Assessment Mental Health and Musculoskeletal Disorders among Military Personnel in Bandar Abbas (Iran) in 2016

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ABSTRACT

Musculoskeletal disorders represent a major issue in the military setting. Musculoskeletal disorders and mental disorders (MSD) are a major cause of disability in the working population. Musculoskeletal disorders and premature tiredness caused by work are arisen from incompatible individual work capacity and job demands. Physical and psychology condition may lead to the generation, amplification musculoskeletal disorders. Musculoskeletal disorders and mental health disorders are high in military personnel. The purpose of this study was Assessment Mental Health and musculoskeletal disorders in military personnel. In this cross-sectional study 70 personnel military participated in May 2016. Cornell Questionnaire and Mental health inventory (MHI-28) were used for data gathering. Finally, Statistical analysis was performed using SPSS version 20, descriptive statistics, Pearson correlation test and One Way Anova test. The findings of the current study showed that personnel situation of mental health were in moderate condition (56.01±13.3). Results Cornell Questionnaire showed that the most of musculoskeletal disorders were respectively in the back (46%), shoulder (34%) and wrist (31%). Also Pearson correlation test showed significantly associated between musculoskeletal disorders and mental health (r=0.72) (p-value=0.001). One Way Anova test showed that with increase age ($p<0.01$) and work experience ($p<0.01$) increased musculoskeletal disorders. Finally, One Way Anova test showed that with increase age ($p<0.02$) and work experience ($p<0.02$) mental health became worse. The finding of this research showed that musculoskeletal disorders and mental health disorders had high prevalence among military personnel and should intervention action need conduct for decrease this disorder. Also attention for maintaining and improving the health of these members must be considered.

Key words: Mental Health, Musculoskeletal Disorder, Military Individuals

INTRODUCTION

Occupational health is an important issue. In some jobs, the working conditions contribute to musculoskeletal complaints and the overall health of the individual is compromised. Work activities and tasks of military workers including repetition, contact stress, forceful contraction, awkward postures, and sustained position were associated with high risk of work-related musculoskeletal disorders [1]. It has been proven that the occupational related musculoskeletal disorders are associated with multiple occupational risk factors. These risk factors comprise environmental physical factors, (such as pressure, posture, shipping and handling objects, vibration) and psychosocial stress factors [2]. Musculoskeletal complaints are the second largest health problems in the world and nearly two-thirds of them are due to work-related diseases and disorders. MSD's are only secondary to the frequent traumas suffered on a worldwide basis [3]. Musculoskeletal disorders (MSDs) are defined as injuries and disorders of joints, ligaments, muscles, nerves, tendons, and structures that support limbs, neck and back. Musculoskeletal disorders are causes discomfort in the upper extremity (neck, shoulder, wrist and elbow) and lower extremities (Foot and knee). As well as Musculoskeletal disorders cause diseases such as carpal tunnel syndrome, lower back pain and Radial tunnel syndrome [4-5]. Occupational health is one of the most important and significant aspects of health. When work is perfectly consistent with the goals, capabilities and human limitations of a person, it plays a major role in promoting mental and physical health. Working conditions in military environments necessitate exposure to a combination of physical and psychological needs [6]. According to the statistics provided by World Health Organization (WHO), prevalence of musculoskeletal disorders is the most important cause of the loss of

working time in work environments [7]. Risk factors Identify is essential for the prevention of musculoskeletal disorders such as observation on the job, or posture assessment. Once risk factors have been determined, there are several intervention methods which could be used to prevent the development of MSDs. The target of MSD prevention efforts is often the workplace in order to identify incidence rates of both disorders and exposure to unsafe conditions [8].

Also, musculoskeletal complaints have been linked with mental health [9]. Musculoskeletal disorders are the most common occupational complaints bringing about increased financial burden and reduced social productivity [10]. On the other hand, mental health includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make choices [11]. According to WHO (World Health Organization), mental health is a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community. Mental health is important at every stage of life, from childhood and adolescence through adulthood [12] many factors contribute to mental health problems, including a workplace psychosocial factor is a non-physical aspect of the workplace that is developed by the culture, policies, expectations, and social attitude of the organization. Also psychological factors are affecting the incidence of musculoskeletal disorders and with control Psychological factors can be and reduced these disorders [13]. Current research suggests that workplace psychosocial factors may increase a worker's risk of developing musculoskeletal disorders. When workplace psychosocial factors place demands on workers that are greater than the worker's ability to cope with them, they experience stress. Stress creates a wide variety of physiological, psychological and behavioral responses within a person [14] unfortunately; in many cases these responses can actually increase their risk of developing MSDs because it causes them to increase their physical and psychological exposure to some MSD risk factors. Factors are usually referred to as psycho-social or psychological factors which lead to staff's cognitive disorders through their effect on their mental resources. Work-related MSDs are associated with high physical and psychosocial work demands, the presence of comorbidities and lifestyle variables [15,16] Aghilinezhad *et al*. investigate musculoskeletal problems among aircraft pilots and military personnel, and reported the back area as the most painful zone with an incidence rate of 42% among helicopter pilots, and 40% among airplane pilots [17]. Occupational risk factors are high in military personnel and the aim of the present study was to assessment mental health and musculoskeletal disorders in military personnel.

MATERIALS AND METHODS

This cross-sectional study was conducted on 70 military personnel in May 2016. In this study, people were selected randomly and simple sampling. Inclusion criteria were at least one year of work experience and lack of cardiovascular diseases, pulmonary diseases, hypertension, diabetes, neurological diseases. Exclusion criteria were musculoskeletal diseases and the unwillingness of people to complete the questionnaire. Data collected by self-report questionnaires including Cornell questionnaire and Mental Health Inventory (MHI-28). Beginning Cornell questionnaire to determine the prevalence of musculoskeletal disorders in during the past 12 months was completed and then demographic variables of age and work experience were recorded and finally completed Mental Health Inventory. Cornell questionnaire is a method observation that can identify ergonomic risk factors and has good reliability for the assessment of musculoskeletal disorders. Cornell questionnaire also a self-report questionnaire to assess musculoskeletal disorders area of the neck, shoulders, thorasic, back, forearm, wrist, hand,thigh,buttock, knee and foot . validity and reliability of the questionnaire in the study Affifeh zadeh *et al*. have been approved and Cronbach's alpha for this questionnaire was 0.98 [6]. Mental health Inventory of 28 questions Veit *et al*. with scale from 1 strongly disagree to strongly agree 5 options (1 = strongly disagree, 2, 3, 4 and 5 = strongly agree) is score. Reliability and validity of the questionnaire in study Besharat *et al.* confirmed and Cronbach's alpha for this questionnaire was 0.89 to 0.94 [18] Minimum score this questionnaire is a of 28 and a maximum score of 140. If questionnaire score is closer to 140, mental health is very worse. Data analysis was performed using with SPSS (version 20), descriptive statistics, Pearson correlation test and One Way Anova test. Also the value of $P<0.05$ was considered statistically significant. This study was performed after getting permission from the Ethic Committee in military organization.

RESULTS

In this study 70 military personnel participated. The average age of participants in this study was 31.09 ± 2.74. The maximum and minimum age of participants in the study was 45 and 27 years. The average work experience of participants in this study was 9.3 ± 5.09

years. The maximum and minimum work experience of participants in the study was 19 and 2.4 years. Duration of work was per day 6 hours and per week 30 hours.

Demographic variables height, weight, body mass index and mental health score is shown in Table 1. Points obtained in the mental health Inventory (Table 1) showed that mental health conditions are moderate.

Table 1: Demographic variables height, weight, Body mass index and mental health score

Variable	mean (SD)	Minimum-maximum
Height(cm)	179.3(4.25)	166-189
Weight(kg)	72.16(14.26)	64-97
Body mass index	24.81(2.37)	19.3-27.9
mental health score	56.01(13.3)	6-109

Obtained points for the mental health Inventory (Table 1) showed that a mental health was moderate condition.

The prevalence of musculoskeletal disorders in different body organs during the past 12 months was determined by a Cornell questionnaire and most of musculoskeletal disorders respectively were in the back (46%), shoulder (34%) and wrist (31%). Also the least amount disorders were in the buttock (3 percent) and Thigh (4 percent).

In Table 2, the frequency distribution (percent) prevalence of musculoskeletal disorders through a Cornell questionnaire in the past 12 months is organs of the body.

Table 2: Frequency distribution of musculoskeletal disorders in different organs by Cornell questionnaire

Variable	Number	Percent
neck	17	26
shoulder	22	34
arm	18	28
Thoracic	19	29
Forearm	14	21
buttock	3	4
wrist	20	31
back	30	46
thigh	4	5
knee	19	29
legs	18	28

Body map for musculoskeletal disorders based on Cornell questionnaire is shown in Fig. 1.

In this study, after Kvlmvgraf- Smirnov test and ensure the normal distribution variables, Pearson correlation test showed significantly associated between musculoskeletal disorders and mental health (r=0.72) (p-value=0.001) and with musculoskeletal disorders increase, mental health was worse conditions. Also One Way Anova test showed that with increasing age (p-value=0.01) and work experience (p-value=0.01) increased musculoskeletal disorders. Finally One Way Anova test showed that with increasing age (p-value=0.02) and work experience (p-value=0.02) mental health became worse.

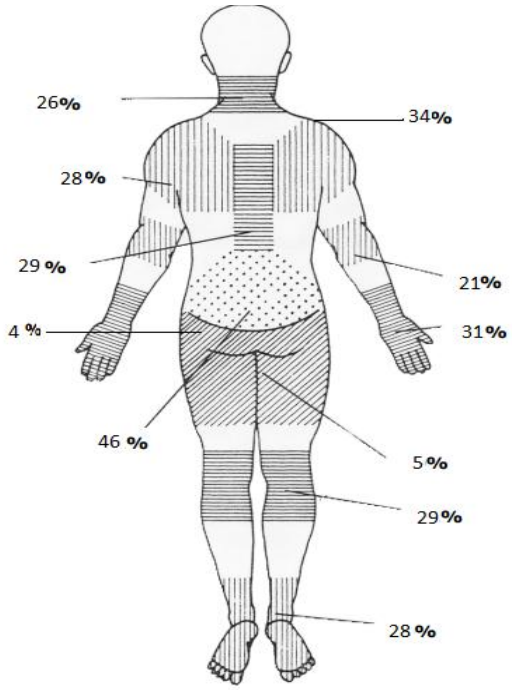

Fig. 1: Body map for musculoskeletal disorders based on standard questionnaire Cornell

DISCUSSION

Mental health and physical health are fundamentally linked. People living with a serious mental illness are at higher risk of experiencing a wide range of chronic physical conditions. Musculoskeletal disorders can cause a range of chronic conditions, including physical health and mental health disorders in people. The findings of this study showed that there is an inverse relationship between musculoskeletal disorders and mental health that with increasing musculoskeletal disorders, mental health became worse. The average total score of mental health questionnaire showed that people's mental health in middle. Results Cornell Questionnaire showed that the most of musculoskeletal disorders were respectively in the back (46%), shoulder (34%) and wrist (31%). mokamelkhah *et al.* investigated association of musculoskeletal disorders and mental health, Concluded with an increase musculoskeletal disorders and low back pain, mental health is getting worse which the findings of the present study confirms[19]. Salaffi *et al.* to evaluate musculoskeletal disorders and relationship with quality of life concluded quality of life is reversely relationship with musculoskeletal disorders [20]. Lowest rates musculoskeletal disorders were in the buttock (3 percent) and Thigh (4 percent). Kangarlou

et al. studied rate of musculoskeletal disorders in staff the Air Force concluded that most of musculoskeletal disorders was in the lumbar (51.2%), which confirms the findings of the present study [21]. The results showed that with increasing age and work experience, mental health became worse. In study of mohseni *et al.* with increases age and work experience, mental disorders increased which the findings of the present study confirms [22]. The results showed that with increasing age and work experience, musculoskeletal Disorders increased. Haji Zadeh *et al.* concluded that increases age and work experience, musculoskeletal disorders increased, which the findings of this study confirm [23]. Neupane *et al.* concluded in their study that in jobs that are higher musculoskeletal disorders psychological pressure increased and the need to reduce the burden of musculoskeletal disorders was higher [24]. Sharma *et al.* to studied musculoskeletal injuries in the British army came to the concluded musculoskeletal disorders was 48.6 percent and rehabilitation interventions should be done to reduce these disorders [25]. In the present study, Pearson correlation test showed significantly associated between musculoskeletal disorders and mental health that study results are consistent with Violante *et al.* [26]. The relationship between musculoskeletal disorders and psychological disorders may different between veteran groups, and should recognize in working population in future cross-sectional studies [27]. Manninen *et al*. also notes the particularly strong link between psychological distress and MSD in the low back and neck/shoulder areas, speculating that psychological factors can change the perception of MSD pain or induce physiological changes (such as increased muscle tension) that might result in MSD pain [28].Musculoskeletal disorders in organs back, neck and shoulder that increased might psychological aroused and muscle activity associated with anxiety and mental stress plays a causal role in the occurrence of MSD pain in these body areas [29]. Eriksen *et al.* studied a large sample of health-care workers over a 15-month period. Findings Showed that not only frequent mechanical exposures, but also organizational, psychological, and social work factors, such as night shift work, perceived lack of support from superior, and perceived lack of pleasant and relaxing or supporting and encouraging culture in the work unit, are associated with an increased risk of intense low back pain (LBP) symptoms [30]. Hartvigsen *et al.* to investigated psychosocial factors at work in relation to low back pain and consequences of low back pain concluded that psychosocial factors has impact in create to low back pain [31].

CONCLUSION

Musculoskeletal disorders represent a major issue in the military setting. Military personnel are exposed to a range of physical training, sporting, work and recreational activities that may result in MSD facet of military training and readiness. Improvement in health, work ability and functional capacity as well as provision of a facilitating environment and employment is a common goal of rehabilitation for the person with disability. The results of this study indicate that there was significantly associated between musculoskeletal disorders and mental health and with musculoskeletal disorders increase, mental health was worse conditions. If exceed the work ability of a person and work demands, as important factors in job doing, have a direct relationship with musculoskeletal disorders. By controlling the amount of musculoskeletal disorders or other mental health can be people health improved and enhanced. Given that human resources is one of the most important assets of any organization, especially military organizations need to prevent musculoskeletal disorders and mental health promotion measures to be done. Actions such as avoiding prolonged sitting, stretching between work, a comprehensive program to reduce psychological stress and mental health can be done.

ETHICAL ISSUES

Ethical issues such as plagiarism have been observed by the authors.

COMPETING INTERESTS

Authors declare that there is not any competing interest.

AUTHORS'CONTRIBUTIONS

Ashnagar was designer and conducted the study. Ghanbary Sartang was Corresponding author. Dehghan was advisor.

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