

# A Study of Musculo Skeletal Disorders among Bank Workers Employed in and Around Arera Hills Bhopal

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## ABSTRACT

**Introduction:** Work related musculoskeletal disorders are one of the most common occupational diseases which mainly affect lower back, neck and upper and lower extremities. Work related MSDs can affect shoulders, arms, elbows, wrists, hands, back, legs and feet. Symptoms include tenderness, pain, tingling, stiffness and swelling. The study aimed to find out the prevalence and pattern of musculoskeletal disorders among the bank employees.

**Material and Methods:** A cross sectional study was carried out among the bank employees (272) employed at Arera Hills Bhopal and evaluation of MSD's with NORDIC musculoskeletal questionnaire.

**Results:** The mean age of study participants was 34.8±10.6 years, and the number of male staffs (67.95%) outnumbered that of females (32.05%). The mean hours spent per week on work is around 50.3±9.8 hours. Lower back associated MSD were more common (65.25%) among the staffs, while ankles were the least affected (6.5%). Most disabling MSD was seen to be that of wrist/hand (34.3%) followed by lower back (27.8%).

**Conclusion:** Moderate prevalence of musculoskeletal disorders and associated disability was reported by bank workers in Arera Hills. Lower back associated morbidities was more prevalent among the bank workers.

**Keywords:** Musculoskeletal Disorders, Bank Employees, NORDIC Musculoskeletal Questionnaire, Disability

42% and 58% of all work-related illnesses and are the most frequent cause of all health-related absence from work. Thus, MSDs cause not only individual suffering but also pose a considerable financial cost to the individual, industry and society at large<sup>5</sup> Rapid technological developments, especially in the use of electronic data, have affected both workers and the workplace. Electronic data are mainly displayed on visual display terminals. Improper body posture and long hours in front of these terminals can result in many health hazards, including eye strain and fatigue and musculoskeletal disorders (MSDs).<sup>6</sup> Work-related MSDs can affect shoulders, arms, elbows, wrists, hands, back, legs and feet. They are caused by forceful or repetitive movements or a poor working posture. Symptoms include tenderness, aches and pains, tingling, stiffness and swelling. Lower and upper back pain and muscle spasm could be due to incorrect seating, which also affects the cervical spine and neck muscles leading to pain.<sup>7,8</sup>

Despite technological advancement and mechanical modification of working place, the incidence of MSDs is ever increasing, which has an adverse impact on the individual and the society. Little information on the prevalence of MSDs and associated disability is available in this part of the country. This study investigated the prevalence of MSDs and associated disabilities among bank workers in Arera Hills Bhopal and also identifies the risk factors responsible for MSDs and the resulting disabling conditions. The aims of this study were (a) to find out the sociodemographic characteristics of the study population (b) to find out the prevalence of MSDs and associated disabilities among bank workers

## INTRODUCTION

The term musculoskeletal disorders encompass a gamut of inflammatory and degenerative conditions that affects the muscles, tendons, ligaments, joints, peripheral nerves, and supporting blood vessels with consequent ache, pain or discomfort.<sup>1,2</sup> Musculoskeletal disorders are reported to occur in certain industries and occupations with rates up to three or four times higher than the average rate across all industries.<sup>1</sup> Work related musculoskeletal disorders (WMSDs) are defined as musculoskeletal disorders that results from a work related event.<sup>3</sup> According to European Agency for Safety and Health at Work, work-related musculoskeletal disorders are impairments of bodily structures such as muscles, joints, tendons, ligaments, nerves, bones and localized blood circulation system, that are caused or aggravated primarily by work and by the effects of the immediate environment in which work is performed.<sup>4</sup> Musculoskeletal disorders affect all persons irrespective of age and sex, and are mostly prevalent across a wide range of occupations. Available data has shown that musculoskeletal disorders accounted between

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## MATERIAL AND METHODS

A cross sectional study was conducted among bank workers in 12 different banks located in Arera Hills, Bhopal, Madhya Pradesh. The study was approved by the ethical committee of Gandhi Medical College Bhopal. All the employees of the above mentioned 12 banks were included in the study.

Participants were recruited into the study purposively based on the following inclusion criteria; currently serving in a bank, using a visual display terminal, between 20 and 55 years, and having work in the bank for a minimum of 1 year. Pregnant women and individuals that were physically disabled as well as those with any underlying condition affecting the musculoskeletal system were not included. The procedure involved the distribution of self-administered questionnaire to the individual participants across the 12 banks enlisted for the study. Consent of the participants and their respective working places were sought verbally. A pre-validated questionnaire adopted from modified Nordic Musculoskeletal Questionnaire was used to obtain the required information from the participants. The short version of the standardized Nordic musculoskeletal questionnaire was used to evaluate MSDs. This questionnaire deals with the occurrence of MSDs during the previous 7 days and 12 months as well as their severity. It also deals with the distribution of these disorders by body organ. The questionnaire consists of two portions, the first part assesses individual's demographic and job characteristics [(age, sex, height, weight, Body Mass Index (BMI)], level of activity, job tenure and amount of time spent at work per week), the second part assesses the annual and weekly prevalence of self-reported MSD in the following body regions; neck, shoulder, elbow, wrist, hand, upper back, lower back, hip, knee, and ankle as well as the associated disability incurred.

Instructions on how to answer the questionnaire was adequately explained to the respective participants on distribution of the questionnaires to them. Further instruction was contained in the questionnaire which included body chart describing the different body region so as to guide the respondents. Participants were also told to fill up the questionnaire properly and to answer all questions to their best of knowledge. Incomplete questionnaires were not included in the study.

## RESULTS

The questionnaire was completed and returned by 259 of the 272 bank workers, giving a response rate of 95.2%. Their mean age was 34.8 (SD 10.6) years and over half the respondents were males (67.5%). A majority were married (74.51%). Only 11.97% were smokers (25.7%), while alcohol drinkers were only 9.27%. 67.57% of the employees had sedentary life style. Mean hours spent per week in job was 50.3 (SD 9.8) hours, while mean job duration of the employees was found to be 6.9 (SD 5.6) years (table-1).

From figure-1, it is evident that overall prevalence of MSD in terms of disorder is around 41.14% in the study population, while the prevalence of disorder is around 8.83%

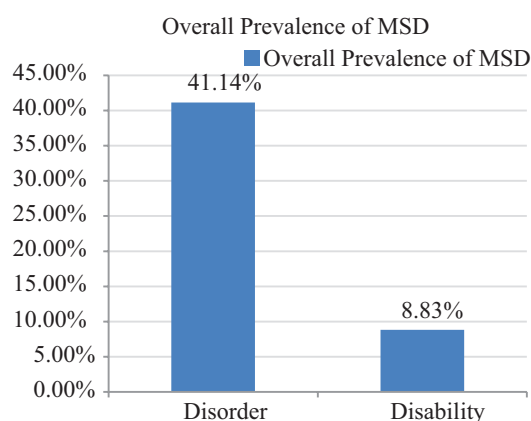


Figure-1: Overall prevalence

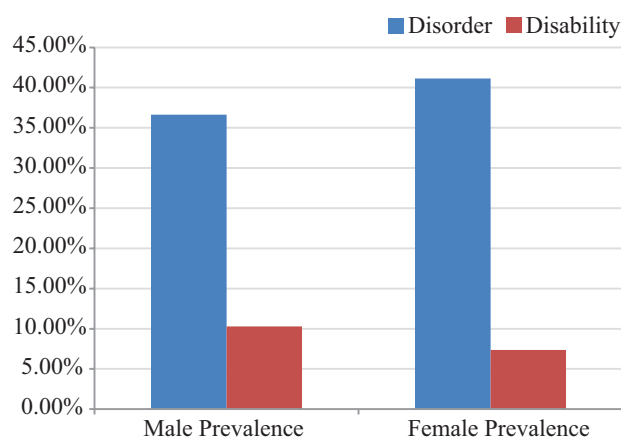


Figure-2: Gender differences in terms of prevalence of MSDs and resulting disabilities

Characteristics	No	Percentage %
Sex		
Male	176	67.95
Female	83	32.05
Mean (SD) age (years)	34.8±10.6	
Marital Status		
Married	193	74.51
Single	66	25.48
Religion		
Hindu	182	70.27
Muslim	47	18.14
Christian	13	5.01
Others	17	6.56
Smoker		
Yes	31	11.97
No	228	88.03
Alcohol drinker		
Yes	24	9.27
No	235	90.73
Hours spent per week	50.3 ± 9.8	
Mean(SD) job duration (years)	6.9±5.6	
Life style		
Active	84	32.43
Sedentary	175	67.57

Table-1: Sociodemographic Profile of the bank workers (n=259)

Body part affected by MSD	Previous 7 days		Previous 12 months		Disabling attacks	
	No	%	No	%	No	%
Neck						
No	206	79.53	116	44.79	238	91.89
Yes	53	20.46	143	55.21	21	08.11
Shoulder						
No	195	75.29	130	50.19	243	93.82
Yes	64	24.71	129	49.80	16	06.18
Right	41	15.83	86	33.20		
Left	15	05.79	19	07.33		
Both	8	3.08	24	09.27		
Elbow						
No	245	94.59	227	87.64	251	96.91
Yes	14	05.40	32	12.35	08	03.08
Right	8	3.08	17	06.56		
Left	4	01.54	10	03.86		
Both	2	0.77	5	01.93		
Hand/Wrist						
No	220	84.94	196	75.68	208	80.30
Yes	39	15.06	63	24.32	51	19.69
Right	25	09.65	41	15.83		
Left	4	01.54	9	03.47		
Both	10	03.86	13	05.01		
Upper back						
No	180	69.49	123	47.49	223	86.10
Yes	79	30.50	136	52.21	36	13.90
Lower Back						
No	174	67.18	90	34.75	210	81.08
Yes	85	32.81	169	65.25	49	18.91
Hip						
No	240	92.66	226	87.25	247	95.37
Yes	19	07.33	33	12.74	12	04.63
Knees						
No	247	95.37	230	88.80	252	97.30
Yes	12	04.63	29	11.19	07	02.70
Foot/Ankle						
No	249	96.13	242	93.43	253	97.69
Yes	10	03.86	17	06.56	06	02.31

**Table-2:** Prevalence of musculoskeletal disorders (MSDs) by affected body part among bank workers during the previous week or year and prevalence of disabling disorders

Of all bank workers, 50.19% reported suffering from MSDs during the previous week, while 73.74% suffered such disorders during the previous year. A total of 33.20% of the bank workers had suffered disabling attacks of MSDs in the previous year.

Table 2 shows that lower back (32.81%), upper back (30.50%), shoulders (24.71%) and neck (20.46%) were the most affected body parts during the previous week. Elbow (05.4%), hips (07.33%), knee (04.63%) and ankles/feet (3.89%) were the least affected. For MSDs occurring during the previous year, the affected body parts showed a slightly different priority, as lower back (65.25%) neck (55.21%) and upper back (52.21%) topped the list, and elbows (12.35%), hips (12.74%) and ankles/feet (06.56%) respectively had the lowest prevalence. The most disabling MSDs affecting bank workers were in the wrists/hands (19.69%) and lower back (18.91%).

Prevalence of MSD was fairly common among female

employees rather than males, but the MSDs causing disabling attacks was prevalent more among male employees (figure-2).

## DISCUSSION

This study determined the prevalence of MSDs and associated disabilities among bank workers in Arera Hills Bhopal. The reported annual prevalence of the MSD was 41.14% while that of the associated disability was 8.83%. These findings were in consistence but relatively higher than previously reported from another population study in southern India<sup>9</sup> but much lesser than findings of most scholars<sup>10,11,12</sup>

The prevalence of regional MSDs was highest in the lower back for the disorders and reasonably high for the associated disabilities, which was commonly reported in previous studies with higher prevalence. The regional MSD prevalence was lowest in the ankle but that of the associated disability in the knee which was contrary to the findings of

Akrouf et al.<sup>13</sup> and Abledu and Abledu.<sup>5</sup>

Females reported to have suffered most from the MSDs while their male counterpart suffered most of the associated disability.<sup>10,11</sup> The commonest regional MSDs and associated disabilities were observed in the wrist/hand, lower back, neck, shoulder, upper back<sup>14</sup>

Findings of this study revealed much lesser prevalence of MSD and associated disability (41.14% and 8.83% respectively) compared to reports of most studies conducted in same or related population as reviewed in the literature.<sup>5,13</sup> This lower prevalence may be attributed to socio-cultural factors, lesser job stress, or understated feedback.

## CONCLUSION

The findings of our study shows moderate prevalence of musculoskeletal disorders and associated disability in bank workers of Arera Hills, Bhopal. Females suffered most of the disorders while males suffered most of the disabilities. Lower back disorders were commonly present and were leading to significant disabling attacks

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