Examining the prevalence of musculoskeletal disorders in workers working in the fields and related days market of Tehran organization Municipality in 2014 with the aim of identifying risk factors affecting on the incidence of these disorders

Mostafa Poyakian¹, Seyed Abolfazel Zakerian², Ali Akbar Yar Ahmadi³, Soheila Khoda Karim⁴, Mehdi Kangavari⁵

1. Assistant professor, Department of occupational health engineering, school of health, Shahid Beheshti University of medical sciences, Tehran, Iran
2. Assistant professor, Department of occupational health engineering, school of health, Tehran University of medical sciences, Tehran, Iran
3. BSc of Occupational Health, Health, kurdistan University of Medical Sciences, sananndaj, Iran
4. Assistant professor, Department of Biostatistics, school of health, Tehran University of medical sciences, Tehran, Iran
5. MSc Student of Occupational Health (student research committee), Department of occupational health engineering, school of health, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Corresponding Author email: kangavari1366@gmail.com

ABSTRACT: Musculoskeletal Disorders (MSDs) are the most common occupational diseases in modern societies. Poor posture, defective working stations, long working hours, high physical work, transport and manual handling of heavy loads, etc. are the major risk factors for musculoskeletal disorders in workers employed in fruit and vegetables days’ market. This study aimed to determine the prevalence of musculoskeletal disorders in workers employed in fruit and vegetables day’s market. This descriptive-analytical study was done in 2014 in the fruit and vegetables days’ market. To determine the prevalence of musculoskeletal disorders among workers of fruit and vegetables fields, the kernel (CMDQ) questionnaire distributed among the selected sample, and after completion, it was collected. Finally data were analyzed by SSPS version 18, after collection. The results of this study show that the average age of the studied person was 31.49±6.38 the people mean time working is 12.28±1.51 and 5.5±2.06 and work experience is. The prevalence of musculoskeletal disorders - muscular was estimated 78.3±6.8 in all subjects. Also the prevalence in balancer jobs, load-selling, middle-seller, post-seller and vegetable and lettuce sales was 91, 86, 78, 71 and 75, respectively. The relationship between age, body mass index, occupational groups with musculoskeletal disorders was significance (p <0.05). The findings of this study are essential in the implementation of appropriate intervention measures including redesigning workstations and train workers to carry the load correctly, the need for part-time presence of occupational health expert to reduce musculoskeletal disorders and increase the efficiency of these individuals.

Keywords: musculoskeletal disorders, fruit and vegetable markets, kernel questionnaires

INTRODUCTION

Today, musculoskeletal disorders (MSDs) are one of the most common occupational diseases and the cause of many disabilities in industrialized nations and developing countries. Of the most important causes of the disorder include poor postures, repetitive and fast movements, apply excessive force, psychological and genetic factors, and in general body’s inappropriate conditions and workstations. Prevention of these problems require assessing and reforming the workplace based on the ergonomics principles, musculoskeletal disorders are the most common work-related diseases in all industries.
and define as the disturbance or damage to the musculoskeletal system (muscles, ligaments, tendons, joints, nerves, blood vessels and soft tissues), including pain, tension, pressure and inflammation (Chung et al., 2013). Musculoskeletal creates disorders mainly due to risk factors for such as repetitive movements, use excessive force, improper body position while performing job, tolerate high pressure, loading, pressure on body because of local contact with objects, lack of muscle recovery time due to fast movements......

The prevalence of musculoskeletal disorders among farmers is estimated about 75.9 percent (Heidari, 2012). Cashier job in sales centers is one of the most stressful jobs and impose lot of pressure on the peripheral joints and limbs, so that job experience and the amount of activity have positive effect over the increase of neuromuscular disorders (Rostai N 2010). The results of Naidoo and colleagues research in 2009 in Africa showed that 73 percent of workers in the agricultural sector suffer from musculoskeletal problems (Naidoo et al., 2009). One of the most important jobs that is associated with the handling and load displacement and, unfortunately, until now there is no consideration about it, is the jobs in the fruit selling department and on top of them are workers of fruit and vegetables markets. The department of fruit and vegetables is one of the units affiliates to Tehran Municipality which currently has 15 main square and 192 fruit and vegetable market and 45 neighborhood markets as direct Centers of fruit and vegetables supply In Tehran and in 22 districts in terms of services provision such as the fruit and vegetables, supply of dairy products, meat, poultry, fish, nuts, and dried fruit, washing-health and other Tehran consumption items have been distributed. Municipality day’s market due to the direct and daily supply of agricultural products as well as packing all items together in one place and, above all due to the very low price products than grocery stores of Teheran and continuous monitoring of inspectors of the squares of the market department and quality and quantity provision of products supplied by all the stalls, has very high customer volume during the day. So that, according to the statistics of field department on Thursdays, on average, about 500,000 people meet such places to provide their own necessities. Obviously, this much working volume imposes a lot of pressure on workers in such centers (Available At: 23 May 2014). There are no accurate statistics on the number of this organization’s employees, but according to that there 2 stand of fruit’s supply and at least 2 stand of vegetable in the market, at least 10 worker works work in each stand, therefore, it will be predicted that the target population will be about 15,000 people. It is obvious that if we add the workers in the Tehran’s shops who work independently and also vegetables selling of Karaj, the target population statistics will be far beyond these numbers. According to the surveys on available information sources, there is no study on musculoskeletal problems in fruit and vegetable markets. Also given the large size of the study population in Tehran and other parts of the country, this study aimed to determine the prevalence of musculoskeletal disorders in workers working in the fields and related days market of Tehran organization Municipality in 2014.

**MATERIAL AND METHOD**

This descriptive-analytical study was done in 2014 in the fruit and vegetables days’ market. To determine the prevalence of musculoskeletal disorders among workers of fruit and vegetables fields, the kernel (CMDQ) questionnaire distributed among the selected sample, and after completion, it was collected. The mentioned questionnaire like other assessment questionnaire of musculoskeletal problems, evaluate pain and discomfort sense in different body organs.

This tool, shows the discomfort and pain sense in the neck, shoulder (right and left), upper back, arm (right and left), lower back (lumbar), forearm (right and left), wrists, hips, thighs (right and left), knee (right and left), legs (right and left) and leg (right and L) during the last working week. And the amount of such pain is as three degrees scale and this questioner measures the impact of this discomfort and pain over work power and it used in the various studies brings is now (Çalık et al., 2013, Fagarasanu and Kumar, 2006). This questionnaire has been prepared for 6 different modes. Two of them for male and female workers in a sitting position, two of them for men and women workers in standing position and the last two can be used for left and right hand (Stanton et al., 2004). In general, Cornell questionnaire contains 54 questions. And measures discomfort and pain in 18 point of body (Mean et al., 2013). Expressing average pain sense is as the threshold prevalence of musculoskeletal problems. This questionnaire translated by Alife zadeh Kashani et al in 2010 in Iran and its reliability has approved (Alifehzadeh-Kashani et al., 2011). Finally data were analyzed by SPSS version 18, after collection. To report the variable’s descriptive statistics, mean and standard deviation and for qualitative variables, percent will be reported. As well as to examine the relationship between demographic characteristic with the prevalence of musculoskeletal disorders, chi-square tests, t-tests, and Kolmogorov-Smirnov was used.
RESULTS

620 questionnaires were distributed among the persons through random selection method. About 50 questionnaires were excluded from the study due to lack of inclusion criteria and incomplete questionnaires and statistical analysis was performed with 570 samples. The results show that the average age of the subjects was between 31.49± 6.38 and average working time of persons was between 12.28±1.51 and their job experiences was also 5.5±2.06. Distribution of other demographic variables show in the table below.

<table>
<thead>
<tr>
<th>Variable kind</th>
<th>mean</th>
<th>Standard deviation</th>
<th>MAX</th>
<th>MIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>age</td>
<td>31.5</td>
<td>6.4</td>
<td>59</td>
<td>19</td>
</tr>
<tr>
<td>Job experience</td>
<td>5.5</td>
<td>2.06</td>
<td>24</td>
<td>10</td>
</tr>
<tr>
<td>Working time during day</td>
<td>12.28</td>
<td>1.51</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Body mass index</td>
<td>27</td>
<td>3.6</td>
<td>42</td>
<td>18</td>
</tr>
</tbody>
</table>

The prevalence of musculoskeletal disorders in all subjects was evaluated 78.3±6.8. The prevalence rate in jobs such as balancer, once retail, middle worker, back worker and lettuce and vegetable wholesale, 91, 86, 78, 71 and 75 respectively. The diagram below shows the prevalence of pain in various parts of the business such as separation balancer and back worker seen as two outbreaks peaks of problems.

Figure 1. shows the prevalence of musculoskeletal disorders in balancer members separated by involved occupational groups.

As Chart 1 shows, the prevalence of musculoskeletal problems seen in this balancer occupational group. The most involved members in this occupational group is knee with 97 percent, then lower back pain, arm and back problems in this group of patients, and the lowest job problems observed in pelvic area and buttocks.

91% of this group members have expressed the pain in one of their organs in the past two weeks.

Figure 2. shows the prevalence of musculoskeletal disorders in back workers members separated by involved occupational groups.
The incidence of pain in this occupational group in the study was less than other occupational groups. So that the maximum amount of pain relates to neck and back with 83 and 79 percent and the lowest incidence belongs to forearm and leg with 14 and 15 percent respectively. The lowest incidence of musculoskeletal disorders related to this occupational group was obtained 71%. In other jobs, the pain amount is between the two spectra of balancer and diligence. For example, the most complaints and pain in time retail jobs, middle workers and vegetable sales relates to forearm, back and neck respectively and the lowest prevalence of pain at times retail businesses, middle workers and vegetable sales related to the pelvic area and hips, wrists, hands and fingers of the thigh respectively. Statistical tests show a significant correlation between age, body mass index, smoking, marital status and occupation, with the prevalence of musculoskeletal problems (p <0.05). But there is no relationship between job experience, hours of work and educational status (p> 0.05).

DISCUSSION AND CONCLUSION

This study aimed to determine the prevalence of musculoskeletal disorders in workers employed in fruit and vegetables day's market. To assess the prevalence of musculoskeletal disorders Cornell questionnaire was used.

The reliability and validity of the cornel questionnaire have proven in many studies including the study noted by Kashani et al (Alifiehzadeh-Kashani et al., 2011). The prevalence of musculoskeletal disorders in studied workers was 78.3. Many studies have been conducted on the prevalence of musculoskeletal disorders and the various prevalence rate has been reported, but in the field of fruit sales workers and jobs, such study has not been done in Iran. Similar studies in other industries reported lower rates of prevalence of musculoskeletal disorders. Aghil nezad and colleagues stated the prevalence rate in the rolled steel and steel workers 61% (Aghilinejad et al., 2012). Banibra et al (2015) stated the prevalence of musculoskeletal disorders in Hindi farm workers 71 percent(Das and Gangopadhyay, 2015). Considering that these jobs are very few in other countries, there found very few studies in this field. But in most of the studies the prevalence reported significantly lower. However, it should be considered that in most conducted studies, the prevalence of musculoskeletal disorders which used Nordic questionnaire ,the annual incidence is more than a week (presence of pain in the past year in opposite of pain in a last week). One of these studies, it can be noted to the study of Aghilinejad et al (2012) and Choobineh et al (Choobineh et al., 2007, Aghilinejad et al., 2012). So if the Nordic questionnaire was used higher prevalence seemed quite reasonable. In connection with this high-prevalence, we can note to the working nature of workers in the fruit and vegetable field noted that the Manual Material Handling, in very much weighing, is the most basic duties of these people. Of major risk factors for musculoskeletal disorders in workers employed in fruit and vegetables days' market we can note to the cases such as long working hours, carrying heavy loads, lack of appropriate handling boxes containing fruit and fresh vegetables, lack of using of mechanized load handling, bulky loads packaging sent to these centers, the lack of training in relation to carrying the load, and so on. It should also be noted that psychological factors, such as faring from family (most are immigrants), lack of support from the insurance coverage, humiliation and economic problems can also be used by customers as a risk factor contributing to musculoskeletal disorders. So the high prevalence rate compared to other professions is obvious due to reasons. Mann-Whitney test results showed a significant correlation between age and the prevalence of musculoskeletal disorders (P <0/001) and with increasing age also increase the prevalence of musculoskeletal disorders. These findings correspond with numerous studies, including the study of Schulte and colleagues in 2011 was performed as the interaction of employment and demographic risk factors in the prevalence of musculoskeletal disorders. Cruz Corvallis test results showed a significant difference between job 6th groups of persons, -related to musculoskeletal disorders prevalence (P <0/001). So that the highest prevalence between the operators of balancer and the lowest prevalence specific to back worker and vegetable sales. Mann-Whitney test showed a significant relationship between job experience and the prevalence of musculoskeletal disorders (P = 0/08). Many studies have reported a significant correlation between these two variables. The study of naderi and colleagues was conducted in 2013 in connection with the evaluation of musculoskeletal disorders banks and announced the relationship between these two variables significant(Nadri, 2014). In connection with this difference of these results, it can be said that according to the average work experience was less than other studies (5/5 years in this study) and in most cases due to the nature of their work, it wasn't 5.5 sequential years and sometimes long breaks during the first year to the last year has been happening on this collection. Statistical analysis showed no significant correlation between these two variables (P = 0/07). Various studies have reported mixed results in this regard. Stocks and colleagues Study in 2011 in the United Kingdom announced significant relationship between these two variables. So that the prevalence of musculoskeletal disorders in classes with higher education is lower(Stocks et al., 2011).

The prevalence of musculoskeletal disorders in the studied working groups according to age and lower job experience, is very high and has multiple risk factors for musculoskeletal disorders and therefore
redesigning and training of health professionals and part-time work of professional workers in these centers will be strongly encouraged.

REFERENCES


