

The Prevalence of Leg Pain among Female Hairdressers: A Case Study in Shiraz in 2010

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ABSTRACT

Purpose: The prevalence of work-related musculoskeletal disorders is increasing worldwide. This survey aimed to evaluate the prevalence of leg pain among female hairdressers in Shiraz, Iran, in 2010.

Methods: This is a descriptive-correlational study that was conducted on female hairdressers in Shiraz, Iran. A total of 239 hairdressers were selected by available sampling method. Data were collected by interview and a questionnaire regarding their age, body mass index, marital status, experience, total work time, positions during work (sitting and standing), daily exercise, types of shoes worn during work, and use of arch support. Also existence of pain in feet and legs was evaluated. We used descriptive statistics and Chi-square test to analyze the collected data. The statistical analyses were done by SPSS version 16.

Results: About 30.1% of subjects had a BMI lower than 18 and 56.1% of them were married. Also 38.9% of subjects had a total work time of more than 8 hours per day and 69.5% of them worked in the standing position. According to the results, 53.1% of the subjects wore ordinary sandals and only 8.4% of them used arch support. Majority of the subjects (70.7%) reported pain in their feet and legs. The result also revealed the significant correlation between pain prevalence and age, BMI, marital status, total work time per day, and type of shoes worn during the work. Also, married people reported pain more.

Conclusion: According to the findings of this study, several factors are associated with discomforts in the legs and feet among hairdressers. Therefore, hairdressing training in correct work procedures and modifying work conditions such as designing a proper chair, reducing working hours, use of medical shoes and sandals can prevent the incidence of musculoskeletal disorders in this occupational group.

Keywords:

Female, Hair, Pain, Leg, Foot

1. Introduction

W

orking is among the factors, which to a great extent, affects the health and development of a society in terms of social and economic aspects. Working environment and conditions might bring about a number of physical disorders or maladies, there-

by reducing the work efficiency [1, 2]. In the modern world, due to a wide variety of jobs, widespread cases of skeletal-muscular disorders are ever increasing. The developed countries have gathered valuable information regarding the relationship between professional activities and epidemic growth of musculoskeletal disorders. Moreover, the developing countries report the same data concerning the problem [3, 4]. The main objective of in-

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investigating the “hairdressing job” is the possibility of alleviating the symptoms of such people. Musculoskeletal disorders due to work usually involve waist, spinal column, and upper Limbs. These disorders are the most common job-related harm and malady which also turned out to be the most contributing factors to workers’ inability to work. Musculoskeletal diseases affect 7% of patients in the community, 14% of referring cases to physicians, and 19% of hospital admissions. Besides, 62% of patients with musculoskeletal diseases have limitation of movements [5].

Various factors cause such harms, which can be divided into physical risk factors like poor posture, lifting and carrying heavy loads, and work with repetitive movements; and psychological, organizational, or individual factors [6, 7]. Working in unpleasant conditions causes temporary discomfort in the body and if one continuously works under such circumstances, he or she will end up in malady and discomfort in musculoskeletal or nervous system. These maladies will result in inability to work. Also, the main complaint of those who constantly work in standing position would be pain in feet and lower parts of the back [8].

One of the jobs that cause musculoskeletal disorders is hairdressing. This job entails a person to do a specific activity, either standing or sitting for a long time. In the former case the whole weight is distributed on legs and feet, causing disorders in this area. However, the latter position leads to pain in back and waist. In hairdressing due to repetitive movements, prolonged working in standing or even wrong positions and postures, the hairdresser is likely to be affected by musculoskeletal disorders. Preventing such diseases requires body position analysis using methods of ergonomics so that necessary modifications are applied [9].

In a study by Margaret Best conducted on 204 hairdressers in Australia in 2014, 70% of them suffered from musculoskeletal disorders and discomforts in different parts of the body. Also, it was pointed out that long stand-up and wrong working postures were among the leading factors causing these problems [10].

In another study by Nasir and his colleagues in 1988, the job-related problems such as dermatologic disorders, respiratory diseases, osteoarthritis, and varicose veins in the hairdressers of Tehran were studied. The subjects comprised 598 hairdressers, (200 female and 398 male) chosen randomly from different districts of Tehran. Although results showed the widespread epidemics of dermatologic disorders (22.24%), the number of those suffering from osteoarthritis was remarkably higher. As suggested by the gathered data, 133 had dermatologic

disorders, 213 varicose veins, and 517 osteoarthritis. Of them, 333 (105 female and 228 male) complained of pain in legs and calves. Only 13.8% showed any sign or symptom of being affected by respiratory disorders [11].

A study in Taiwan compared the mechanical coping of barbers’ and hairdressers’ wrists upon trimming and cutting. It yielded that the average time for a female client (51.4 min) was significantly longer than that of male clients (35.6 min) and electrical activities of muscles were more in women than in men. Given the few studies conducted in this field, the information about musculoskeletal problems in this occupational group is scarce [12].

In another research carried out in Sardasht, Iran, working condition and the factors affecting the musculoskeletal disorders among barbers and hairdressers were studied. The results showed that 56% of them complained of the pains in their calves and legs [13].

Considering the little research done in this field and lack of analyses of the working conditions (work experience, working hours, working conditions, type of shoes, using insoles in shoes), the relevance and impact of such variables as gender, age, work experience have also been neglected. Moreover, pain intensity, time of pain, and different treatments have not been evaluated too. Thus, the degree of such pains and the triggering factors, along with characteristics of barbers and hairdressers, should be studied to come across the required measures to prevent such pains or the best relieving treatments.

The main objective of the present study was to study the widespread epidemics of such pain among female hairdressers in Shiraz. In our study, pains in calves and legs of the subjects were studied so as to explore any posture or position that could cause musculoskeletal problems. Furthermore, a question was posed regarding the possible effect of activities like daily exercises and using insoles in shoes in preventing or alleviating pain.

2. Materials & Methods

This is a descriptive-correlational study that was conducted on female hairdressers in Shiraz, Iran. A total of 239 hairdressers were selected by available sampling method. The locations of conducting research were the subjects’ shops. The samples comprised all age groups. Inclusion criteria included the willingness to participate in research and working as a hairdresser or a barber in Shiraz. Exclusion criteria were having congenital abnormalities, fractures in knees or feet, having diabetes, or being pregnant. To collect the data, a questionnaire, consisting

Table 1. Characteristics of the participants with regard to age group, BMI, and marital status.

Variables		No.	%
Age group	25-35 years	155	64.9
	36-45 years	62	25.9
	46-55 years	22	9.2
BMI	Very thin	72	30.1
	Thin	35	14.6
	Average	42	17.6
	Obese	35	14.6
	Very obese	55	23
Marital status	Married	134	56.1
	Single	105	43.9

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of two parts was used: The first part included questions about personal and professional characteristics, including age, body mass index, marital status, work experience, working hours, working conditions, daily exercises, type of footwear when working and using insoles

in shoes. The second part included questions about experiencing pain over the past 6 months, feeling pain in the legs at present, the time of having pain, the extent or degree of pain during daily activities or work, any treatment and its type.

Table 2. Characteristics of the participants with regard to work experience, working hours, working conditions, daily exercise, shoes worn at work and having insoles in shoes.

Variables		No.	%	
Work experience	5≥years	96	40.2	
	6-10 years	86	36	
	11-15 years	30	12.6	
	15<years	27	11.3	
Working hours	8<hours	78	32.6	
	8 hours	68	28.5	
	8<hours	93	38.9	
Working conditions	Standing	166	69.5	
	Sitting	73	30.5	
Daily exercise	No sports	193	80.8	
	Exercise regularly	12	5	
	Irregular exercise	34	14.2	
Type of shoes during working	Shoe	Usual	52	21.8
		Medical	15	6.3
	Sandal	Usual	127	53.1
		Medical	45	18.8
Insoles in shoes	Yes	20	8.4	
	No	219	91.6	

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Body mass index is obtained through measuring the ratio of weight to squared height (kg/m^2). The body type based on BMI numerical value is classified as follows:

1. Very thin individuals with BMI lower than or equal to 20.29;
2. Thin individuals with BMI from 20.30 to 22.29;
3. Average individuals with BMI from 22.30 to 24.29;
4. Fat individuals with BMI from 24.30 to 26.99;
5. Very fat individuals with BMI higher than or equal to 27.00

Pain intensities were classified as follows: Grade 1 is a mild pain, which calls for no tranquilizers and is relieved by resting. Grade 2 is a permanent mild pain, which does not interfere with working. Grade 3 is accompanied by moderate pain, which stops a person from working properly. Grade 4 is a type of severe pain, which prevents a person from doing any activities. The information gathered through the questionnaire was analyzed through

descriptive statistics and Chi-square test using SPSS version 16.

3. Results

According to obtained data, 56.1% of the subjects were married and 43.9% were single. Also, 64.9% of the subjects were in age group of 25-35 years and 30.16% were in the classification of "very thin" (Table 1). The results indicated that the largest number of hairdressers (40.2%) had the working experience of lower than or equal to 5 years. About 38.9% worked over 8 hours a day, 69.5% worked in a standing position, 80.8% did no daily exercises, 53.1% used usual sandal while working and 91.6% used no insoles in their shoes (Table 2). According to the results, all participants (70.7%) reported pain over the past 6 months and 66.5% reported pain in their feet and calves at the time of the study. The largest number of participants (34.3%) felt pain while working and relaxing at night and 31.4% reported grade 1 pain (mild). In terms of treatment, 21.8% received treatment and majority of them (14.2%) used medications (Table 3).

According to the results, 50% of the first age group and 41.9% of the second age group reported grade 1 pain in-

Table 3. Characteristics of the participants with regard to pain experience (duration, time, intensity and treatment).

Variables	No.	%	
Experiencing pain in the last 6 months	Yes	169	70.7
	No	70	29.3
Feeling pain in the feet and legs at present	Yes	159	66.5
	No	80	33.5
Time of pain	During work	18	7.5
	At night when resting	64	26.8
	Both	82	34.3
Pain intensity	Grade 1	75	31.4
	Grade 2	69	28.9
	Grade 3	15	6.3
	Grade 4	5	2.1
Treatment	Yes	52	21.8
	No	141	59
Type of treatment	Medicinal	34	14.2
	Physiotherapy	10	4.2
	Medical shoe	7	2.9
	Surgery	1	0.4

Table 4. Prevalence of experiencing pain in the past 6 months, pain in legs at present, time of pain, and pain intensity with regard to age groups.

Prevalence of pain	Experiencing pain in the past 6 months		Feeling pain in legs at present		Time of pain			Pain intensity			
	Chi-squared	P-value	Chi-squared	P-value	Chi-squared	P-value	Chi-squared	P-value			
	0.61	0.73	0.10	0.94	3.44	0.48	12.98	0.04*			
Age groups	Yes	No	Yes	No	During work	At night when resting	Both	Grade 1	Grade 2	Grade 3	Grade 4
25-35 years	107 (69%)	48 (31%)	102 (65.8%)	53 (34.2%)	14 (13.2%)	44 (41.5%)	48 (45.3%)	53 (50%)	44 (41.5%)	9 (8.5%)	0 (0%)
36-45 years	46 (74.2%)	16 (25.8%)	42 (67.7%)	20 (32.2%)	3 (7%)	14 (32.6%)	26 (60.5%)	18 (41.9%)	16 (37.2%)	5 (11.6%)	4 (9.3%)
46-55 years	16 (72.7%)	6 (27.3%)	15 (68.2%)	7 (31.8%)	1 (7.6%)	6 (40%)	8 (53.3%)	4 (26.7%)	9 (60%)	1 (6.7%)	1 (6.7%)

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tensity and 60% of the third age group reported grade 2 pain intensity. This difference was statistically significant (P=0.04) (Table 4).

According to results, 62% of very thin people, 52.6% of thin people, 50% of the average, 59.3% of obese, and 25% of very obese people reported pain at night when resting. This difference was statistically significant (P=0.01). Also, 56% of very thin individuals and 55.6% of very fat individuals had grade 1 pain. About 56.5% of very thin individuals, 50% of average individuals, and 36.8% of very fat individuals reported grade 2 pain. This difference was statistically significant (P=0.04) (Table 5).

According to the results, 76.1% of the married subjects and 63.8% of the single subjects reported pain over the past 6 months. This difference was statistically signifi-

cant (P=0.03). Also, 49.5% of the married subjects reported grade 2 pain and 62.7% of the single subjects had grade 1 pain. This difference was statistically significant too (P=0.02) (Table 6).

With regard to working hours (Table 7), 51.3 % of the first age group and 73.5% of the second age group and 84.9% of the third age group reported pain during the past 6 months. This difference was statistically significant (P=0.001). Regarding the relationship between current feeling of pain in the legs and working hours, 51.3% of the first age group, 69.1% of second age group, and 77.4% of third age group reported pain in calves at present. This difference was statistically significant too (P=0.01). Finally with regard to pain intensity and working hours, 51.2 % of the first age group and 44% of the second age group had grade 1 pain, also 54.2% of the

Table 5. Prevalence of experiencing pain in the past 6 months, feeling pain in legs at present, time of pain, and pain intensity with regard to BMI.

Prevalence of pain	Experiencing pain in the past 6 months		Feeling pain in legs at present		Time of pain			Pain intensity			
	Chi-squared	P-value	Chi-squared	P-value	Chi-squared	P-value	Chi-squared	P-value			
	1.82	0.19	1.028	0.79	19.38	0.01*	4.38	0.04*			
BMI	Yes	No	Yes	No	During work	Night when resting	Both	Grade 1	Grade 2	Grade 3	Grade 4
Skinny	50 (69.4%)	22 (30.6%)	49 (68.1%)	23 (31.9%)	3 (6%)	31 (62%)	16 (32%)	28 (56%)	19 (38%)	3 (6%)	0 (0%)
Thin	23 (65.7%)	12 (34.3%)	22 (62.9%)	13 (37.1%)	4 (17.4%)	7 (30.4%)	12 (52.2%)	7 (30.4%)	13 (56.5%)	2 (8.7%)	1 (4.3%)
Average	25 (59.5%)	17 (40.5%)	26 (61.9%)	16 (38.1%)	5 (19.2%)	8 (30.8%)	13 (50%)	12 (46.2%)	13 (50%)	1 (3.8%)	0 (0%)
Obese	27 (77.1%)	8 (22.9%)	26 (74.3%)	9 (25.7%)	6 (22.2%)	5 (18.5%)	16 (59.3%)	15 (55.6%)	10 (37%)	2 (7.4%)	0 (0%)
Very obese	44 (80%)	11 (20%)	36 (65.5%)	19 (34.5%)	0 (0%)	13 (34.2%)	25 (65.8%)	13 (34.2%)	14 (36.8%)	7 (18.4%)	4 (10.5%)

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Table 6. Prevalence of experiencing pain in the past 6 months, feeling pain in legs at present, time of pain, and pain intensity with regard to marital status.

Prevalence of pain	Experiencing pain in the past 6 months		Feeling pain in legs at present		Time of pain			Pain intensity			
	Chi-squared	P-value	Chi-squared	P-value	Chi-squared	P-value	Chi-squared	P-value			
	4.30	0.03*	1.79	0.18	1.24	0.53	14.9	0.002*			
Marital status	Yes	No	Yes	No	During work	Night when resting	Both	Grade 1	Grade 2	Grade 3	Grade 4
25-35 years	102 (76.1%)	32 (23.9%)	94 (70.1%)	40 (29.9%)	10 (10.3%)	35 (36.1%)	52 (53.6%)	33 (34%)	48 (49.5%)	11 (11.3%)	5 (5.2%)
36-45 years	67 (63.8%)	38 (36.2%)	65 (61.9%)	40 (38.1%)	8 (11.9%)	29 (43.3%)	30 (44.8%)	42 (62.7%)	21 (31.3%)	4 (6%)	0 (0%)

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Table 7. Prevalence of experiencing pain in the past 6 months, feeling pain in legs at present, time of pain, and pain intensity with regard to working hours.

Prevalence of pain	Experiencing pain in the past 6 months		Feeling pain in legs at present		Time of pain			Pain intensity			
	Chi-squared	P-value	Chi-squared	P-value	Chi-squared	P-value	Chi-squared	P-value			
	23.57	0.0001*	12.30	0.001*	1.53	0.82	13.95	0.03*			
Working hours	Yes	No	Yes	No	During work	At night when resting	Both	Grade 1	Grade 2	Grade 3	Grade 4
25-35 years	40 (51.3%)	38 (48.7%)	40 (51.3%)	38 (48.7%)	6 (14.6%)	16 (39%)	19 (46.3%)	21 (51.2%)	15 (36.6%)	2 (4.9%)	3 (7.3%)
36-45 years	50 (73.5%)	18 (26.5%)	47 (69.1%)	21 (30.9%)	6 (12.55%)	19 (39.6%)	23 (47.9%)	21 (43.8%)	26 (54.2%)	1 (2.1%)	0 (0%)
46-55 years	79 (84.9%)	14 (15.1%)	72 (77.4%)	21 (22.6%)	6 (8%)	29 (38.7%)	40 (53.3%)	33 (44%)	28 (37.3%)	12 (16%)	2 (2.7%)

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Table 8. Prevalence of experiencing pain in the past 6 months, feeling current pain in legs, time of pain, and pain intensity with regard to working shoes.

Prevalence of pain	Experiencing pain in the past 6 months		Feeling pain in legs at present		Time of pain			Pain intensity				
	Chi-squared	P-value	Chi-squared	P-value	Chi-squared	P-value	Chi-squared	P-value				
	1.028	0.79	4.42	0.21	5.50	0.48	19.81	0.019*				
Type of shoes wearing during working	Yes	No	Yes	No	During work	Night time rest	Both	Grade 1	Grade 2	Grade 3	Grade 4	
Shoes	Usual	39 (75%)	13 (25%)	39 (75%)	13 (25%)	5 (12.8%)	15 (38.5%)	19 (74.8.7%)	20 (51.3%)	17 (43.6%)	2 (5.1%)	0 (0%)
	Medical	10 (66.7%)	5 (33.3%)	11 (73.3%)	4 (26.7%)	1 (9.1%)	1 (9.1%)	9 (81.8%)	4 (36.4%)	3 (27.3%)	4 (36.4%)	0 (0%)
Sandal	Usual	87 (68.5%)	40 (31.5%)	84 (66.1%)	43 (33.9%)	9 (10.3%)	36 (41.4%)	42 (48.3%)	35 (40.2%)	43 (49.4%)	6 (6.9%)	3 (3.4%)
	Medical	33 (73.3%)	12 (26.7%)	25 (55.6%)	20 (44.4%)	3 (11.1%)	12 (44.4%)	12 (44.4%)	16 (59.3%)	6 (22.2%)	3 (11.1%)	2 (7.4%)

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second age group had grade 2 pain. This difference was statistically significant (Table 7) ($P=0.03$).

With regard to the type of shoes wearing during working, 51.3% of the first group, 59.3% of the fourth group suffered from grade 1 pain and 36.4% of the second group had grade 1 and 3 pain, while 49.4% of the third group had grade 2 pain. This difference was statistically significant ($P=0.01$) (Table 8).

4. Discussion

The results of the study are shown that the prevalence of experiencing pain in the feet and legs over the past 6 months and at the present were 70.7% and 66.5%, respectively. These findings were consistent with findings of Nasir and his colleagues. Their study was conducted on 598 female and male hairdressers and barbers, and indicated that most of them complained of pain in feet and calves [10]. In a study on 150 barbers in Birjand, Iran, Miri and his colleagues found that 69% of barbers had discomfort in their calves [8]. Hokmabadi et al. in a study that was done in Esfarāyen, Iran, reported that 84% of people suffered leg pain (in calves) in the past year [7]. Therefore, the above results indicate that hairdressers are more prone to experience pain in feet and calves.

There was no significant relationship between experiencing pain over the past 6 months and age group. No relationship was seen between age group and time of pain too. There was no significant relationship between age groups and the pain at present but there was a significant relationship between pain intensity and age groups so that the pain intensity increased with aging. This means that subjects in the first and second age groups had pain with intensity classified as in grade 1 but older subjects reported grade 2 pain.

These findings conform to those found by Miri, but in terms of pain intensity there was no conformity that perhaps could be attributed to long working hours. So, this study showed a significant association between the pain over the past 6 months and working hours. As it was seen, those who worked longer hours reported more pain. Also, there was a significant relationship between feeling pain in calves at present and working hours, so that among those working less than 8 hours a day, 51.3% had pain in calves at the present, whereas 77.4% of those working more than 8 hour a day reported current pain in their calves. Moreover, there was a remarkable relationship between the pain intensity and working hours so that with the increase in working hours, the pain intensity rose. Our results regarding the relationship between

working hours with discomfort in the leg were in conformity with the results of Miri [9]. Also, Varen Glover et al. showed that working in a fixed position for long hours, insufficient relaxation and serving a large number of patients a day could be risk factors for discomforts of different body parts such as lower limbs and waist [14]. Another study revealed that the health status of the barbers and hairdressers who had their own businesses was lower than those of their counterparts who were paid by the others as employers. This difference could be attributed to factors such as working environment and organization, long working hours, fewer security measures, and lack of preventive medical measures in work place due to poor training [15].

Regarding the relationship between BMI and pain prevalence, as shown in Table 5, a significant relation was noticed so that very thin subjects felt pain only while relaxing at night, yet those with excessive weight reported more pain both at work and after work at night. Furthermore, a significant relationship between pain intensity and BMI was noticed so that the subjects with lower weight experienced grade 1 pain, but those with more weight had grade 2 pain and the percentages of suffering from grade 3 and 4 pains also increased. The results of the study conducted by Alexander Sigonia (2009) were nearly the same as the ones in the present study; i.e. BMI was related to knee pains [16].

There was a significant relationship between experiencing pain over the past 6 months and marital status in which married subjects had experienced more pain over the past 6 months than single ones. In addition, in analyzing the relationship between pain intensity and marital status, it was found that a lot of married subjects, suffering from grade 2 pain, were noticeable than single ones reporting grade 1 pain. This might be due to less time that married people spend on doing exercise. According to a study by Lindal Stradine and Gabriel Bamer on female employees, the women, particularly married ones, were more prone to harm due to doing house chores, lack of relaxation, or doing exercise [17].

A significant relation was noticed between pain intensity and type of shoes worn while working so that those wearing medical shoes and sandals complained about grade 1 pain and the ones with normal footwear had complained more of grade 1 and 2 pains. Therefore, wearing such shoes and sandals could be one way to reduce intensity of pain. Nonetheless, there was no significant relationship between the experiencing pain during the past 6 months, feeling pain in calves at present, and the intensity

of pain while wearing shoe pads. Probably because only a few study participants (8.4%) wore shoe pads.

In summary, a variety of factors are associated with creating pain in feet and calves. Therefore it is recommended that hairdressers follow correct work procedures and modify their work conditions. Designing a proper chair, using soft pillows beneath feet, reducing working hours, and using medical shoes and sandals can reduce the prevalence of musculoskeletal disorders in this occupational group.

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