



The Relationship between Musculoskeletal Pain and Demographic Variables in Nursing and Midwifery Students

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ABSTRACT

Aim: Musculoskeletal pain refers to pain in the muscles, bones, ligaments, tendons, and nerves. The purpose of this study was to investigate the relationship between factors affecting musculoskeletal pain and demographic variables of nursing and midwifery students. studying in Tehran University of Medical Sciences (TUMS)

Method and Instrument: The method of this cross-sectional study was descriptive-correlational through which 120 nursing and midwifery students of Tehran University of medical sciences aged between 18-22 years were studied. The sample was selected by simple random sampling and standard Nordic pain questionnaire was used to measure the prevalence of pain. To test the hypotheses, in addition to descriptive statistics such as mean and standard deviation, chi-square test was used. Data were analyzed by SPSS-25 software.

Findings: Totally, 120 nursing and midwifery students including 55.8% of nursing students (N=67) and 44.2% midwifery students (N=53) were studied. The results showed that nursing students more than midwifery students were suffering from at least one more musculoskeletal pain. This study showed that there is statistically significant difference between nursing and midwifery students in terms of foot pain ($P < 0.01$) that means the rate of foot pain in nursing students was higher than midwifery students.

Conclusion: Findings from this study showed that there was a relationship between demographic variables, field of study and musculoskeletal pain. Therefore, nursing students might suffer from more musculoskeletal pain.

Keywords: Musculoskeletal Pain, Demographic Variables, Nursing and Midwifery Students, Field of Study.

Introduction

Musculoskeletal pain is a major clinical problem and further research into peripheral and central neurobiological mechanisms is required to improve understanding, diagnosis and management. Peripheral and central sensitization is important mechanisms for musculoskeletal pain conditions [1].

The causes of musculoskeletal pain are varied. Muscle tissue can be damaged with the wear and tear of daily activities. Trauma to an area (jerking movements, auto accidents, falls, fractures, sprains, dislocations, and direct blows to the muscle) also can cause musculoskeletal pain. Other causes of pain include postural strain, repetitive movements, overuse, and prolonged immobilization.

Changes in posture or poor body mechanics may bring about spinal alignment problems and muscle shortening and also causing other muscles to be misused and become painful [1]. Various factors, such as demographic characteristics, are associated with musculoskeletal disorders. For example, a study has shown that there are relationships among the occurrence of neck and shoulder pains and marital status, work experience, education level, right / left-handedness, weight and place of work [2].

Furthermore it has been shown that the prevalence of shoulder pain is associated with marital status, work experience, education level, right / left handedness, age and gender [2].

A study among elementary school students has shown that there are relationships between desk height, backward seat pan inclination, forward seat pan inclination, difficulty in viewing the board and too much homework with musculoskeletal pain^[3]. Another study among students has concluded that the most severe pain was reported in the knee zone^[4] and the mildest pain in the pelvic zone. There was a significant relationship between Body Mass Index (BMI) of students and musculoskeletal pain^[4]. Additionally, a significant relationship between height and musculoskeletal features was seen. Moreover, there is also a significant relationship between the type of school bag and musculoskeletal disorders^[4]. The potential risk factors for neck and shoulder pain among schoolchildren are high desk, forward-inclined seat pan, time spent carrying school bag and psychosocial factors which independently could increase the risk of neck pain, while low BMI could decrease it^[5].

In a study, Shokri et al (2015) evaluated the prevalence of musculoskeletal disorders among students using portable computer and found that upper arm, right neck, right hip and lower extremities have most pain^[6]. In another study; Kolahi et al found the most frequent complaint was pain and the most common sites of complaints were knee pain, lumbar / spine pain, and shoulder pain, respectively. Osteoarthritis was the most common rheumatic disease and the knee was the most common region affected followed by low back pain^[7].

Caneiro et al. (2010) reported that different sitting postures significantly affected neck, head, and chest muscle activity^[8].

In another study Youdas et al. (2006) in 235 healthy individuals aged 20 to 68 years old reported that age and sex had a significant relationship with lumbar lordosis^[9].

Although, further studies have been done in

this field by foreign researches, but there is almost less study comparing these disorders in two groups of nursing and midwifery based on demographic characteristics in Iranian research literature. According to this reason, the purpose of this study was to investigate the relationship between musculoskeletal pain and demographic variables of nursing and midwifery students studying in TUMS.

Method and Instruments

This study was a descriptive – correlational cross-sectional designed that was carried on 120 nursing and midwifery students of Tehran University of Medical Sciences aged between 18-22 years Old and were selected randomly.

Instrument: Standard Nordic pain questionnaire was used to measure the prevalence of pain^[10]. After informing the participants regarding the purpose of the study and obtaining their cooperation, they signed an ethical consent form. Musculoskeletal disorders related to shoulder, arm and hand among nursing and midwifery students were assessed by using standard Nordic questionnaire. This questionnaire was developed in 1987 by L. Rockin Rook and his colleagues at the institute of occupational health in the Nordic countries (Scandinavian countries). In Iran, its validity and reliability have been obtained by Azeri and Davoodi^[11].

Nordic questionnaire has 46 items including 9 demographic questions (1-9) such as age, height, weight, degree level of education, cigarette and tobacco use, right or left dominant, marital status, history of an accident or heart disease and doing heavy activity. The other nine questions from question 10 to 18 were about the amount of pain, burning and discomfort in different parts of the body that indicates pain in different areas of the body such as the left and right parts of the body over the past week or past 12 months. Furthermore, there are 8 individual

items about skeletal disorders (from questions 19 to 26), 12 items from question 27 to 38 about physical needs and 8 items from questions 39 to 46 about occupational psychological needs. This questionnaire has content validity and its reliability with Cronbach's alpha coefficient is 0.70. Therefore, it has good validity and reliability ^[12].

Data were analyzed through using SPSS 25. To test the hypotheses, in addition to descriptive statistics such as mean and standard deviation, chi-square test was used.

Findings

In this study 120 nursing and midwifery students were studied. Of these, 55.8% (N= 67) of nursing students and 44.2% (N= 53) were midwifery students. About 68.3% (N=90) were female and 31.7% (N=30) were male. Approximately, 71.6% (N= 67) of nursing students and 69.8% (N=53) of midwifery students had at least one musculoskeletal pain during the past 12 months. Table 1 shows frequency and percentage of some demographic and musculoskeletal pain. The results of Chi-square test showed that only between foot pain among nursing and midwifery students was statistically significant ($P < 0.01$). In other words, the rate of foot pain in nursing students is higher than midwifery students (Table 1).

In this study, there was a statistically significant difference ($P < 0.05$) between musculoskeletal pain and left-right handed. In other words, the amount of back pain was more frequent in right-handed students than left-handed students. Furthermore, shoulder pain was more frequent in taller students than others. There was a statistically significant difference between musculoskeletal pain and their marital status ($P < 0.05$). In other words, the rate of sitting and back pain in married students more frequent than single students (Table2).

Discussion

The purpose of this study was to investigate the relationship between musculoskeletal pain and demographic variables of nursing and midwifery students. Accordingly, the results showed the majority of nursing students and midwifery students had at least one musculoskeletal pain during the last 12 months, which was more prevalent in nursing students. Based on the age of the students, in present study the rate of back pain in right-handed students was more prevalent than left-handed students.

Inappropriate sitting situations in the classroom due to the dominant cerebral hemisphere can lead to musculoskeletal pain in the lumbar and neck areas, especially lumbago. Of course, if you do not pay attention to this issue in the long term, it can lead to irreparable complications in the spine. This finding is consistent with the study by Caneiro et al. (2010) that showed sitting position is effective on neck pain ^[8]. Therefore, it is recommended to provide these people with warnings and training as well as corrective actions to prevent other complications of the disorder. On the other hand, there was no statistically significant difference between musculoskeletal pain and heavy student activity. In other words, the rate of musculoskeletal pain in students (with and without heavy activity) was almost similar in both nursing and midwifery groups. Due to being young and lacking in physical activity, the study population did not have a specific illness or a history of an accident affecting musculoskeletal pain.

There was a significant relationship between musculoskeletal pain and marital status. In other words, the rate of sitting and back pain was higher in married students than single students. To explain this, it can be said that married people have more duties to be done such as having a job, doing work tasks, etc. This study is partly consistent with Ramadan

Table 1 Frequency distribution and percentage of students with musculoskeletal pain by field of study

Musculoskeletal pain		Field of study		
		Nursing	Midwifery	Total
Field of study		N (%)	N (%)	N (%)
		67 (55.8)	53 (44.2)	120(100)
Sex	Female	29(43)	53(100)	90(75)
	Male	38(57)	0(0)	30(25)
Musculoskeletal pain	No	19(28.4)	16(30.2)	35(29.2)
	Yes	48(71.6)	37(69.8)	85(70.8)
Neck pain	No	50(74.6)	44(83)	94(78.3)
	Yes	17(25.4)	9(17)	26(21.7)
Shoulders pain	No	56(83.6)	41(77.4)	97(80.8)
	Yes	11(16.4)	12(22.6)	23(19.2)
Elbows pain	No	61(91)	50(94.3)	111(92.5)
	Yes	6(9)	3(5.7)	9(7.5)
Wrists and hands pain	No	64(95.5)	53(100)	117(97.5)
	Yes	3(4.5)	0(0)	3(2.5)
Back pain	No	41(61.2)	29(54.7)	70(58.3)
	Yes	26(38.8)	24(45.3)	50(41.7)
Backward seat pan and waist pain	No	36(53.7)	23(43.4)	59(49.2)
	Yes	31(46.3)	30(56.6)	61(50.8)
Thighs pain	No	60(89.6)	50(94.3)	110(91.7)
	Yes	7(10.4)	3(5)	10(5)
Knees pain	No	47(70.1)	39(73.6)	86(71.7)
	Yes	20(29.9)	14(26.4)	34(28.3)
Legs pain	No	59(88.1)	53(100)	112(93.3)
	Yes	8(11.9)	0(0)	8(6.7)

Table 2 Comparison of musculoskeletal pain in terms of studied variables

Musculoskeletal pains		Field pf study		Total N (%)	X2. Value	df	P. Value
		Nursing N(%)	Midwifery N (%)				
Leg pain	No	59 (88.1)	53(100)	112(97.3)	6.780	1	0.009**
	Yes	8(11.9)	0(0)	8(6.7)			
Handed							
		Right	Left				
Back pain	No	58(55.2)	12(80)	70(58.3)	3.511	1	0.05*
	Yes	47(44.8)	3(20)	50(41.7)			
Height							
		Normal	Tall				
Shoulder pain	No	79(78.2)	18(94.7)	97(80.8)	3.92	1	0.04*
	Yes	22(21.8)	1(5.3)	23(19.2)			
Marital status							
		Single	Married				
Backward seat pan and waist pain	No	56(53.3)	3(23.1)	59(49.2)	3.971	1	0.04*
	Yes	51(47.7)	10(76.9)	61(50.8)			

0.05 (*) 0.01(**)

Badr et al. studies (2006) who examined musculoskeletal disorders in different areas of the body with respect to marital status [13]. On the other hand, there was no statistically significant difference between the musculoskeletal pains of students and their weight. Therefore, the rate of musculoskeletal pain in obese and normal weight people is almost similar. The rate of musculoskeletal pain in male and female students was approximately similar. These results are not consistent with the study by Youdas et AL that showed gender has an effect on musculoskeletal pain. Furthermore it is consistent with a study by Kohestani et

AL that showed some musculoskeletal pain is more prevalent in women [13]. Shoulder pain was statistically significant between normal height and tall individuals. In other words, shoulder pain has higher rate in normal height than tall students. This finding is consistent with a study by Dianat et al. that indicated normal students were more likely to suffer from shoulder pain. The main reason may be that the sitting position, body posture of normal people is due to the different height of tall people [5]. This study is not without limitations. These limitation include variables have not been investigated in large sample with

Table 3 Comparison of musculoskeletal pain in terms of studied variables

	N (%) N (%)		Total	X2	Df	Sig
Musculoskeletal pain	Heavy Activity					
	Yes	No				
No	7(30.4)	28(28.9)	35(29.2)	0.022	1	0.882
Yes	16(69.6)	69(71.1)	85(70.8)			
	Weight					
	Fat	Normal				
No	8(36.4)	27(27.6)	35(29.2)	0.411	1	0.675
Yes	14(63.6)	71(72.4)	85(70.8)			
	Accident or disease					
	Yes	No				
No	1(20)	34(29.6)	35(29.2)	0.214	1	0.638
Yes	4(80)	81(70.4)	85(70.8)			
	Sex					
	Male	Female				
No	11(28.9)	24(29.3)	35(29.2)	0.212	1	0.645
Yes	27(71.1)	58(70.7)	85(70.8)			

different characteristics. Therefore, it is recommended that future studies provide a more comprehensive study with a larger sample size and with a wild age range among students and non-students in order to reduce the pain associated with musculoskeletal disorders by identifying other factors affecting musculoskeletal disorders. Finally, corrective interventions and training for students in a good sit-in condition provided a guarantee for future community health.

Conclusion

The results of this study show the importance of demographic characteristics that could be some factors that predict the musculoskeletal pain of the students and be resulted in disability, pain intensity and social functioning. As the findings of this study showed that musculoskeletal

pain is associated with some demographic variables of students. Therefore, further studies should be considered for confirming these results and consequently designing interventions for high-risk groups.

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