



Original Article

Prevalence of Musculoskeletal Pain and Burnout among Librarians of Shiraz University of Medical Sciences

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ABSTRACT

Background: Musculoskeletal pain and burnout can influence the quality of services provided by librarians working in libraries; therefore, the present study has been designed to investigate the prevalence of musculoskeletal pain as well as the existence of burnout among librarians working in libraries affiliated with Shiraz University of Medical Sciences.

Methods: This is a descriptive cross-sectional study conducted by taking a census of librarians working in libraries affiliated with Shiraz University of Medical Sciences. The prevalence of musculoskeletal pain was assessed using the standard Nordic questionnaire, and the pain intensity was measured based on the numeric pain rating scale. The standard Maslach and Jackson questionnaire, with a reliability coefficient of 0.78, was used to measure burnout.

Results: According to the findings, the most common musculoskeletal pain experienced by the librarians was a pain in the spinal region, particularly in the low back, and after that, the pain in the upper limb was most frequent. In terms of burnout, librarians experienced low levels of emotional exhaustion and depersonalization, and moderate levels of personal accomplishment.

Conclusion: All librarians reported at least one musculoskeletal pain. Low back pain is frequent among librarians. These individuals suffer from burnout.

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Introduction

Incorrect postures and unfavorable environmental conditions can result in physical injuries and musculoskeletal disorders. These bring both short- and long-term consequences, and are one of the common causes of occupational injuries and disabilities in developing countries. They are also the most common causes of work-related disability, which creates financial pressure and medical expenses. Long-term work postures and high and constant pressure on the neck and shoulder muscles increase the risk of musculoskeletal disorders. Work-related musculoskeletal disorders are

due to a variety of factors such as repetitive movements, excessive force, undesirable and static postures, sitting and standing for long periods [1]. Besides, psychological risk factors and work-related psychosocial factors can also contribute to the development of these disorders [2, 3]. Musculoskeletal disorders can also impair a person's quality of life [4]. Librarians are among those who experience diseases such as back pain, wrist pain, and neck pain. These are often due to sitting for a long time, carrying books without a cart, or excessive use of computers. These musculoskeletal injuries in the neck, shoulders, and wrists lead to reduced efficiency [5-7]. In addition to physical injuries, librarians are not immune to non-physical injuries associated with occupational and environmental conditions. Among these non-physical injuries, we can refer to burnout. Burnout is a work-related syndrome [8] and a three-dimensional structure

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consisting of emotional exhaustion, depersonalization, and reduced personal accomplishment, and is seen among individuals handling people-work. Burnout emerges in response to chronic emotional stress resulting from excessive contact with other people. Therefore, this syndrome can be regarded as a kind of occupational stress. Burnout can reduce the quality of services provided by an employee, decrease productivity, and lead to depression and diseases [9, 10]. Since librarians have lots of direct contact with other people, they are likely to develop this syndrome.

Studies carried out on librarians have reported musculoskeletal pain and burnout among these people [5, 8, 11-13]. The most musculoskeletal disorder observed among librarians is the pain in the lower back and neck [5, 11]. Low levels of emotional exhaustion (a state in which a person feels frustrated, burnout, lethargic, and unable to be present at work the following day) are frequent among librarians [12]. In the study of Hariri and Hassanzadeh, the burnout seen among librarians had a significant relationship with work experience, age group, and level of education, but had no significant relationship with marital status and income level. In this study, higher levels of burnout were observed among librarians who have been providing services in the library of their workplace for more than twenty years [13]. In another study, it was found that there was no significant relationship between ergonomic conditions and the occurrence and intensity levels of librarians' emotional exhaustion, decreased personal accomplishment, and depersonalization [14]. The study of Mohammad Ismail and Joulahi revealed that there was no significant relationship between work-related musculoskeletal disorders and age, work experience, work hours, library equipment, and environmental conditions [5]. Mostafavi et al., however, reported that all three aspects of burnout would increase with age and work experience [15]. Available evidence suggests that the results of the studies are not entirely consistent, and there are some discrepancies between them.

In today's society, libraries provide a wide range of traditional and electronic services to users, so they play a fundamental role in helping people in the community expand their knowledge and improve their lives. If librarians are in good physical and mental health, they can play their part in providing better and higher quality services and attracting more audiences to these centers. Besides, studies confirm that work can influence individuals' mental and physical health, and even emotional intelligence. Librarians are no exception to the rule, and librarianship can certainly affect their health. Therefore, particular attention should be given to librarians' mental and physical problems so that they can deliver the best service possible. Besides that, having accurate information about the employees' level of physical and mental health helps the library managers to provide related services within the libraries.

So far, few studies have examined musculoskeletal pain among librarians in Iran [5, 11]. There is also little evidence on the simultaneous study of musculoskeletal pain and burnout. The only survey which has simultaneously

examined the two variables is a study on librarians working in public libraries in Hamadan whose results showed the presence of musculoskeletal pain in different parts of the body with higher prevalence in the lower back and neck. The study also revealed that librarians are at risk for burnout [11]. The medical science libraries are special ones containing thick reference books that students need to borrow every day. Besides, the librarians in academic libraries have different relationships with the students compared with those in public libraries with clientele. Also, students have different motivations for using the libraries as compared to clientele. For these reasons, there might be differences between the results of the simultaneous study of musculoskeletal pain and burnout factors in different types of librarians. Given the above discussion, this study aimed to simultaneously investigate musculoskeletal pain and burnout among librarians of Shiraz University of Medical Sciences. The new approach adopted in this research is the simultaneous study of physical (musculoskeletal disorders) and psychological (burnout) dimensions of librarians in special libraries.

Methods

This study aimed to investigate the prevalence of musculoskeletal pain and burnout among librarians of Shiraz University of Medical Sciences. This study is a cross-sectional descriptive survey. The statistical population of this study consists of all librarians working in libraries affiliated with Shiraz University of Medical Sciences. Sampling was done by taking a census of all the aforementioned librarians who were available. Since some librarians were not present during our frequent visits to the libraries, and some others were not reachable because their workplaces were located outside the city, and some of them were reluctant to participate in the study, the total number of individuals who participated in the study reached 39 people.

In this study, the standard Nordic questionnaire, numeric pain rating scale, and standard Maslach and Jackson burnout questionnaire were used to assess data of pain location and intensity, and the rate of job burnout among librarians. Demographic and other information required, such as age, height, weight, and length of service, were also collected through a self-made questionnaire. The questionnaires were completed by the researcher through in-person interviews.

The Maslach and Jackson Questionnaire is a 22-item questionnaire that is scored using the Likert scale- from zero (never) to six (daily). The validity and reliability of this questionnaire have been approved by Filian (1992) for the first time in Iran, and the Cronbach's alpha reliability coefficient was 0.78 [16]. Badri Gregory (1995) has assessed the validity of the questionnaire between 0.75-0.84 [17]. The burnout questionnaire is then a standardized questionnaire and has the acceptable validity to measure burnout rate.

Eligible subjects completed the informed consent form before entering the study. Inclusion criteria included working in libraries affiliated with Shiraz University of

Medical Sciences, with at least three years of experience.

Subjects were excluded if they were unwilling to participate in the study. Neuropsychiatric diseases, musculoskeletal abnormalities, or other disorders that cause pain not associated with occupational activities, such as scleroderma, muscular dystrophy, poliomyelitis, and progressive congenital scoliosis, were self-reported. The data were collected, entered into a computer, and analyzed at the level of descriptive statistics using SPSS-16 statistical software. Statistical characteristics such as frequency and percentage, mean, standard deviation, minimum, and maximum were used to express the rate of prevalence and descriptive statistics. The relationship between variables was assessed using Chi-square (χ^2) and Fisher's exact test.

Results

The present study was carried out on 39 individuals working in libraries affiliated with Shiraz University of Medical Sciences. The highest proportion of the participants (64.1%) had a bachelor's degree. 28.2% of the participants were aged 24-33, 35.9% were 34-4, 28.2% were 44-53, and 7.7% were in the 54-65 age range. In terms of the workplace, 56.4% of the study subjects worked in faculties and 41% in hospitals. 86.1% of the individuals handled responsibilities in all library sections, 5.1% worked in the depository section, 2.6% in the thesis/dissertation section, 2.6% in the catalog section, 5.2% in the acquisition section, and 2.6% in other related sections. In terms of years of work experience, 41% had 5-9, 15.4% had 10-14, 23.1% had 14-19, and 20.5% had 20-24. Table 1 shows the descriptive statistics of the variables of age, height, weight, work experience, and work hours for the study population.

Out of the 39 subjects, 79.5% were women, and 20.5% were men. More than 92% of the participants were right-handed. Sitting posture was the dominant position adopted during work in approximately 80% of the subjects. In terms of mobility, 41% of the individuals reported immobility, 30.8% had regular mobility, and the rest reported irregular mobility while working. All 39 patients confirmed the presence of at least one local musculoskeletal pain. The descriptive report of pain incidence in subjects is shown in Table 2.

There was no statistically significant relationship between the dominant side of the body, the dominant posture during work, and the length of service from one side, and the occurrence of pain in parts of the body, from another, at 0.05 error levels. There was a statistically significant relationship between work hours and the incidence of pain in the lower limb only, which means that with an increase in work hours, the incidence of

pain in the lower limb also increases. The study of the relationship between the work section and the occurrence of pain in different parts of the body did not show any statistically significant relation. There was no statistically significant relationship between age and incidence of pain ($\chi^2=6.122-2.234$, $df=3$, $P=0.106-0.972$) within any part of the body, at the error level of 0.05. The study of the relationship between mobility and the incidence of pain revealed that the only statistically significant relationship was seen between mobility and the incidence of shoulder pain, in that shoulder pain is much less frequent among employees with mobility, particularly on a regular basis. In these groups, the conclusions were not statistically strong enough due to the small sample size.

The results of the Nordic questionnaire indicated that there was a statistically significant relationship between the incidence of pain in each body part and the impairment of their normal functions. The results are reported in Table 3.

Table 4 shows the values for descriptive statistics of the three dimensions of burnout and their intensities in the study sample.

According to Table 4, in total, the status of burnout was estimated to be at a low level in terms of emotional exhaustion, with a sample mean value of 12.38. This variable was also at a low level in terms of depersonalization, with a mean value of 1.61. It was at a medium level in terms of personal accomplishment.

The examination of the relationship between age, education ($\chi^2=2.895-1.790$, $df=2$, $P=0.235-0.409$), work experience ($\chi^2=4.138-5.109$, $df=6$, $P=0.658-0.530$), and work hours ($\chi^2=1.222-0.003$, $df=2$, $P=0.543-0.999$) and the occurrence and intensity of the three burnout dimensions showed no significant relation at the error level of $\alpha=0.05$. Also, there was no statistically significant relationship between the incidence of pain in the neck, back, lower and upper limbs and the occurrence and intensity of the burnout dimensions at the $\alpha=0.05$ error level.

Table 2: Incidence of musculoskeletal pain (in percentage) in the study subjects

Body part	Number (Percentage)
Neck pain	17 (43.59%)
Shoulder pain	18 (46.15%)
Elbow pain	7 (17.95%)
Wrist/Hand pain	19 (48.72%)
Upper back pain	17 (43.59%)
Low back pain	23 (58.97%)
Hip pain	10 (25.64%)
Knee pain	16 (41.02%)
Ankle/ Foot pain	3 (7.69%)
Upper limb pain	26 (66.67%)
Lower limb pain	19 (48.72%)
Spinal pain (thoracic & lumbar region)	26 (66.67%)

Table 1: Minimum, maximum, mean and standard deviation values for age, height, weight, work experience, and work hours in the study subjects

Variable	Number	Minimum	Maximum	Mean±SD
Age (year)	39	24	65	39.94±8.58
Height (m)	39	1.44	1.80	1.63±7.39
Weight (kg)	39	41	120	63.84±1.37
Work Experience (year)	39	5	27	13.92±6.85
Work Hours (h)	39	4	9	7.34±1.55

Table 3: Results of the study of the relationship between the incidence of pain and impairment of normal functions of the relevant organ

Type of Relationship	chi-square (χ^2)	Difference of Freedom (df)	P value
Neck pain and impairment of its normal functions	7.422	1	0.011
Shoulder pain and impairment of its normal functions	15.690	1	<0.0001*
Elbow pain and impairment of its normal functions	9.637	1	0.028*
Hand pain and impairment of its normal functions	18.246	1	<0.0001*
Upper back pain and impairment of its normal functions	7.422	1	0.011*
Back pain and impairment of its normal functions	11.645	1	<0.0001*
Low Back pain and impairment of its normal functions	12.058	1	<0.0001*
Hip pain and impairment of its normal functions	16.63	1	<0.0001*
Knee pain and impairment of its normal functions	12.264	1	<0.0001*
Ankle pain and impairment of its normal functions	12.316	1	0.077*

* Significant at $\alpha=0.05$ error level

Table 4: Minimum, maximum, mean, and standard deviation values for burnout dimensions and their intensities in the study subjects

Variable	Number	Minimum	Maximum	Mean \pm SD
Emotional Exhaustion	39	3	38	12.38 \pm 7.89
Intensity of Emotional Exhaustion	39	4	44	15.53 \pm 9.56
Depersonalization	39	0	6	1.61 \pm 2.04
Intensity of Depersonalization	39	0	10	1.89 \pm 2.53
Personal Accomplishment	39	21	48	38.56 \pm 6.56
Intensity of Personal Accomplishment	39	6	56	42.41 \pm 9.01

Discussion

All the 39 participants in the study confirmed the presence of at least one musculoskeletal pain, the most frequently reported being low back pain. One reason for the higher prevalence of low back pain among librarians might be because these individuals stay seated in an incorrect posture during long hours of work. Wrong sitting posture pulls the spinal column curves out of its normal position, increasing the pressure on the vertebrae and discs in the spine and causing pain. The study of Zare Gavvani et al. on librarians working in public libraries showed that low back pain was highly frequent among these individuals [11]. After low back pain, upper limb pain was highly prevalent among librarians. Since librarians are frequently moving books, checking out, and checking in books to the clients, the pressure exerted by the weight of the books and dissertations on the upper limb increases the pain in this area. Also, our findings showed no significant relationship between the presence of musculoskeletal pain and age, which is consistent with the previous study results [18, 19]. There was no significant relationship between musculoskeletal pain and length of service, which is consistent with the results of Mortazavi et al. and Pourabbas et al. [6, 18].

The results of the present study showed no statistically significant relationship between musculoskeletal pain and the dominant posture during work, which is consistent with the findings of Dehghanmanshadi et al. [19]. The results of the present study indicated that an increase in work hours increases pain in the lower limbs. Mobility also decreases the incidence of shoulder pain among librarians. This finding has been reported in previous studies [7]. In the present study, it was found that pain in any part of the librarian's body impairs the normal functioning of that part while the librarian is working. It should be pointed out that librarians' dysfunction due to musculoskeletal pain can affect their productivity and the quality of services they provide.

In our study of burnout, we found low levels of emotional exhaustion, low levels of depersonalization, and moderate levels of personal accomplishment among librarians. No significant relationship existed between different dimensions of burnout and age, which is in agreement with the findings of previous studies [20-27], but in contrast with those reported by Nyklíček et al., Armon, Boyas et al. [28-30]. These studies found higher levels of burnout among young people. The discrepancy might be due to inconsistencies in the age the individual started working at different parts of the job pyramid and receiving appropriate training upon starting work. The subjects of this study are in direct contact with the medical, health, and treatment staff and can gain sufficient knowledge from them about how to avoid mental and physical injuries and prevent burnout. Besides, these individuals work in a medical and health organization, and the organizational policies may include training required to adapt their employees to working conditions, environments, challenges ..., and to provide them with necessary instructions and services to prevent health problems. Therefore, by learning how to adapt to their working conditions and environment, they would take preventive measures that can avoid the risk of burnout with increased age. The results of some studies conducted in Iran are also inconsistent with the findings of the present research. These studies have shown that burnout increases among librarians with an increase in age [13, 15, 31, 32]. One reason for that might be psychological factors affecting the job, difficult working conditions, poor job promotion conditions, and lack of cooperation of the library manager with librarians.

Similar to other studies, the present research found no statistically significant relationship between education level and burnout [20, 30, 33]. Talaei et al. showed that education level had a significant relationship only with personal accomplishment and had no significant relationship with the two other burnout dimensions [34]. The findings of Demir et al., however, revealed that the rate

of burnout decreased with increased education level [35].

There was no significant relationship between different dimensions of burnout and work experience. Several studies are in line with [20, 26, 34, 36, 37] and several ones in contrast with this finding [15, 22, 31, 32, 35]. In the latter studies, the rate of burnout decreased with increased work experience. The reason might be that as the individual's work experience increases, they get familiar with the working environment and learn how to deal with the problems at work and manage work stress. The results of Hariri's study were also inconsistent with ours, but in Hariri's, the rate of burnout increased with age [13].

Mirabzadeh et al. found no statistically significant relationship between work hours and any of the dimensions of burnout [25]. The reason might be because all participants in the study worked the same number of hours and didn't work overtime.

According to our findings in this study, there was no significant relationship between the prevalence of musculoskeletal pain in different body parts and burnout among librarians of Shiraz University of Medical Sciences. One reason might be that burnout is affected more by psychological factors and problems rather than physical issues. Based on the previous studies, factors such as lack of support from supervisors, job insecurity, lack of cooperation of managers, lack of proper motivational strategies, unscientific methods of performance appraisal, repetitive activities in a job, assigning undesirable responsibilities to employees, lack of challenges or stimuli, staff shortages and the resulting increase in responsibilities are the most common causes of stress and burnout among librarians [38, 39]. It can be explained because more than one librarian works in a library, the tasks are dividend, and the workload on librarians reduces, so burnout has not been statistically related to the prevalence of musculoskeletal pain. In the study of Zare Gavvani et al., however, a significant relationship was observed between burnout and musculoskeletal disorders. The reason for this discrepancy may be because the participants in the study of Zare Gavvani et al. experienced a higher burnout intensity compared to the subjects of the present study. High-intensity burnout is likely associated with musculoskeletal pain, but the relationship is not significant at the lower intensity of the syndrome. Furthermore, the discrepancy between the two studies may be due to the smaller sample size of our research.

One of the limitations of this research was the small sample size. Not all librarians working in libraries affiliated with Shiraz University of Medical Sciences were reachable, because of working in hospitals, colleges, and educational centers located outside the city; also, some librarians were unwilling to participate in the study.

Conclusion

According to the findings of the present study, there is a significant prevalence of low back pain among librarians working in libraries affiliated with Shiraz University of Medical Sciences. Burnout is also seen among these

people. Based on these results, it is necessary to pay attention to librarians as being individuals who are at risk of musculoskeletal pain and burnout. Therefore, appropriately designed workstations and intervention programs such as ergonomic programs, sports programs ... must be provided. It also seems necessary that the university holds classes and create training programs to help librarians become informed about the ongoing intervention methods and to teach them appropriate strategies to improve their working environment.

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