



## Prevalence of Musculoskeletal Disorders and associated factors among Adults living in Aq Qalaian rural, Iran

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**Background:** Musculoskeletal disorders (MSD) are concerned as costly health problems worldwide. Rural people are more susceptible to musculoskeletal disorders. This study aimed to investigate the prevalence of musculoskeletal disorders and related factors among adult living in Aq Qalaian, Iran.

**Methods and Material:** This was a cross-sectional study which performed among 200 adult living in rural region in north of Iran named Ag, Qalaian. The data were gathered through Nordic Standard Questionnaire and were analyzed using SPSS, version 18. To compare subgroups in terms of different variables, the significant level of %5 was considered.

**Results:** Totally, 200 adults including 100 women and 100 men with mean age of  $38/36 \pm 7/72$  and  $41/84 \pm 9/39$  respectively were studied. Seventy nine percent of the studied participants suffered from a type of musculoskeletal disorders. The most musculoskeletal disorders were occurred among housewives. Low back pain was the most prevalent musculoskeletal disorders.

**Conclusions:** Considering the high prevalence of musculoskeletal disorders in people living in rural areas, ergonomics intervention and education programs are guaranteed.

**Keywords:** Prevalence, Musculoskeletal disorders, rural region

### Introduction

Today Musculoskeletal disorders are one of the most important occupational health issue (Smith., 2009).

Musculoskeletal disorders are defined as injuries/diseases of the muscles, nerves, tendons, ligaments, joints, cartilage and spinal column (Gangopadhyay et al., 2007).

Most people experience musculoskeletal pain at some stage in their lives (Razavi et al., 2013). Also, some studies have reported that the prevalence of pain, region of pain and pain symptoms may be influenced by body posture and work-related behaviors as well as demographic factors (Leggat et al., 2006). Due to the importance of musculoskeletal disorders, the World Health

Organization (WHO) has named the years between 2000 and 2010 as decade of bone disease. Rural people are one of the most productive social groups who are helpful for independency, self-sufficiency and food security of all countries.

Today almost half of the workforce are employed in the agricultural sector. However, these groups have been neglected because the majority of attentions have been focused on workers working in industry sector (Razavi et al., 2006). Results of a study in Africa showed that 67% of rural women, has been reported chronic muscle pain (Razavi et al., 2013).

A recent study conducted in Iran reported the prevalence of MSD -over the past month -in at least one body site has been 51.7% and the most common sites were low back and right shoulder pain as 27.4% and 20.1%, respectively (Chaman et al., 2015). However, to the best of our knowledge there are limited evidences about the prevalence of MSD and demographic related factors in different rural regions of Iran. In this regard, this study aimed to determine the prevalence of MSD and related causes among rural adults living in Aq Qala city located in north of Iran.

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## Material and Methods

This cross-sectional study aimed to determine the prevalence of musculoskeletal disorders and associated risk factors in adults in the village of Aq Qala city in north of Iran in Jan 2016. Totally, 200 adults including 100 women and 100 men were studied. Out of the 40 villages composed the central part of Aq Qala, 5 villages were selected randomly, then from each village, 40 potential eligible participants (20 males and 20 females) were selected.

For sample selection in each village, in the villages which has a health center, firstly the first houses on the right hand of health center (while leaving the house hygiene) females) and in the villages without a health house, the first houses on the right hand of main entrance road to the village were selected and then all eligible and satisfied adults living in the houses were interviewed up to completing data from 40 adults (20 males and 20). Inclusion criteria was being aged  $\geq 18$  years old and living in the rural areas. After obtaining

Signed informed consent, the data were collected through Nordic questionnaire that has obtained high reliability and validity in previous study (Korana, 1987).

This standard questionnaire has been used to collect data on cross-sectional studies regarding MSD and related disability/inability to work.

The questionnaires were completed through interview with participants. Collected data were analyzed through descriptive/analytic statistics using SPSS version 18. The significance level was set at 5%.

## Results

Totally, 200 adults including 100 men and 100 women were studied. The mean age of all participants was  $40/1 \pm 8/75$  years. Also, the mean age for women and men were  $38/36 \pm 7/72$  and  $41/84 \pm 9/39$  respectively. Of all participants, 34% of women ( $N = 34$ ) and %14 of men ( $N = 14$ ) were illiterate. Furthermore, 88% of men ( $N = 88$ ) and %82 of women ( $N = 82$ ) had not received any training on how to prevent musculoskeletal pain. However, 15% of the all participants ( $N = 30$ ) have received, musculoskeletal pain prevention education through TV, book and friends. 79 percent of all participants including (80 women and 78 men) reported at least one musculoskeletal disorder had experienced in the past 12 months. Table 1 shows the prevalence of different MSDs among both sexes in last 12 months. Table 2 shows prevalence of experiencing pain while daily activity in different parts of body among studied participants.

**Table 1. Distribution of Musculoskeletal Disorders among studied rural men and women in last 12 months.**

| Different Musculoskeletal Disorders | Women (last 12 months) |        | Men (last 12 months) |        | Total (last 12 months) |        |
|-------------------------------------|------------------------|--------|----------------------|--------|------------------------|--------|
|                                     | %                      | Number | %                    | Number | %                      | Number |
| Neck                                | 32                     | 32     | 22                   | 22     | 27                     | 54     |
| Shoulder                            | 32                     | 32     | 14                   | 14     | 23                     | 46     |
| Elbow                               | 18                     | 18     | 6                    | 6      | 12                     | 24     |
| Wrist                               | 32                     | 32     | 22                   | 22     | 27                     | 54     |
| Back                                | 24                     | 24     | 14                   | 14     | 19                     | 38     |
| Low back                            | 60                     | 60     | 52                   | 52     | 56                     | 112    |
| Hip                                 | 12                     | 12     | 4                    | 4      | 8                      | 16     |
| Knee                                | 42                     | 42     | 30                   | 30     | 36                     | 72     |
| Ankle                               | 32                     | 32     | 18                   | 18     | 25                     | 50     |

**Table 2. Distribution of feeling pain in different parts of body while daily activity among studied participants.**

| Feeling pain in different parts of body while daily activity | Women |        | Men   |        | Total |        |
|--|-------|--------|-------|--------|-------|--------|
|  | %     | Number | %     | Number | %     | Number |
| Neck   | 43/75 | 14     | 72/72 | 16     | 55/55 | 30     |
| Shoulder   | 75    | 24     | 85/71 | 12     | 78/26 | 36     |
| Elbow  | 33/33 | 6      | 100   | 6      | 58/33 | 14     |
| Wrist  | 50    | 16     | 63/63 | 14     | 55/55 | 30     |
| Back   | 25    | 6      | 57/14 | 8      | 36/84 | 14     |
| Low back   | 83/33 | 50     | 73/07 | 38     | 78/57 | 88     |
| Hip  | 0     | 0      | 50    | 2      | 12/5  | 2      |
| Knee   | 52/38 | 22     | 60    | 18     | 55/55 | 40     |
| Ankle  | 68/75 | 22     | 55/55 | 10     | 64    | 32     |

**Table 3. Distribution of Musculoskeletal Disorders among studied participants in terms of different occupation.**

| Musculoskeletal Disorders | Worker |        | House wife |        | ranch |        | farmer |
|---------------------------|--------|--------|------------|--------|-------|--------|--------|
|                           | %      | Number | %          | Number | %     | Number | Number |
| Neck                      | 10     | 10     | 32         | 32     | 0     | 0      | 12     |
| Shoulder                  | 8      | 8      | 32         | 32     | 0     | 0      | 6      |
| Elbow                     | 2      | 2      | 18         | 18     | 0     | 0      | 4      |
| Wrist                     | 4      | 4      | 32         | 32     | 0     | 0      | 18     |
| Back                      | 4      | 4      | 24         | 24     | 0     | 0      | 10     |
| Low back                  | 14     | 14     | 60         | 60     | 0     | 0      | 38     |
| Hip                       | 0      | 0      | 12         | 12     | 0     | 0      | 4      |
| Knee                      | 10     | 10     | 42         | 42     | 0     | 0      | 20     |
| Ankle                     | 8      | 8      | 32         | 32     | 0     | 0      | 10     |

## Discussion

The findings of this study showed high prevalent of different musculoskeletal disorders among rural women and men. Overall prevalence of musculoskeletal disorders in all parts of the body were in women (80%) rather than men (%78).

In this study, the prevalence of low back pain (60%) among rural women living in Aq Qala area, was higher than what was reported in many other countries, such as Denmark, America (Abdoli., 1999) and even in other study that was conducted in Iran (Razavi et al., 2012).

In a systematic review with a review of 80 studies on pain, showed on average, 40-50 percent of individuals experienced low back pain while working (Girish et al., 2003).

The previous evidence revealed that 67 percent of rural women experienced musculoskeletal pain (Naidoo et al., 2009). In present study, high

prevalence of MSDs in women under study could be attributed to doing the heavy agricultural lifting and carpet weaving on the squat, and also doing housework.

The prevalence of back pain among men was 52 percent that was lower compared with the incidence of back pain in women. In the study of Ahmadi (Ahmadi et al., 2014) the prevalence of back pain was 81/5% in rural men. In a study in Korea, musculoskeletal pain was reported as %81/9 among farmers. Furthermore, the highest prevalence of musculoskeletal disorders was reported in the back, shoulders and upper limbs (Lee et al., 2008).

Overall prevalence of back pain in the general population of the Iran has been as %15/7 that is much higher than other parts of body (Razavi et al., 2013).

The high prevalence of MSDs also has social and economic consequences, so that many people

experience these disorders that consequently resulted in absence from their work for treatment and relief of pain (Tavafian, Jamshidi & Mohammad., 2011).

In present study, there were no relationship between age, sex and literacy with musculoskeletal disorders. This result is in the line of what has been reported in previous study (Askaripoor et al., 2013).

In this study, the most prevalent disorder has been reported in region of lower back vertebra that is consistent with what reported by previous research which was conducted on workers (Ghasemkhani et al., 2008).

Previous study (Varmazyar et al., 2009) on 38 workers also showed relatively high incidence of spinal disorders. The results of another study (Simcox et al., 2001) showed about 53% of the fruit packaging workers suffered from at least one type of musculoskeletal disorders with symptoms during past 12 months. Disorders were associated with working around the waist, wrist, neck and shoulder 62%, 64 %, 57 % and 68%, respectively.

However, the difference in the statistics among different countries could be due to differences in the research procedures and target populations.

Furthermore, it seems that the different jobs are less/more prone to musculoskeletal disorders.

In present study, the majority of the participants have not received any training in the field of musculoskeletal disorders and ways to prevent this disorder. Only 15% of subjects have received training in this area through television, practitioner, books and friends. Therefore, due to the importance of the rural population role in agricultural production and also country's' economy, the training/ education of this target group is necessary.

### Conclusion

The musculoskeletal disorders are prevalent health problem among the rural men and women in Iran and there are no education programs for this population. However, it seems, conducting educational intervention program for these communities are necessary.

### Conflict of Interest

There is no conflict of interest for this article.

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### Author contribution

HI: Study implementation, Data collection and analysis, writing the first draft of Paper.

HI: Study design and data analysis, editing and confirming the final draft of the paper.

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