a common problem in nurses. The quality of life is effective, job satisfaction, and everyday life of nurses. The study was conducted with the aim of determining the relationship of musculoskeletal disorders and the dimensions of the quality of nursing life in the hospitals in Southern regions of West Azarbaijan in 2017. **Materials and Methods:** In this descriptive-analytical study, 100 nursing staff working in southern regions of West Azarbaijan hospitals was chosen randomly. The data gathering tool was a two-part tool using a Nordic questionnaire and a quality of life questionnaire. Data were analyzed using SPSS software, *t*-test, and Pearson correlation coefficient. **Results:** The results showed that the most musculoskeletal disorders in the nursing staff were in the lumbar (50%). In addition, individual factors such as age, work history, type of working system, body mass index, and sex are effective in the increase of musculoskeletal disorders ($P < 0.05$). The results of quality of life indicators showed that psychological problems with mean and standard deviation (32.3 ± 14.1) had the lowest and physical performance (58.2 ± 17.5) had the highest amount and dimensions and components of work-life quality have significant relationship with musculoskeletal disorders. **Conclusion:** Considering that there is a relationship between skeletal muscle-muscle disorders and living quality of life, nursing managers should establish a correct relationship with the staff and provide a suitable environment to reduce physical and psychological stresses caused by work and increase the quality of working life.

Keywords: Musculoskeletal disorders, nursing staff, quality of work life

INTRODUCTION

Today, job-related musculoskeletal disorders are among the greatest health problems in industrialized countries and developing countries. One of the main reasons for this is the lack of compliance with ergonomics during physical work (lifting or pulling objects), repetition of movements and tensile conditions of the limbs, and doing tough works in a static and undesirable situation in some occupations. Health-care occupations are among the high-risk cases associated with these disorders.^[1] In this regard, Fujishiroo writes that 12% of the health workers in the United States suffered occupational injuries, often in the back and shoulders, causing more than 600,000 employees to lose their working time a year and spent \$ 54–45 billion, resulting in a reduction in labor productivity.^[2,3] The nursing profession is among the health-care professions with a lot of physical activity, with bending, twisting, prolonging stretches, moving the patient, and lifting heavy objects with an increased risk of musculoskeletal injuries.^[1] Hedge writes that more than 40% of the injuries reported by nurses were related to the

movement of patients, of which 75.9% had incurred injuries to the waist.^[4] In their study, de Castro *et al.* reported an 80% increase in the incidence of low back pain among nurses in the Philippines. These researchers consider the increase in back and foot injuries related to the nature of nursing work, in particular carrying out activities associated with the placement of the patient, including covering the clothes of the patients and changing their position in the bed.^[5] Hegarty *et al.*, in an ergonomic evaluation of the American Acute Care Nursing Center, found that patient relocation activities received the highest score of 10 in Rapid Entire Body Assessment, which is a tool for assessing the work situation of health-care professionals, including nursing.^[6] As a result, this activity is risky in nurses and a quick correction of the status of the work

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is required. In this regard, the application of ergonomic science can be useful. This science, which studies the adaptation between individuals and their type of work, places people at the top of the list and takes into account their abilities and limitations. The goal of ergonomics is to ensure that the tasks, equipment, and work environment are maximally proportionate to the needs of each employee.^[4]

In recent years, studies have shown that there is a mutual relationship between disease and quality of life, and physical impairments have a direct impact on all aspects of quality of life.^[7] Considering the inevitability of some factors in the nursing profession and the necessity of prevention of psychological and behavioral effects, adoption of certain measures to improve the quality of working life is one of the duties of health and medical organizations managers.^[8] For this purpose, high quality of life of employees has become an important issue in many organizations, including health organizations since the 1970s.^[9]

Quality of life is a complex set of people's responses to the psychological, physical, and social factors that affect normal life.^[10] Moreover, such factors as age, health status of people, social environment, and the maximum occupation of people can be mentioned as elements influencing the quality of life.^[11] Nursing jobs have a lot of tensions, and this is problematic due to the nature of the job, the type of tasks, and responsibilities.^[12] Quality of life is an important factor in the rate of musculoskeletal abnormalities.^[13] Regarding the high prevalence of musculoskeletal disorders in nurses and lack of study in this area, this study was conducted to assay the underlying causes of prevalence of skeletal disorders and their impact on quality of working life among nurses working in southern hospitals of west Azarbaijan. The results of this study are expected to be useful in comprehensive plannings and adoption of appropriate educational and executive approaches and prevention of musculoskeletal problems.

MATERIALS AND METHODS

This descriptive-analytic study was conducted to investigate the prevalence of musculoskeletal disorders and its effect on the quality of working life among nurses working in southern hospitals of West Azarbaijan 2017. The research units in this study were selected from among all nurses working in different departments of general hospitals in the southern regions of West Azarbaijan province. To determine the sample size, based on the Cochran sample size formula, at a 5% error rate and accuracy of 5% of 296 nurses, 100 subjects were selected randomly.

Having the minimum associate degree, full-time employment and satisfaction to participate in the research were the specifications for the units under study. The environment of this research was made up of different parts (medical and surgical ward) of the general hospitals of the southern regions of West Azarbaijan province. The instrument for data collection in this study was a two-part tool consisting of a researcher-made

questionnaire on the demographic characteristics of the samples (including age, sex, work record, type of work system, educational qualification, height, and weight), Nordic questionnaire and quality of work life of Short-Form (SF)-36. The data related to the demographic characteristics were completed by the individuals themselves.

The Nordic questionnaire is consisted of two parts of a general questionnaire including demographic characteristics (age, sex, type of occupation, job satisfaction, type of employment, type of work system, and work experience) and a specific questionnaire which analyzed deep disorders such as pain, discomfort, and numbness (shoulder, waist, back, elbow, wrists and hands, knees, wrists and legs, and ankles, thighs, and buttocks) in the last 12 months. This questionnaire follows two goals:

- a. As an instrument for screening musculoskeletal disorders
- b. A tool for evaluating the results of epidemiological studies on musculoskeletal disorders.

The validity and reliability of the questionnaire were approved according to the standard questionnaire. The Nordic questionnaire was validated by qualified professors in this field, and its reliability (Cronbach's alpha) in this study was 0.89.

The SF-36 quality of life questionnaire was classified in two physical and mental health scales, and these two scales were also classified in eight subscales of physical function (10 questions), physical limitations (4 questions), physical pain (2 questions), general health (5 questions), vitality (4 questions), social function (2 questions), mental problems (3 questions), and mental health (5 questions). The score of each area is based on the questionnaire's instructions in the form of the three-choice questions "100, 50, and zero," the 5-choice questions with scores of "100, 75, 50, 25, and zero" and multiple-choice questions with scores of "100, 80, 60, 40, 20, and zero" were independently scored and calculated.

In each question, the zero score showed the worst situation, and the score of 100 showed the best status. The reliability and validity of the quality of work life questionnaire have been studied in various studies among which we can refer to studies by Montazeri *et al.* and Zarrin Ghabaee *et al.*^[13,14] Data were analyzed using SPSS 20 statistical software, *t*-test, and Pearson correlation coefficient.

RESULTS

The results showed that the highest frequency of sex was related to women (68%) and married (64%). The level of education in most of the samples (90%) was bachelor's degree. The mean age of participants in this study was 32.3 ± 7 years and the average work record was 10.1 ± 5.5 years. The mean body mass index (BMI) was 25.2 ± 4.3 . Most of the units (85%) stated that they had not had posture training class (45%), and 45% were unaware of the dangers of works they had done. By Kolmogorov-Smirnov test, the normality of the data was proved.

The results showed that the highest percentage of musculoskeletal disorders in the nursing staff was in the lumbar (50%), neck (44%), and knee (40%), and the least discomfort was in the elbow with 8%. The results showed that the most frequent visits to the medical centers were due to pain in the waist area of 4 (8%) and the least amount of referral in the elbow area (without referring) and the rate of referral to physiotherapy due to skeletal musculoskeletal disorders in the knee area 4 (8%) and in the wrist area, which was 1 (2%).

The results of the analysis of demographic factors in terms of musculoskeletal disorders showed that there was no significant relationship between education and marital status in the studied units ($P > 0.05$), but it has significant relationship with age, work history, type of work system, BMI, and sex ($P < 0.05$). There was a significant relationship between BMI and two variables in quality of work life and musculoskeletal disorders ($P < 0.05$).

The mean of total score of quality of life was 50.45 ± 13.91 . The results of quality of life indicators showed that mental disorders with mean and standard deviation (32.3 ± 14.1) had the lowest and physical activity (58.2 ± 17.5) had the highest value [Table 1].

In this study, the quality of life in the physical dimension was significantly higher than the spiritual dimension, and the results of *t*-test showed a significant difference between men and women in terms of quality of life insofar as women had higher quality of life. In addition, the mean of dimensions of quality of work life showed a significant difference in various kinds of working systems and the greatest difference was related to the type of circular or circulating system, those who had activity in this type of system, had a mean score lower than the rest ($P < 0.05$). The results of the Pearson correlation test showed that dimensions and components of quality of work life were significantly correlated with musculoskeletal disorders [Table 2].

DISCUSSION

The purpose of this study was to determine the relationship between quality of work life and musculoskeletal disorders in nursing staff. The population of the study, with a mean age of 32.3 ± 7 years and an average working experience of 10.1 ± 5.5 years, was relatively young. The results of this study showed that individual factors such as age, work history, type of working system (fixed or circulating), BMI, and sex are effective in the development of musculoskeletal disorders. With the increase in age, the prevalence of musculoskeletal disorders turns high and quality of life is low, which is consistent with the results of the study by Carllius *et al.*^[15] Work experience is associated with musculoskeletal disorders and low quality of life, which is consistent with the results of study by Dargahi *et al.*^[16] The gender factor can be effective in musculoskeletal disorders and quality of life insofar as in this study, women had a higher quality of life than men, which is consistent with the results of the study of Choobineh

Table 1: Mean and deviation of scores of quality of life dimensions in the studied units

Indexes of quality of life	Mean \pm SD
Physical limitation	39.3 \pm 12.2
Mental problems	32.3 \pm 14.1
Vitality	52.5 \pm 16.1
Mental health	57.5 \pm 17.7
Social function	55.4 \pm 11.1
Physical pain	54.8 \pm 10.2
General health	53.6 \pm 12.4
Physical performance	58.2 \pm 17.5
Total score of quality of life	50.45 \pm 13.91

SD: Standard deviation

Table 2: Results of correlation between dimensions of quality of life and musculoskeletal disorders in the units under study

	P	The correlation coefficient
Physical constraints and musculoskeletal disorders	0.004	0.12
Mental problems and musculoskeletal disorders	0.035	0.15
Vitality and musculoskeletal disorders	0.001	0.22
Mental health and musculoskeletal disorders	0.06	0.17
Social function and musculoskeletal disorders	0.004	0.3
Physical pain and musculoskeletal disorders	0.001	0.12
General health and musculoskeletal disorders	0.002	0.21
Physical function and musculoskeletal disorders	0.005	0.51
Total quality of life scale and musculoskeletal disorders	0.001	0.33

et al.^[17] In this study, the mean BMI in women was higher than that of men, and they had overweight. Overweight could be an important factor in the occurrence of musculoskeletal disorders in nurses, which is consistent with the results of the Reed study.^[18] The type of working system, especially working shifts is associated with musculoskeletal disorders and quality of life in this study. In this study, circular shifts as compared to constant shifts had more skeletal-muscular injuries and lower quality of life, which is consistent with the results of Ghasemi's *et al.* study.^[19] In this study, the quality of work life and musculoskeletal disorders were not significantly correlated with the results of the Beaudoin study.^[12] In this study, the mean total score of quality of life was 50.45 ± 13.91 . The results of quality of life indicators showed that among others, mental problems with mean and standard deviation (32.3 ± 14.1) had the lowest and physical activity (58.2 ± 17.5) had the highest amount. In this study, quality of life in the physical dimension was significantly higher than the spiritual dimension, which is consistent with the results of the study of Allaf Javadi *et al.*,

which showed that the physical status of nurses was better than their mental health.^[20] In a study done by Chung *et al.* in 2006 about nurses, their physical health scores were normal in their community, but their mental health score was lower than normal in the Australian community.^[21]

A study by Yazdi-Moghadam *et al.* in Sabzevar Hospital in 2009 also reported that the mental health score of nurses was lower compared to other dimensions of quality of life.^[22] Another study by Hazhiri in 2004 among nurses from Shiraz hospitals showed that the score of physical health is higher than that of mental health among nurses in these hospitals, which is consistent with the results of this study.^[23] Various studies show that the nursing profession faces high physical activity with bending, twisting, prolonged stretching, moving the patient and lifting heavy objects with increased risk of musculoskeletal injuries.^[1] Hedge writes that more than 40% of the injuries reported by nurses were related to the movement of patients, of which 75.9% had incurred injuries to the waist.^[4] These researchers have linked the increase in back and foot injuries with the nature of nursing work.^[5] Nurses suffering from skeletal disorders in their waist and legs suffer from impairment in quality of life, so they should give careful attention to their health. The results of this study showed that dimensions and components of quality of work life have a significant relationship with musculoskeletal disorders, so that the high level of disorders can reduce the quality of life. This finding is consistent with the results of the studies of Zarrin Ghabae *et al.* and Beaudoin *et al.*^[12,13]

CONCLUSION

In general, there is a relationship between musculoskeletal disorders and quality of work life. Therefore, to reduce musculoskeletal disorders and increase the quality of work life in nurses, nursing managers should be focused on establishing proper communication with nurses and creating an appropriate environment to reduce the work-related physical and psychological stress and increase the quality of work life. To this end, they are suggested to offer some training courses and proper working practices, and conduct periodic visits and ergonomic evaluation of the departments to examine the hazards in the departments and adopt the necessary corrective measures and hire special workforce to divide the work and reduce the physical and psychological pressure it poses.

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Conflicts of interest

There are no conflicts of interest.

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