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Research Article

4Work-family conflict and musculoskeletal disorders among wait staff- results from touristic city Isfahan, Iran

Abstract

Background: This investigation undertook to corroborate the alarming regions concerning the elements that impact work–family dispute among hotel employees in Isfahan, Iran.

Method: Data were composed of wait staff workers of 4 or 5-star (or in some rating First Class and Luxury) hotels, and gathered from 150 people by questionnaire that had three sections: demographic, musculoskeletal disorders and work-family conflict. The statistical analysis was done by running Stata version 13.

Result: Among the existing participants, 93 cases were reported having had symptoms in at least a single body region. The prevalence of the12-months of WRMSDs was 74.4% (CI95%: 66.64-82.15). As can be seen, the right ankle and right foot were the most prevalent body region having discomfort or pain 47.24% (CI95%:38.44-56.04). The final findings of our study depicted that the association of both time and strain-based work intervention with musculoskeletal disorders was significant statistically.

Conclusion: work-family conflict as a social stressor, specifically in terms of time and strain can highly impact the development of musculoskeletal disorders.

Introduction

The arrival of international tourists has witnessed a global increase from 25 to 1186 million between 1950 and 2015 [1]. This industry has created about 240 million jobs between these years, which is about 10.6 percent of the job opportunities in the world [2]. Hotels make up the most significant division in the tourism industry and for the sake of their survival and profitability, servicing with high quality is essential for them [3,4]. According to the United Nations World Tourism Organization (UNWTO 2016), the Americas, Asia and the Pacific registered an almost 6% escalation in the arrival of international tourists, with Iran being the second highest country in South Asia [1]. Tourism and the hotel industry are of extreme importance in the Iranian economy and this sector has witnessed an elevation in tourism resources, along with the total number of tourists. A total foreign tourists population of 4.7 million in 2013 gave Iran (Islamic Republic of), a first time global ranking of 48th since the inception of the Islamic Revolution and in more details, about 5 million tourists visited Iran in 2014, which justified the more than USD 8 million from tourism expenditure in that year [5]. The collection of hotels has experienced an upsurge due to a large number of travelers that come to Iran. According to statistics in 2010, the country has 782 hotels in various cities [6].

Attendants of the hotels and restaurants (wait staff) are among the people who mostly encounter guests in a face-to-face contact basis. This mode of encounter increases the pressure on these people compared with other sectors [7]. When working in hotels the pressure becomes inevitable with time, and impacts negatively on the physical status of attendants. According to Sampson et al (2014), the nature of the work at hotels includes unpredictable interaction with guests, working for long hours, night work, repetitive work, unmet requirements and low income [7]. Studies also show that the risk of musculoskeletal disorders in the industry is 1.9 times higher than that of other service jobs [8].

With the expansion of the industry, there is a growing necessity for services to tourists, and this subsequently can lead to an escalation in musculoskeletal disorders among workers [9,10]. The relationship between career associated

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musculoskeletal disorders (CAMSDs) or work related musculoskeletal disorders (WRMSDs) and work-family conflict in different jobs has been investigated in several studies [11,12], but there are no such studies related to waiting staff. Work-family conflict as a psychosocial risk factor is high in this industry (about 66%). This can be due to high working hours and also the unusual rhythm of working shifts in hotels [13].

Greenhaus & Beutell (1985) referred to work–family conflict as "a form of interred struggle in which the pressures from the work and family jurisdictions are mutually opposed in certain aspects". Consistent with Greenhaus and Beutell's (1985) description, 3 types of work–family dispute has been acknowledged in the literature: (a) time-based conflict, (b) strain-based conflict, and (c) behavior-based conflict. In 1991, Gutek et al. proposed a bidirectional orientation in each of these 3 types of work related-family conflict: (a) conflict stemming from job interfering with family and (b) conflict resulting from family intruding into the job [14].

Overwhelming evidence shows that work-family conflict is an important risk factor for the health and performance of workers [11]. In previous studies, the influence of work-family conflict on mental health and welfare of individuals has been scrutinized, and in recent years, this index has also been introduced as a factor in the creation of physical problems among workers [15,16]. Berkman et al. found that managers who consider and provide work-family needs of their employees, reduce the possibility of heart disease among them [17]. Furthermore, Hammig et al. and other studies have introduced this type of conflict as an effective cause of musculoskeletal disorders and demonstrated a significant association between these two criteria [18].

Restaurant wait staff are a large part of the workforce in the U.S. and the worker's population in this area was over 2 million in 2012. Despite such a high number of employees, few studies have been successfully conducted on the physical and psychosocial risk factors for musculoskeletal disorders in this job. However, no such study on musculoskeletal disorders has been performed yet in this job in Iran [19,20]. Since, this study aimed to evaluate musculoskeletal disorders and work-family conflict between 4 and 5-star (or in some rating First Class and Luxury) hotel waiters in Isfahan (The province is situated at the heart of Iran, and according to the Cultural Heritage and Tourism Organization of Iran, Isfahan Province among the most frequented provinces, and the third province of Iran in hotel rankings (52 hotels) [21,22]).

This hotels were selected, firstly because they attract the majority of tourists in Iran and this attraction has led to an increase in the number of travelers to Isfahan and also an increase in the work load for the waiting staff. Secondly, in Isfahan, other hotels do not have restaurants and waiting staff. This study attempts to investigate the correlation between musculoskeletal disorders and work-family conflict and present work-family conflict as a factor for WRMSDs in waiting staff.

Materials and Methods

Participants

The total population of waiters working within this province was 150 people, and this study included 136 people that have no physical and psychological problems and tended to participate in the study. Questionnaires were shared to all of them and all our participants were interviewed, based on the questionnaire and the aims of the study.

Data collection

The questionnaire had three sections: demographic, musculoskeletal disorders and work-family conflict. Each participant had to answer all the questions in the questionnaire.

The demographic section included questions about age, gender, level of education, hours of work in a day, shift and team work. The musculoskeletal section was adapted from the short version of a Dutch questionnaire (Dutch Musculoskeletal Questionnaire) [23]. Each participant was supposed to give a short affirmation or negation (yes or no response) to the questions about the presence or absence of discomfort in the whole body in three different periods, including the lifetime, within one year and seven days.

The section concerning work-family conflict was adapted from the questionnaire of Carlson, Kakmar, and Williams (2000), and it had 18 questions. The purpose of using this questionnaire was to investigate all the six unique dimensions pertaining to work–family conflict and just this questionnaire covered our objectives. This scale evaluates six measurements of work-family conflict. These measures were based on time, strain and behavior [24]. The term 'family' was then replaced by expressions comprising the whole non-work domain.

The questionnaire comprised of six sections, with each section having three questions. The six measures of work–family conflict contained: 1) time-based work intervention with family (e.g. 'I regularly miss private events or family activities because of my work'), 2) time-based family intervention with work (e.g. 'My family and personal obligations often keep me from participating in work events which are important for my career'), 3) strain-dependent work intervention with family (e.g. 'When I come home from work, I am often too tired to take part in family or private activities'), 4) strain-dependent family intervention with work (e.g. 'Due to stress and obligations in my personal life, I often find it very difficult to concentrate at work'), 5) behavior-dependent work intervention with family (interfere with behavior and work norms in family behaviors and norms) and 6) behavior-dependent family intervention with work (interfere with behavior and family norms in work behaviors and norms). The reliability and efficacy of this questionnaire were conducted by Motesharrei et al in 2013 and it got 98 percent validity and reliability [25], it was in the form of a 5-point Likert scale (Strongly disapprove, Disapprove, partly, Approve, strongly approve), in which the higher score indicated the more conflict.

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Data analysis

The continuous and categorical variables were outlined as number (%) and mean (S.D.) respectively. The incidence of WRMSDs was calculated based on the demographic and occupational profile. Student's t test and Pearson chi-square test were employed in assessing the differences between baseline demographic and professional profile of employees with and without WRMSDs. The relation between WRMSDs and work-family conflict was verified using multiple logistic regression in seven steps. Each of the domains of work-family conflict was entered at every level into the model as an explanatory variable. In the concluding model, we entered the total work-family conflict as a predictor. Potential confounders were considered in the model and used for adjustments in the following order: Age, Gender, Education, weight, marital status, Job tenure, Type of employee, working hours/week, Working shift numbers.

Variable selection was reduced based on the obtainable facts about the WRMSDs factors as much as possible, without overlapping with other measurements to avoid colinearity in the logistic model. Results are reported as odds ratio (OR) with aconfidence interval of 95% (CI). The statistical analysis was done by running Stata version 13 (Stata, College Station, TX, USA).

Results

Demographic profiles

A total of 150 restaurant wait staff were requested to contribute in the study; 136 (89.7% males and 10.3% females) answered the questionnaire, giving a 90.66% response rate.

Among the existing participants, 93 cases were reported having had symptoms in at least a single body region. The prevalence of the12-months of WRMSDs was 74.4% (CI95%: 66.64-82.15). The average (SD) age of employees with and without WRMSDs was (31.86 ± (8.43) vs. 31.28 ± (10.31) respectively; P=0.75). The contrast between these two divisions based on the demographic and professional profile was not significant (Table 1).

Prevalence of WRMSDs

Table 2 shows the distribution of WRMSDs according to the regions of the body. As can be seen, the right ankle and right foot were the most prevalent body region having discomfort or pain 47.24% (CI95%:38.44-56.04), followed by the right knee 45.66% (CI95%: 36.88-54.45), and Left ankle and left foot 44.09% (CI95%: 35.34-52.84). Similarly, both right and left elbows were listed as the body regions with the least common pain or discomfort 15.74% (CI95%: 9.32-22.16).

A mojority of the staff expressed multiple musculoskeletal pain and discomfort. 60.29% (CI95%: 51.96-68.62) of the staff complained of pain in two body regions, 44.85% (CI95%: 36.38-53.31) were affected by ache in 3 body regions, while 41.91% (CI95%: 33.51-50.31) disclosed pain in four body regions. Among the existing participants, eleven cases (8.08%) reported pain in all body regions (CI95%: 3.44-12.72).

Work-family conflict

The mean scores of each psychosocial work-family conflict domain according to WRMSDs are given in table 3. In all domains, mean scores were highest in employees with WRMSDs. Both time and strain-related work interventions with family had the most elevated mean scores in employees

Table1: Demographic and occupational profile of participants.

Variables		WRMSDs		P-value+
		Yes(n=93)	No(n=43)	
Age(yr.)	Mean± (SD) 31.9 ± (8.81)	31.86± (8.43)	31.28± (10.31)	0.75
Job tenure	Mean± (SD) 6.99 ± (7.65)	6.68± (7.14)	7.34± (8.77)	0.66
Working hours/ week	Mean± (SD) 62.1 ± (12.71)	63.74± (13.13)	59.13± (11.18)	0.08
Gender	Male (89.7%)	83(89.2)	39(90.7)	0.53
	Female (10.3%)	10(10.8)	4(9.3)	
Marital status	Married (58.8%)	56(60.2)	24(55.8)	0.49
	Not married (41.2%)	37(39.8)	19(46.2)	
Education	Under diploma (19.9%)	17(18.3)	10(23.3)	0.24
	Diploma (57.4%)	51(54.8)	27(62.8)	
	Academic (22.7%)	25(26.9)	25(26.9)	
Type of employment	Formal (16.9%)	13(14)	10(23.26)	0.21
	Contractual (83.1%)	80(86)	33(76.74)	
Working shift numbers*	1 shift (36%)	47(51)	21(51.2)	0.99
	2 shift (56%)	41(44.1)	18(43.9)	
	3 shift (8%)	2(4.9)	2(4.9)	

Values given as mean ± SD(standard deviation), or number (percentage) unless otherwise indicated.
+calculated by t-test or chi-square test.
*Duration of each working shift was 8 hours. Some of participants worked in 1 shift (just morning or night shift), and the rest of them worked in 2 or 3 shift (2= rotation between morning and evening, 3= rotation between morning, evening, and night).

Table 2: Twelve-month prevalence of WRMSDs according to body region (N = 136).

Body region	No. (%)	CI (95%)
Neck	35.43	27-43.86
Upper back	37	28.49-45.52
Lower back	40.15	31.51-48.8
Left shoulder	21.42	14.16-28.69
Right shoulder	20.47	13.35-27.58
Left elbow	15.74	9.32-22.16
Right elbow	15.74	9.32-22.16
Left hand and left wrist	21.25	14.04-28.47
right hand and right wrist	25.19	17.54-32.85
Left buttock and left thigh	18.89	11.99-25.79
Right buttock and right thigh	23.8	16.27-31.34
Left knee	40.94	32.27-49.61
Right knee	45.66	36.88-54.45
Left ankle and left foot	44.09	35.34-52.84
Right ankle and right foot	47.24	38.44-56.04
Total	74.4	66.64-82.15

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with WRMSDs. However, in employees without WRMSDs the highest average was seen in time-related work intervention with family and behavior-based family interference with work.

The score of work-family dispute in employees with WRMSDs varied between 19 and 112 while in employees without WRMSDs, the lowest value was 18 and the highest value was 78.

As depicted in table 3, after calibrating the covariates, work–family conflict and all the other domains had a statistically remarkable affiliation with musculoskeletal disorders in the preceding year except for the two domains (Behavior-based work intervention with family and Behavior-based family interference with work).

Discussion

This investigation targeted at examining work-related musculoskeletal disorders and work-family conflict among restaurant employees in 4 and 5 stars (or in some rating First Class and Luxury) hotels in the Isfahan province, and also at determining the relationship between work-related musculoskeletal disorders and work-family conflict, in terms of the demographic and job parameters. Several studies have reported musculoskeletal problems among restaurant employees.

Wills et al. (2013) identified the upper back region as the highest percentage target zone, ranking the leg and foot in the third position. Chyuan et al. (2004) using the Nordic questionnaire evaluated musculoskeletal disorders among the 905 people working at a hotel's restaurant. About 84% of these complained of at least one region of their body with symptoms of musculoskeletal disorders. The most reported regions were shoulders, neck and the lower back [26]. The results of the studies are different from the present study, and the reason for this difference can be attributed to the sample size or the scale of the studied hotels.

According to table 2, the most established disorder occured in the foot and knee regions. The fourth area with the highest report within a year was the lower back. Dempsey et al. (2006) studied the relationship between work pressure and musculoskeletal distress among the wait staff of restaurants and concluded that about 42% of these individuals have experienced at least 1 disorder in their body within a year. The highest prevalence was also related to the upper back region [27].

Table 1 shows that many people are working in two shifts. In addition, table 3 indicates that the severity of work-family conflict is related to time-based dimensions. Therefore, the reason for work-family conflict may be due to the extended work duration and inappropriate order of shifts. These outcomes validate the findings from the study of Emmanuel Gamor et al. (2014) who investigated the work-family dispute among hotel staff in Ghana and concluded that the rate of conflict is up to 63% high. Prottas et al also attributed long working hours as a responsible factor in this kind of hotel employee's conflict [28].

Regarding the work-family conflict and musculoskeletal disorder relationship, it is noticeable that many studies have considered the conflict index as a factor for stress. Besides, an affiliation between musculoskeletal disorders and stress has been validated. Furthermore, a conflict of this nature and its consequences are seen as organizational and managerial problems [29].

The results show that musculoskeletal disorders have a significant association with increased conflict based on strain and time, which confirms other studies as well. Since the average work hours per week (63.73 hours) is high, it can be concluded that hotel wait staff spend most of their time at their jobs. The contrast between family and work causes damage to a person's health, and an increase in the conflict suffered increases a person's musculoskeletal disorders. By considering the conflict as an overall indicator, there is still a significant affiliation between musculoskeletal disorders and work-family conflict. O'Donnell et al (2012) indicated that a conflict of this nature is linked directly to musculoskeletal disorders. They concluded that with an increase in managerial support for balancing time, strain-based work-family conflict and also reducing the risk factors, musculoskeletal disorders among workers can be controlled and reduced (30). The parameters examined in this investigation (as mentioned before, the conflict in terms of time, strain and behavior) and that of O'Donnell et al (2012) are the same. Kim et al (2013) performed a census on the liaison concerning work-family conflict and musculoskeletal disorders amongst hospital staff and considered this category of conflict

Table3: The relationship between work-family conflict domains with WRMSDs among participants by considering demographical aspects.

Psychosocial domain		WRMSDs		Adjusted OR+	95% CI	P-value
		Yes(n=93)	No(n=43)			
Time-based work interference with family	Mean± (SD)	11.28± (3.05)	9.13± (4.03)	1.19	1.04-1.36	0.01
Time-based family interference with work	Mean± (SD)	9.67± (5.41)	6.94± (2.38)	1.56	1.23-1.97	<0.001
Strain-based work interference with family	Mean± (SD)	10.06± (3.28)	8.24± (4.29)	1.19	1.04-1.37	0.009
Strain-based family interference with work	Mean± (SD)	7.76± (3.35)	6.57± (3.78)	1.17	1.01-1.36	0.02
Behavior-based work interference with family	Mean± (SD)	8.77± (2.83)	7.8± (3.87)	1.12	0.96-1.31	0.14
Behavior-based family interference with work	Mean± (SD)	8.95± (2.96)	8.5± (3.64)	1.09	0.94-1.26	0.21
Total (work-family conflict)	Mean± (SD)	57.04± (14.6)	44.61± (15.71)	1.07	1.03-1.12	<0.001

Values given as mean ± SD(standard deviation)
+Model included: Age, Gender, Education, Weight, Marital status, Job tenure, Type of employee, working hours/week, Working shift numbers.

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as a factor in musculoskeletal disorders. They reckoned that with an increase in the work-family conflict, musculoskeletal disorders also increase. This result conforms with the present study.

Hämmig et al (2011) and Bethge et al (2015) found that an increase in work-family conflict, increases neck and shoulder disorder, and these two factors have a significantly related association. In addition, there is a more significant association between strain and time-based conflict and musculoskeletal disorder. Inferring from the relationship between this disorder and the ability to work, therefore work-family conflict can affect the ability to work by implication. As demonstrated in this investigation, an increase in conflict can increase the disorder. Reducing the conflict among employees can be accomplished by changing the working hours and work schedules and also by shifting the schedule [18,31]. The difference between this study and that of Bethge et al (2015), is the gender of the selected population, as they assumed that the work-family conflict is more obvious among women. According to evidence from our investigation, we reckon that the cause of conflict in emerging nations like Iran among males is also the same. However, future studies can also examine gender differences [31].

Conclusion

This study shows compelling evidence for the job and the parameters that have been less studied. Our results reveal that the liaison amongst musculoskeletal disorder and work-family conflict is high. Our findings also demonstrate that due to the long working hours and various shifts, 74% of the subjects have suffered the disorder. Moreover, the conflict type in terms of time and strain can be a major influence in causing the disorder. Besides, our results and those of previous investigations indicate the necessity to carry out further studies about the wait staff. Finally, we suggest the necessity for more comprehensive studies with other factors to confirm these results.

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