



## Effects of Nursing Burnout Syndrome on Musculoskeletal Disorders

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**Background:** Musculoskeletal disorders (MSD) represent one of the most frequently occurring and costly occupational issue in nursing. The nursing profession is one of the most stressful occupations today, because of the quantity and diversity of risk factors associated with the work environment. The aim of this study was to examine the relationship between burnout syndrome and musculoskeletal disorders.

**Material and Methods:** In this cross-sectional study a questionnaire survey was carried out among 415 nursing personnel in five educational hospitals in Hamedan, Iran. Data were collected through two unnamed questionnaires including Maslach Burnout Inventory, Visual Analogue Scale (VAS).

**Results:** Statistical analysis showed that the most commonly painful regions among the nurses were lower back (5.53%), left foot (5.08%), and head and neck (4.43%), right foot (4.90%), right knee (3.84%) and left knee (3.74%). The lowest pain, were found to be in right and left elbows (1.99%) and (1.91%), respectively. Also emotional exhaustion, depersonalization and personal accomplishment has significant correlation with musculoskeletal disorders ( $P = 0.000$ ,  $r = 0.122$ ).

**Conclusions:** The results showed high prevalence of MDS among Iranian nurses that could be due to emotional exhaustion and depression.

**Keywords:** Musculoskeletal disorders, Burnout syndrome, Nursing, Iran

### Introduction

Work related musculoskeletal disorders (WMDs) are groups of syndromes characterized by symptoms of soft tissue pain, par aesthesia, stiffness, swelling, weakness, discomfort and loss of function that can be caused or aggravated by work related exposures (Hammerschmidt DM, 2008). Musculoskeletal disorders (MSD) are the most common health problem associated with work in Europe, affecting millions of workers. (MSD) has been estimated as 25% of European workers complain of back pain and 23% of muscle aches (Murray et al., 2012). MSD are the main cause of sickness absence in

western European countries (European Agency for Safety and Health at Work, 2007). Factors associated with MSD include individual characteristics, such as age and sex, occupational risk factors and non-work related exposures. Physical risk factors that arise from a worker's tasks (e.g. physical demands, handling loads, repetitive movements or vibration) are well established workplace risk factors for the occurrence of MSD. However, there is some evidence that occupational psychosocial risk factors, such as high psychosocial demands, low job control or low social support, could also have a role in this regard (Magnago et al., 2007). Hospital nurses are occupational groups especially at risk of developing MSD (Solidaki et al., 2010). The prevalence of MSD in nursing professionals has been documented in different studies (Choobineh et al., 2010) and varies across countries (Coggon, Ntani & Palmer, 2013). Nursing often requires heavy physical work activities such as lifting heavy loads, working in awkward postures, transferring patients, operating hazardous equipment, etc. The nursing profession ranks second after industrial work where physical

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workload is concerned (Engels, Landeweerd & Kant, 1994). Karahan and others found that hospital nurses and nursing aides had the highest prevalence of MSD (77.1%) in a sample of Turkish health care workers (Karahan et al., 2009). In Norway the prevalence of MSD in nursing aides has been found to be as high as 89% (Willy, 2003), whereas in Japan it is much lower at around 37% (Matsudaira et al., 2011). Several studies have shown a high risk of developing neck and low back pain in hospital nurses, attributed to both physical and psychosocial factors at work, such as shift work, long hours at work (Magnago et al., 2007) and the stress related to patient's management (Solidaki et al., 2010).

In recent years, interest in the subject of burnout has been increased since we have begun to realize the considerable negative influence that it has on employees, service consumers, and organizations. Burnout is a psychological syndrome which appears after a prolonged exposure to psychosocial stressors (Maslach, Schaufeli & Leiter, 2001). Christina Maslach defined burnout as a psychological state resulting from prolonged emotional or psychological stress of job (Maslach, Schaufeli & Leiter, 2001). Maslach sees burnout as an internal emotional reaction (illness) caused by external factors, resulting in loss of personal and/or social resources: 'Burnout is the index of the dislocation between what people are and what they have to do. It represents erosion in values, dignity, spirit, and human soul. It's a malady that spreads gradually and continuously over time, putting people into a downward spiral from which it is hard to be recovered (Maslach, Schaufeli & Leiter, 2001). Burnout, as defined by Maslach, has three dimensions. The first dimension of the burnout syndrome is emotional exhaustion and it is argued that a key aspect of the burnout syndrome is increased feelings of emotional exhaustion. When the emotional reserves are depleted, employees feel that they are no longer able to provide work of good quality. They have feelings of extreme energy loss and a sense of being completely drained out of emotional and physical strength. The second dimension "depersonalization" is defined as the development of negative attitudes, such as cynicism and negativism, both in thinking as well as in behavior, in which coworkers and service recipients are approached with derogatory prejudices and treated accordingly. Such negative reactions to clients may be linked to the experience of emotional exhaustion, i.e. these two aspects of burnout appear to be somewhat related. This callous or even dehumanized perception of others can lead staff to view their clients as somehow deserving of their troubles and the prevalence among human service professionals of this negative attitude

toward clients has been well documented. The third aspect is "lack of personal accomplishment". This is defined as lack of feelings on job and personal competence and failure in reaching goals. Workers feel unhappy about themselves and dissatisfied with their accomplishments on the job (Maslach, Schaufeli & Leiter, 2001). The association between musculoskeletal complaints and burnout syndrome was investigated by Grossi and others. (Grossi, Soares, & ngesleva 1999), (Honkonen et al., 2006), (Soares & Jablonska, 2004), (Toppinen-Tanner et al., 2005).

This paper aims to show the relationship between intensity of musculoskeletal disorders in different body regions and burnout syndrome dimensions.

### Material and Methods

In this cross-sectional study that conducted between February and May 2013, data were collected through unnamed questionnaires. A random sample of 415 male and female nurses from Five Hamadan's hospitals out of 888 nurses was selected to participate in this investigation.

Burnout syndrome and intensity of musculoskeletal disorders were measured with the Maslach Burnout Inventory (MBI) and Visual Analogue Scale (VAS) respectively.

Persian version (Akbari et al., 2011) of the MBI Scale was used to evaluate burnout among nursing personnel. Three dimensions of this scale included ' Emotional Exhaustion (EE), Personal Accomplishment (PA) and Depersonalization (DP). This questionnaire includes a total of 22 questions as follows: nine items for the EE dimension, eight items for PA and five items for DP. Each question of MBI is scored on a 7-point scale according to how often it is experienced, from "0-never" to "6-every day". Calculated Cronbach's  $\alpha$  in this investigation for three dimension of Maslach questionnaire 0.85 for EE, 0.80 for DP and 0.75 for PA. Cut off points for each of the subscales are shown in table 1.

**Table 1. Cut-off point of Maslach burnout subscales.**

Intensity of burnout	High	Moderate	Low
<b>Burnout subscales</b>			
<b>Emotional exhaustion</b>	> 27	17-26	0-16
<b>Depersonalization</b>	> 13	7-12	0-6
<b>Personal accomplishment</b>	0-31	32-38	> 39

Intensity of musculoskeletal disorders in different body regions were measured by visual analogue scale. The scale not only was divided the body into left and right sides but also, was adopted to estimate the severity of each painful region perceived by nursing through a continuous line between two end-points from 0 to 10. Data were presented as Mean  $\pm$

Standard Deviation (M ± SD) for continues variables and frequency (percentage) for discreet variables. Relationship between burnout subscales and severity of musculoskeletal disorders were tested through Pearson correlation.

**Results**

The demographic features of the studied population are shown in table 2. Most of the respondents were females (82.7%). The average age of the participants was 31.93 ± 6.13 years, ranging between 21 and 58 years. The average job tenure of the nursing personnel was 7.68 ± 5.39 years, ranging between 1 and 34 years.

**Table 2. Demographic characteristics and psychosocial risk factors of nursing (N = 415).**

Variable	M (SD)	Range
Age (years)	31.93 (6.13)	21-58
Job tenure (years)	7.68 (5.39)	1-34
Variable	n (%)	
<b>Gender</b>		
Female	343 (82.7)	
male	72 (17.3)	
<b>Marital status</b>		
Single	193 (46.5)	
married	222 (53.5)	
<b>Education</b>		
associate diploma	36 (8.7)	
B.Sc.	379 (91.3)	
<b>Working schedule</b>		
Shifts	344 (87.9)	
Fixed	71 (17.1)	
<b>Involving</b>		
Yes	5 (1.2)	
No	410 (98.8)	

As shown in table 2 most of the nursing personnel had B.Sc. degree (91.3%). According to the employment contract, working schedule for 87.9% nursing personnel was shift work. In table 3 nurses who participated in study reported high score in emotional exhaustion (44.8%), high score in depersonalization (12.3%) and 36.4% of nurses were low personal accomplishment. If high levels

of emotional exhaustion and depersonalization and decreased personal accomplishment considered as total burnout 8.67% nurses were experiencing severe burnout (Table 3).

**Table 3. Prevalence of burnout in nurses (N = 415).**

Burnout syndrome dimensions	M (SD)	High (%)	Moderate (%)	Low (%)
<b>Emotional exhaustion</b>	25.13 (12.42)	186 (44.8%)	106 (25.5%)	123 (29.6%)
<b>Depersonalization</b>	5.91 (5.12)	51 (12.3%)	101 (24.3%)	263 (63.4%)
<b>Personal accomplishment</b>	33.30 (9.59)	159 (38.3%)	105 (25.3%)	151 (36.4%)

**Table 4. The intensity of musculoskeletal disorders in various body regions (N = 415).**

Body region	Intensity of pain M (SD)
Head and neck	4.43 (3.26)
Right shoulder	2.90 (3.14)
Left shoulder	2.79 (3.08)
Lower back	5.43 (3.14)
Right elbow	1.99 (2.61)
Left elbow	1.91 (2.45)
Right hand	2.20 (2.70)
Left hand	2.21 (2.63)
Hip	2.13 (2.66)
Right knee	3.84 (3.19)
Left knee	3.74 (3.28)
Right foot	4.90 (3.23)
Left foot	5.08 (3.32)

Average intensity of musculoskeletal disorders is shown in Table 4. The most commonly painful regions among the nurses were lower back (5.53%), Left foot (5.08%), head and neck (4.43%), right foot (4.90%), right knee (3.84%) and left knee (3.74%). The lowest pain, were found to be in right and left elbows (1.99%) and (1.91%), respectively other parts that did not had significant correlation have not been shown in this table.

Table 5 shows the Pearson correlation between intensity of musculoskeletal disorders and burnout syndrome.

**Table 5. Pearson correlation between intensity of musculoskeletal disorders and burnout syndrome (N = 415).**

	EE	DP	PA	R. shoulder	L. shoulder	Low Back	R. Elbow	L. Elbow	R. Hand	L. Hand	Hip	R. Knee	L. knee	R. foot	L.foot
<b>EE</b>	1														
<b>DP</b>		1													
<b>PA</b>			1												
<b>R. shoulder</b>	0.178			1											
<b>L. shoulder</b>	0.192				1										
<b>Low Back</b>	0.210					1									
<b>R. Elbow</b>	0.118						1								
<b>L. Elbow</b>	0.192							1							
<b>R. Hand</b>	0.154								1						
<b>L. Hand</b>	0.126									1					
<b>Hip</b>	0.107										1				
<b>R.Knee</b>	0.101	0.095										1			
<b>L. knee</b>	0.122	0.123											1		
<b>R. foot</b>	0.122	0.099	0.122											1	
<b>L. foot</b>	0.105		0.105												1

L. Left R = Right

## Discussion

The results of this study showed that there is a statistical correlation between the three dimensions of burnout and severity of musculoskeletal disorders in various parts of the body. The relationship between musculoskeletal disorders and burnout syndrome as a psychosocial risk factor have been investigated by many researchers (Grossi, Soares, & ngesleva 1999; Honkononen et al., 2006; Soares & Jablonska, 2004; Toppinen-Tanner S et al., 2005). In previous study it was shown his study showed that the prevalence of musculoskeletal disorders with increased intensity of burnout syndrome in all three dimensions would amplified and occupational burnout syndrome had significantly correlation with musculoskeletal disorders (Honkononen et al., 2006). That result would confirmed and the results of this study.

Burnout syndrome in numerous domestic and foreign researches was differently reported. The results of this study in emotional exhaustion subscale are similar to the results of other studies conducted in Iran (Rahmani et al., 2010), (Al-Turki et al., 2010), (Xie, wang & Chen, 2011), Spain (Iglesias Vallejo & Fuentes 2010) and are different from previous study (Kilfedder et al., 2001), In contrast to the studies, the findings of this study in depersonalization subscale, is consistent with previous study in the United Kingdom (Kilfedder, Power & Wells, 2001),

In this cross-sectional study, we found high severity of musculoskeletal disorders not only for back pain but also for head and neck, right knee, left knee, right foot and left foot. Studies have reported that musculoskeletal disorders are particularly common in health-care workers who are in direct contact with patients (Lipscomb et al., 2004). The high prevalence of musculoskeletal disorders among nurses is considered to be because of physical work demands, as well as organizational work factors, of which scheduling is an important factor (Hui et al., 2001). Hignett in 1996 reported that low back pain was one of the most important WMSDs among nursing professionals, accounting for a point prevalence of approximately 17%, an annual prevalence of 40-50% and a lifetime prevalence of 35-80% (Hignett, 1996).

## Conclusion

It can be concluded that lack of attention to burnout syndrome could lead to musculoskeletal disorders as one of the most common occupational

disease. Therefore, it is necessary that stressful situation and causes of musculoskeletal disorders should be identified in the workplace and also education of educating nurses regarding prevention of MSDs is necessary.

## Conflict of interests

The authors declare that they have no conflicts of interest.

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## Author contribution

TG, AHP, MM, RHM, AKJ; Study Importation, Data collection and analysis, Writing the first draft of the Paper.

TG, AHP, AKJ: Study design and data analysis, editing and confirming the final draft of the paper.

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