

**Research Paper :**

## **Prevalence of musculoskeletal disorders in masonry workers**

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### **ABSTRACT**

The National Institute for Occupational Safety and Health (NIOSH) has identified that WMDs are one of the leading occupational health problem of construction workers. To collect the relevant data, simple multistage random sampling technique was used and total 50 respondents having the age above 30 years and experience of minimum five years were interviewed. It was found that most of MSD symptoms were reported in hand / wrist followed by knee/leg and back among mason workers. Forcefulness of muscle repetition of work and posture were most existing risk factor of MSD with highest mean value in upper extremities whereas statistic standing posture for lower extremities and standing working posture for back was found to be most existing risk factor of MSD among the mason workers.

**Key words :** Musculoskeletal disorders, MSD symptoms, Risk factors.

Work related musculoskeletal disorders constitute a major source of employee disability and lost wages. Early symptoms of MSDs are referred to as unpleasant sensation or discomfort associated with fatigue, perceived exertion and poor posture (Kuorinka, 1983). At the beginning, these discomfort symptoms may be transient and occur mostly at night. As the discomfort develops, they become more persistent and painful. Musculoskeletal pain arises from injuries, irritation of inflammation and may be considered as condition affecting the soft tissues (Caillict, 1988). Construction activities are considered as high risk of causing work related musculoskeletal disorders (WMDs). The study was planned to assess the prevalence of work related musculoskeletal disorders and existing risk factors causing MSDs among mason workers.

### **METHODOLOGY**

A simple multistage random sampling method was used. Out of 12 zones of the Lucknow city, five zones have been selected randomly. From each zone, 10 mason workers were selected having the age above 30 years and experience of minimum five years as mason worker. Total 50 respondents were selected for the study. Three point rating scale *i.e.* "severe", "moderate" and "not at all" with score 3, 2 and 1, respectively was used to assess the prevalence of MSD among mason workers. To know the risk factors of MSDs again a three point rating scale *i.e.* "strongly exist", "exist" and "absent" with score 3, 2 and 1, respectively, was used. Mean and average mean were analyzed to interpret the data.

### **FINDINGS AND DISCUSSION**

The results obtained from the present investigation are presented below:

#### **Prevalence rate of MSD:**

Prevalence rate of MSD symptoms were analyzed in Table 1 where the highest mean value of pain (2.6), numbness (1.48) and locking (2.08) were found in back whereas, the feeling of burning sensation (1.48), tingling (1.84) and swelling (1.52) were found highest in hand/wrist. The lowest mean value of pain (1.64) and locking (1.4) were found in ankle/feet whereas, lowest mean value for burning sensation (1.06) and swelling (1.08) were found in hips/thigh. The elbow/ upper arm showed lowest mean value for numbness (1.36) and tingling (1.12).

Most of the MSD symptoms were found in hand/wrist with mean value 1.69 followed by knee/leg (1.66) and back (1.63). The lowest MSD symptoms were observed in ankle/feet (mean 1.41) followed by elbow/upper arm (mean 1.44) and neck (mean 1.47). Among all, the MSD symptoms pain was found as most prevalent symptom with mean value 2.18 followed by locking with mean value 1.79. Pachal and Sastri (2000) also reported in their study among welders steel industry that 42.6 per cent workers had pain and 52.6 per cent had other forms of MSD. The burning sensation with mean value 1.20 was identified as least prevalent symptom in mason workers followed by numbness, tingling and swelling with mean value 1.44, 1.35 and 1.32, respectively.

**Table 1: Mean distribution of the respondents on the basis of MSD**

| Sr. No. | Body part        | Pain/aching | Burning | Numbness | Tingling | Swelling | Locking | Average mean |
|---------|------------------|-------------|---------|----------|----------|----------|---------|--------------|
| 1.      | Neck             | 2.28        | 1.06    | 1.42     | 1.16     | 1.16     | 1.72    | 1.47         |
| 2.      | Shoulders        | 2.48        | 1.08    | 1.44     | 1.12     | 1.4      | 1.92    | 1.57         |
| 3.      | Elbow/ upper arm | 1.84        | 1.08    | 1.36     | 1.12     | 1.4      | 1.84    | 1.44         |
| 4.      | Hand / wrist     | 2.12        | 1.48    | 1.64     | 1.84     | 1.52     | 1.52    | 1.69         |
| 5.      | Back             | 2.60        | 1.24    | 1.48     | 1.24     | 1.12     | 2.08    | 1.63         |
| 6.      | Hip / thigh      | 2.20        | 1.16    | 1.40     | 1.28     | 1.08     | 1.84    | 1.50         |
| 7.      | Knee / leg       | 2.28        | 1.24    | 1.40     | 1.68     | 1.42     | 1.96    | 1.66         |
| 8.      | Ankle/ feet      | 1.64        | 1.24    | 1.36     | 1.36     | 1.44     | 1.40    | 1.41         |
|         | Average mean     | 2.18        | 1.20    | 1.44     | 1.35     | 1.32     | 1.79    |              |

**Risk factors of MSD:**

Table 2 explains about the existing risk factors of MSD among mason workers. It shows that posture and forcefulness of muscles with mean value 2.46 and 2.08, respectively were highest existing risk factors for neck and hand/wrist whereas, repetition or repetitive work was most existing risk factor for elbow/upper arm and shoulder with mean value 2.32 to cause MSD. Vibration was found as least existing risk factor for all the upper

**Table 2 : Mean distribution of the respondents according to risk factors for MSD in upper extremities**

| Sr. No. | Risk factors            | Neck | Shoulder | Elbow/ upper arm | Hand/ wrist |
|---------|-------------------------|------|----------|------------------|-------------|
| 1.      | Forcefulness of muscles | 2.08 | 2.44     | 2.40             | 2.68        |
| 2.      | Repetition              | 2.04 | 2.52     | 2.52             | 2.56        |
| 3.      | Posture                 | 2.46 | 2.10     | 2.24             | 2.28        |
| 4.      | Vibration               | 1.28 | 1.80     | 1.88             | 2.12        |
| 5.      | Combination             | 1.48 | 2.16     | 2.32             | 2.36        |

extremities *i.e.* neck, shoulder, elbow/upper arm and hand/wrist with mean value 1.28, 1.80, 1.88 and 2.12, respectively.

It is obvious from Table 3 that in lower extremities static standing posture had highest mean value (2.80) as risk factor, followed by unequal floor surface (mean 2.44), awkward posture (mean 2.20) and forcefulness of muscles (mean 2.16). Repetitive movement was found

**Table 3 : Mean distribution of the respondents according to risk factors for MSD in lower extremities**

| Sr. No. | Risk factors            | Thigh/knee |
|---------|-------------------------|------------|
| 1.      | Forcefulness of muscles | 2.16       |
| 2.      | Static standing posture | 2.80       |
| 3.      | Unequal floor surface   | 2.44       |
| 4.      | Awkward posture         | 2.20       |
| 5.      | Repetitive movement     | 2.00       |

as least affecting risk factor with mean value 2.00 for lower extremities.

Table 4 explores that static work posture was found as highest risk factor for back with mean value 2.88 followed by awkward posture (mean 2.85), reaching (mean 2.84), and twisting (mean 2.82). Sideway bending (mean 2.76), combination of risk factors and pushing activity were found with the mean value 2.68 and 2.64, respectively to cause MSD in back. The lowest mean value was found for pulling activity (1.64) followed by whole body vibration (mean 1.72), unequal lifting (mean 2.24) and lifting (mean 2.42). Meyers *et al.* (1995) also found many risk factors associated with the development of MSD in agricultural task that includes static positioning, forward bending, heavy lifting, carrying and body vibration.

**Table 4 : Mean distribution of the respondents according to risk factors for MSD in back**

| S. No. | Risk factors         | Back |
|--------|----------------------|------|
| 1.     | Lifting              | 2.42 |
| 2.     | Pushing              | 2.64 |
| 3.     | Pulling              | 1.64 |
| 4.     | Twisting             | 2.82 |
| 5.     | Reaching             | 2.84 |
| 6.     | Sideway bending      | 2.76 |
| 7.     | Unequal lifting      | 2.24 |
| 8.     | Awkward posture      | 2.85 |
| 9.     | Whole body vibration | 1.72 |
| 10.    | Static work posture  | 2.88 |
| 11.    | Combination          | 2.68 |

**Conclusion :**

It is concluded that "pain" as one of the most prevalent symptoms of musculoskeletal disorder was identified among mason workers whereas hand/wrist were found as most affected body part of mason workers. Forcefulness of muscles, repetition of work and posture

were most existing risk factors of MSD in upper extremities whereas static standing posture and static working posture were most existing risk factors of MSD in lower extremities and back of the mason workers.

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