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Original Article

The Study of musculoskeletal disorders associated with labor in midwives working in educational centers of Mazandaran University of Medical Sciences

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Ali Morad Heydari Gorgi [1], Solaleh Ramzani [2], Zeynab Hoseinnezhad [3], Ali Pahnabi [4*]

[1] Education Development Center, Mazandaran University of Medical Sciences, Sari, Iran
[2] MSc Student in Occupational Health, Department of Occupational Health, Mazandaran University of Medical Sciences, Sari, Iran
[3] MSc Student in Midwifery Counseling, Student Research Committee, Mazandaran University of Medical Sciences, Sari, Iran
[4] Student Research Committee, Department of Operating Room, Mazandaran University of Medical Sciences, Sari, Iran

Musculoskeletal disorders are one of the most important causes of poor body position (poor posture) during work and are considered as the major health problems in the hospital. The aim of this study was to determine occupationally related skeletal disorders in midwifery staff working in educational centers of Mazandaran University of Medical Sciences during the years of 2017-2018. This cross-sectional study was conducted using a descriptive-analytical approach. 40 midwifery employees who were employed in educational centers of Mazandaran University of Medical Sciences were selected through multistage sampling. The data gathering tool was Nordic standard questionnaire. The collected data were analyzed using descriptive statistics and inferential statistical tests including Mann-Whitney using SPSS version 20 software. The results indicated that the symptoms of musculoskeletal disorders were high among midwives, so that the frequency of disorders in one or more areas of the body during the last 12 months was 77.5%. The highest frequency of pain, discomfort and anesthesia was observed in the last 12 months in three areas of limbs (65%), shoulders (45%) and back (45%). There was a direct relationship between the amount of musculoskeletal disorders in the last 7 days among midwives with age (r = 0.47, P = 0.002). There was no significant correlation between acute skeletal disorders and some demographic characteristics such as height, weight, BMI. Considering the prevalence of skeletal disorders in midwifery personnel, proper planning for improvement of working conditions and reduction of these disorders among midwives seems necessary. Training on how to help the patient correctly, and hospital bed designing according to ergonomic standards can be helpful.

Keywords: Musculoskeletal Disorders, Midwives, Nordic Questionnaire

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Introduction

Today, manpower is an important factor in the development of societies [1]. Work and humans are two main and indivisible parts that must be planned in a way that is appropriate to each other [2]; therefore, organizations invest heavily in the field of maintaining their employees [3]. Musculoskeletal disorders are the most commonly reported occupational health problem which, in addition to affecting the quality of life of individuals, leads to a high direct cost of diagnosis and treatment and high indirect costs associated with absenteeism and loss of Specialist staffs at work [4,5]. Musculoskeletal disorders are injuries and disorders that affect one or more parts of the musculoskeletal system, including sprain, tension, inflammation, degeneration, rupture, Carpal tunnel syndrome, and bone fractures [6].

These disorders are painful symptoms in different areas of the body such as neck, shoulder, elbow, wrist, lumbar, hip and cause organic lesions in some areas and organs [7]. Several problems caused by musculoskeletal disorders,

* Corresponding author: **Ali Pahnabi.** Student Research Committee, Department of operating room, Mazandaran University of Medical Sciences, Sari, Iran. Email:cheshmabi91@yahoo.com

including various degrees of disability, the impact on daily activities of life, physical, emotional, and occupational problems, and the imposition of direct and indirect costs, indicate the need for special attention to these complications [8].

Acute musculoskeletal disorders are one of the most common causes of occupational injury and disability in developing countries and are the most common cause of work-related disability and, consequently, financial, and medical costs [9,10]. These disorders can impose individual, social and economic impacts on every society. In Sweden, one-third of women and one quarter of males are complaining of neck pain and shoulders that appear every day or every few days. In the United States, back pain is the most reported occupational disease, with 43%[11]. In Finland, surveys show that these disorders are the main reason for the inability to do daily activities in 20% of the population over the age of 30 years[12]. On the other hand, these disorders due to the high incidence are considered as a major cause of death and disability among adults in developed and industrialized countries [13,14].

Susceptible musculoskeletal disorders after respiratory problems are the second leading cause of work absenteeism in the short term (less than 2 weeks) [15]. The health sector is the largest portion of female recruiting, so that 75% of these forces are female employees [16]. Most studies in this area focus mainly about male employees, while the number of musculoskeletal disorders in women is more than men [17, 18]. Some factors such as work and work pressure have more impact on women [19, 20]. A study conducted in Hamedan showed that 54% of midwives had at least musculoskeletal disorders in one area of their own body [21]. In the study in Shiraz, the highest prevalence of musculoskeletal disorders was in the waist and lumbar (55.8%), knee (54.2%) and back (49.2%), respectively [2].

Considering that midwives have many duties in the field of health services, as well as there are limited research on musculoskeletal disorders related to midwifery profession in Iran and other countries, therefore the present study was conducted to determine musculoskeletal disorders in midwifery staff employed in educational centers of Mazandaran University of Medical Sciences in 2017 [21].

Materials and Methods

This cross-sectional study was conducted using a descriptive-analytical approach. 40 midwives working in educational centers of Mazandaran University of Medical Sciences (Imam Khomeini Hospital, Sari and Razi Hospital, Ghaemshahr) were selected through multistage sampling method in all job shifts in 2017. The inclusion criteria for the study were the presence of a midwife for at least one year in the hospital. Exclusion criteria were: 1) injury to the waist or back, 2) history of acute pathologic fracture, 3) lower extremity pain with greater or equal to the lumbar region, 4) neurological defects in the lower extremity, 5) Systematic neoplasm, 6) Infectious and autoimmune diseases, 7) Previous surgery in the spinal column and 8) Congenital diseases of the lumbar region. After obtaining the necessary permissions to conduct the research and after obtaining informed written consent from the midwifery staff, while expressing the goals and manner of conducting the study, the selected individuals were examined Also, in order to observe ethical and confidential data, the subjects were investigated. It is assured that their responses will be used for the purposes of the research. A questionnaire was used to collect data. The first part included demographic data and the second part was the Nordic questionnaire for measuring musculoskeletal disorders. The human body in the Nordic questionnaire has been divided into 9 anatomical regions including neck, shoulders, elbows, wrists and hands, back, waist, thighs, knees and legs [22] .The questionnaire can also be used to examine the signs of skeletal muscle as an appropriate tool for analyzing work environments, workstations and designing tools, and examining the degree of adaptation between worker and occupation or tools [22]. The validity of this questionnaire has been reviewed in previous studies and has been approved as a screening tool. In this study, with a correlation coefficient of 0.91, this questionnaire was stable [21]. The collected data were analyzed using descriptive statistics indices including mean and standard deviation for descriptive research and inferential statistical tests including Mann Whitney using SPSS version 20.

Results

The average age of the samples was. The dominant hand was the right hand in 85% of the people. Some demographic characteristics of individuals are presented in Table 1.

Table 1. Frequency distribution of midwifes studied in terms of personal characteristics

The studied variable	Mean SD	Minimum	Maximum
Age	35.25 8.44	24	51
Height	161.36 4.82	150	169
Weight	62.73 11.67	47	89
BMI	24.08 4.28	16.46	33.5

Of the total number of subjects, 31 (77.5%) had pain at least in one member of their body during the past 12 months. The highest frequency of pain, discomfort and anesthesia was observed in the last Table 3 shows the mean of musculoskeletal disorders among midwives employed in Imam Khomeini hospital in Sari and Razi hospital in Qaemshahr. According to the results of this study, there was a significant difference between the mean score of musculoskeletal disorders in the last 12 months in two Imam Khomeini and Razi hospitals in Qaemshahr (P = 0.006), so that the mean score of musculoskeletal disorders was higher in Razi Hospital in the past 12 months. There was no significant difference between the mean score of skeletal musculoskeletal disorders with the dominant hand and musculoskeletal disorders leading to disability with dominant hand in the last 7 days.

Discussion

Musculoskeletal disorders are among the most important ergonomic consequences of working environments in today's societies, which are the result of various risk factors [23]. Staff in the health sector are at risk of skeletal musculoskeletal disorders [24]. In this study, the frequency of self-reported symptoms of musculoskeletal disorders in midwives working in educational centers of Mazandaran University of Medical Sciences was studied.

The results indicate that the symptoms of musculoskeletal disorders are prevalent among midwives, with an abnormality of 77.5% in one or more areas of the body within the last 12 months. Based on the results of the study, Zamani et al., Found that 69.16% of midwives had pain and discomfort at least in one of the nine regions of the musculoskeletal system during the past 12 months [2]. In the study of Mohammadian et al., 78.4% of midwives in Iran / Kerman hospitals experienced discomfort or pain at least in one organ, in the last 12 months [25]. In the study of Barzideh et al., The prevalence of disturbances in one or more areas of the nurses' body over the past 12 months was 89.9% in Iran / Shiraz [26]. The study of Smith et al showed that the prevalence of musculoskeletal disorders in Japanese nurses was 85.5% [27].

Also, the results of Younan et al study in Lebanon showed that 71.3% of midwives had musculoskeletal disorders during the last 12 months, most of which included low back pain. [28]. The frequency of abnormalities in this study can be explained by the Undesirable situation of work, including bending for long periods of time, contributing to natural labor, staying in the curved state, responding to a patient's sudden movement and helping to move and transfer the patient Because repetition of muscle contractions and static pressure is one of the known factors in the development of musculoskeletal disorders. The results showed that the highest frequency of pain, discomfort and anesthesia during the last 12 months was related to three limbs of waistline (65%), shoulders (45%) and back (45%).

Table 2. Frequency of musculoskeletal disorders in midwives for organ transplantation

	Musculoskeletal Disorders								
Variable	*Neck*	*Shoulders*	*Elbows*	*Wrists and hands*	*Back*	*Waist*	*Seat/ thigh*	*Legs*	*Feet*
Pain, discomfort, anesthesia over the past 12 months	16(%40)	18 (45%)	4 (10%)	12 (30%)	18 (45%)	26 (65%)	8 (20%)	16 (%40)	10 (25%)
Pain, discomfort, anesthesia over the past 7 days	10 (25%)	8 (20%)	4 (10%)	4 (10%)	8 (20%)	20 (50%)	4 (10%)	10 (25%)	6 (15%)
Stay out of daily activities in the last 12 months	4 (10%)	2 (5%)	4 (10%)	2 (5%)	6 (15%)	12 (30%)	2 (5%)	4 (10%)	2 (5%)

Table 3. Comparison of the mean scores of musculoskeletal disorders among midwives in terms of hospital

The studied variable	Hospital	Mean SD	Amount of Mann-Whitney test statistic	p-value
Musculoskeletal disorders (total)	Imam Khomeini	33.66 9.42	96	0.007
	Razi	35.50 2.72		
Total musculoskeletal disorders in the last 12 months	Imam Khomeini	12.16 3.66	94	0.006
	Razi	14 1.60		
Total musculoskeletal disorders in the last 7 days	Imam Khomeini	11 2.92	130	0.079
	Razi	11.62 1.68		
Total musculoskeletal disorder leads to survival	Imam Khomeini	10.50 3.39	180	0.754
	Razi	9.87 1.12		

In the study of Zimani et al., The prevalence of these disorders in midwives employed in public hospitals in Iran / Shiraz was 55.8%, knees 54.2% and back 49.2%, respectively [2]. In the study of Mohammadian et al., The highest frequency of symptoms of musculoskeletal disorders was observed in the three limbs of legs (39.2%), knees and waist (35.1%) in midwifes [25]. While in Smith et al., The highest prevalence of disorders in Japanese nurses was 71.9% in the shoulder region, 71.3% in the lower lumbar region and 54.7% in the neck [29]. In the same study conducted by Tinubu et al. In Nigeria, the prevalence of musculoskeletal disorders was observed in the waist circumference (44.1%), neck (28%) and the knee (22.4%). Also, in the study of Ashiyat K and colleagues the low back pain was reported in the most common musculoskeletal disorders [30]. Differences in the incidence of musculoskeletal disorders in different countries may be due to different working conditions [31]. In the present study, which was consistent with the results of the study of timbres and tinubu and Ashiyat K, low back pain was more frequent than other areas[2,29,31]. Lower back pain is the most common musculoskeletal disorder in adults and about 60-80% of people experience this disorder in some stages of their lives. In this study, no significant relationship was found between weight, height, and body mass index with musculoskeletal disorders [32]. In the study of Zamanian and colleagues, there was a significant correlation between BMI and prevalence of musculoskeletal disorders in the patients [2]. In the study of Sharifnia et al., The results indicated that with increasing height, the probability of musculoskeletal disorders will be increased which is not consistent with the results of the present study, but the results of the study conducted by Askaripoor et al [8]. Showed no effect of BMI on dyspeptic skeletal disorders [33]. Also, in some studies, height and BMI variables were not correlated with musculoskeletal disorders which is consistent with the results of the present study According to experts, maintaining normal body weight reduces pressure on the spine, while excess abdominal weight imposes excess pressure on the vertebrae [34]. This matter may cause chronic spasms in the waist. While the muscles of the wrists contract to keep the abdomen up, abnormal forces on the vertebrae cause damage to the intervertebral discs [35]. Perhaps the reason for the lack of association between weight, body mass index and musculoskeletal disorders in this study will be attributed to the normalization of weight and BMI of the midwifery staff. The results showed that there was a direct relationship between the rate of the skeletal musculoskeletal disorders in middle aged midwives in the last 7 days. In the study of Abedini et al., With the increasing of age, the probability of developing skeletal musculoskeletal disorders was also higher [36]. There was also a significant correlation between the age and musculoskeletal disorders in the study of Macpherson et al. [37]. The results of these studies were consistent with the findings of the present study. The results of the study showed that there was no statistically significant relationship between the age and prevalence of musculoskeletal disorders [2]. In the study of Derakhshan Rad et al., there was no significant relationship between age and musculoskeletal disorders [38]. The results of these studies are inconsistent with the findings from the current study. Kelberg concluded that younger people would be faster and easier to work with safe techniques than middle-aged people [39]. The mean total of total musculoskeletal disorders and the mean total of musculoskeletal disorders in the last 12 months in midwives in Imam Khomeini and Raqi hospitals were significantly different, so that the musculoskeletal disorders were higher in the midwives of the Razi Hospital. Considering the Imam Khomeini Hospital located in the provincial capital, it may have advantages such as having enough workforce proportional to the number of patients that can be one of the factors influencing the development of musculoskeletal disorders in the midwifery community. In most scientific studies, it has been shown that the risk of musculoskeletal disorders in women is higher than that of men. It has been mentioned in these studies that housekeeping, child retention, and mental conditions and different anthropometric dimensions in women could be a factor in increasing the prevalence of these injuries [40]. Officials and staff have a little knowledge of ergonomics and ergonomic principles in the work environment, and in other studies, this issue is also seen in other occupations

Conclusion

Considering the high frequency of musculoskeletal disorders in midwifery as a contributing factor in the recovery of patients, it is recommended to take effective steps to improve the quality of services provided and the health of staff, taking into account safety and health issues in the workplace. Teaching how to help the patient correctly, and the design of hospital beds in

accordance with the ergonomic standard can be useful.

Research constraints

Due to the cross-sectional nature of the study as well as the method of collecting data that was self-explanatory, it was necessary to interpret the findings with caution. The self-concept approach has some weak points, such as the difficulty in remembering the complication, which in this study, by limiting the reminder period to reporting symptoms to 12 months, attempted to some extent reduce the impact of this problem.

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Conflicts of interest

None.

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