



Prevalence of Musculoskeletal Disorders (MSD's) in an Urban Slum Population Turbhe, Navi Mumbai, India

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ABSTRACT

Background: Musculoskeletal Disorders (MSD) is the most common cause of severe long term pain and physical disability affecting millions of people around the world. The burden of MSDs is global so WHO declared 2000-2010 as the Bone and Joint decade.

Aim: To study of musculoskeletal disorders in an urban slum population.

Objectives: Objective of this study was to estimate the prevalence of selected Musculoskeletal Disorders in study area and to study the association of socio-demographic characteristics with Musculoskeletal Disorders.

Methodology: 595 adults from a preselected urban slum area of Turbhe were screened for musculoskeletal disorder in a cross sectional house to house survey over 10 months. The core questionnaire was taken from Community Oriented Programme for Control of Rheumatic Diseases (COPCORD) Bhigwan model. Also Statistical Analysis Spss -20.0 Version Percentage was done through chi square test

Results: Prevalence of MSD in our study was 44% (specific MSDs was spinal disorders 20.6%, osteoarthritis 6.2%, soft tissue rheumatism in 7.5% and unclassified ill-defined pains and aches 9.5%). Prevalence was more in females and with advancing age. Results were statically significant; light work (47.3%) shown higher prevalence of MSDs. MSDs was more in respondents with history of substance abuse (50%) and obesity (66.6%). MSDs were more in lower socioeconomic class.

Conclusion: The prevalence of MSDs was 44% in present study.

Key words: COPCORD, MSD, Prevalence

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INTRODUCTION

Musculoskeletal Disorder (MSD) is the most common cause of severe long term pain and physical disability affecting millions of people around the world. Joint diseases account for more than half of all chronic conditions in persons aged 60 years and above and back pain is the second leading cause of sick leave [1]. Musculoskeletal conditions rank 4th globally in impact on the health of populations, considering both death and disability (DALYs). They are the 2nd greatest cause of disability, as measured by years lived with disability (YLDs), accounting for 21.3% of disability worldwide [2].

The burden of Musculoskeletal Disorders is global and looking at the gravity of the Situation WHO declared 2000-2010 as the BJD (bone and joint decade). BJD is a global alliance for Musculoskeletal Health, the purpose of which is to improve the health of people with bone and joint diseases and injuries worldwide by raising aware-

ness and understanding of the importance of these severe conditions [3]. In the first 10 years of the BJD great efforts were made to bring the professional, scientific patient organization from all countries together to rebut the criticism that musculoskeletal community was a disparate group of clinicians dealing with a vast spectrum of conditions due to congenital disorders, specific acquired diseases, ageing or injury. Since these disparate conditions have common outcomes—chiefly pain and physical disability—recognition can be gained of the total impact of musculoskeletal conditions on public health. The next 10 years of the Bone and Joint Decade 2010-2020 are focused around activities to make musculoskeletal health a public health priority in health and social policies, strategies and actions at global, regional and national levels [1]. According to the statistics of the Global Burden of Diseases which has been developed by the World Health Organization, musculoskeletal disorders contribute 37% [4]. This rising burden of disability causing long-term conditions imposes new challenges on health systems but at present the priority remains on dealing with conditions with high mortality [5]. This community based study was therefore undertaken to find the magnitude and assess the impact of selected musculoskeletal dis-

orders on quality of life in adults (aged over 18 year) of urban slum population. This study can be used as a baseline for further studies related to MSDs.

AIMS AND OBJECTIVES

To assess the prevalence of selected Musculoskeletal Disorders in an urban slum area.

To study the association of socio-economic and demographic characteristics with Musculoskeletal Disorders.

METHODOLOGY

Study design

This study is a community based cross-sectional study. Study area which was considered is the urban slum area of Turbhe, Navi Mumbai, India.

Duration for which this study was conducted is one year from August 2015 to July 2016. Sample Size of 595 was taken.

Sampling technique

The respondents were selected for the study by using the simple random sampling (SRS) method based on the sampling frame. The house numbers were selected randomly by using lottery method and accordingly house to house survey was done till the targeted samples were obtained.

Inclusion criteria

Males and females above 18 years of age were included in the study. Written consent was taken from the study population.

Exclusion criteria

Mentally incompetent respondents and respondents not knowing either of the language (English/Hindi/Marathi) were excluded. Those who were not willing to sign on written consent form were also not included in this study.

Study tool

The core questionnaire was taken from COPCORD with some modifications. The initial part of the questionnaire collected basic demographic and socio-economic data which includes questions on personal habits, wages and nature of work/occupation. Profile of chronic complaints present in study subject were asked i.e. muscular pain, arthritis, hypertension, diabetes, TB etc. Body mass index (BMI) classification was used to measure obesity [6]. MSD include a group of conditions that involve the bones, tendons, muscles and supporting structures such as intervertebral discs. A specific and detailed definition was used for the classification of the musculoskeletal disorders in the study. A combination of two approaches i.e. self-administered questionnaire and examination of positive responders is known to work well in terms of sensitivity and economy. The same combination approach has been used for the following specific diagnoses in the study includes Rheumatoid Arthritis, os-

teoarthritis, spinal Disorder, injury and others. For the purpose of the study, the respondents were labeled as having different MSD based on history and clinical finding alone.

Rheumatoid Arthritis (RA)-The following classification criteria from the 1987. American College of Rheumatology (ACR) have been used in the study: Morning stiffness, Arthritis of three or more joints, Arthritis of hand Joints, Symmetrical Arthritis, Rheumatoid Nodules, for classification purposes, a patient was said to have rheumatoid arthritis if he/she has satisfied at least four of these seven criteria.

Osteoarthritis (OA)-The preferred definition uses both symptoms and clinical findings for the classification of osteoarthritis. This can occur in any joint but the most common in knee, hip and hands have been used in study. Duration of pain, morning stiffness duration, crepitus, age and bony enlargements were used.

Spinal disorder-Include wide and heterogeneous range of specific (trauma, spinal and mechanical injuries, inflammation, infection etc.) diseases and non-specific (Pain in the neck and back, no specific pathology underlying etc.) musculoskeletal disorders involving the spinal column. Non-specific conditions and these are staged as: Acute: Less than 7 day, Sub-acute: More than 7 days, Chronic: More than 6 weeks (42 days).

Injury-Any history of injury elicited from the respondent was recorded as injury in this study and it was decided to include only the mode, nature and outcome of injury.

Others-included in our study were IDS (unclassified ill-defined aches and pain) and STR (Soft tissue rheumatism e.g. bursitis, epicondylitis etc.) [7].

Furthermore, the respondents were screened for musculoskeletal symptoms like joint pain, joint swelling, joint stiffness, muscle pain, spine/backpain, difficulty in daily self-activity etc. The assessed responses were categorized under three headings: Present-means presently individual is having this problem which may be even for last 7 days. Past-means in individual this problem was not there during last 7 days but experienced earlier within the last 12 months. Both-Individual having MSD symptoms (at present and in the past).

Analysis

The data so collected was compiled in MS Excel and was analyzed using SPSS-20.0 version.

Ethical approval

Ethical Approval was taken from ethical committee before conducting the study.

RESULTS

The Socio-economic and demographical variables were studied (Table 1) [8,9], and following results were observed: Of the total Population covered in study (595), 359 (60.3%) were females and 236 (39.6%) were males. Majority were married (86.1%), 35.8% were il-

literate out of which majority were females (42%) The percentage population having higher level of education was negligible. 279 (46.9%) were involved in housework and among them 266 (74%) were women. About 87 (14.9%) were service oriented field job and among them 66 (28%) were male. Further, 72 (12.3%) reported their occupation as others, which include security guard, tailor, carpenter, driver, manual labors, daily wagger in construction work etc., 37 (6.2%) had their own shop/business and 6 (1%) were farmers.

Table 1: Socio-economic and demographic variables

Sex	Female (N=359)		Male (N=236)		Total (N=595)	
	N	%	N	%	N	%
Age group						
18-29	147	40.9	69	29.2	216	36.3
30-39	96	26.7	70	29.7	166	27.9
40-49	60	16.7	44	18.6	104	17.5
50-59	35	9.7	29	12.3	64	10.8
60-69	16	4.5	16	6.8	32	5.4
70+	5	1.5	8	3.4	13	2.1
Educational status						
Illiterate	154	42.9	59	25	213	35.8
Primary	91	25.3	63	26.7	154	25.9
SSC	62	17.3	58	24.6	120	20.2
HSC	41	11.4	38	16.1	79	13.3
Graduate	11	3.1	16	6.8	27	4.5
Post graduate & Above	0	0	2	0.8	2	0.3
Occupation						
Students	7	1.9	27	11.4	34	5.7
Housework	266	74.1	13	5.5	279	46.9
Housemaid	19	5.3	3	1.3	22	3.7
Service-desk job	6	1.7	13	5.5	19	3.2
Service-field work	21	5.8	66	28	87	14.6
Shop/Business	9	2.5	28	11.9	37	6.2
Professionals	1	0.3	3	1.3	4	0.7
Farm work	3	0.8	3	1.3	6	1
Retired	4	1.1	14	5.9	18	3
Unemployed	6	1.7	11	4.7	17	2.9
Others	17	4.7	55	23.3	72	12.1
Types of substances abuse						
	N	%	N	%	N	%
No addiction	282	47.39	98	16.4	380	63.86
Bidi/cigarette	3	0.5	5.04	21.9	33	5.54
Tobacco chewing	48	8.06	82	13.78	130	21.85
Alcohol use	1	0.1	25	4.2	26	4.37
Gutkha	15	2.5	16	2.6	31	5.21
Mishri	13	2.1	1	0.1	14	2.35
Types of work*						
Light work	184	51.3	76	32.2	260	43.7
Moderate work	163	45.4	126	53.4	289	48.6
Heavy work	12	3.3	34	14.4	46	7.7

*Light work: Domestic work, teacher, tailor, office work, light industry, nurse, postal worker, Retired but working; Moderate works: Agricultural work, porter, carpenter, driver, industrial worker, welding work, fishing work; Heavy work: Manual labor work, lifting heavy weights, Mine worker.

BMI was also measured and was observed that majority of respondents had normal BMI i.e. 329 (55.3%), 152 (25.5%) belonged to pre-obese group and only 48 (8.1%)

were obese in the present study, while 66 (11.1%) were under-weight (Table 2).

Table 2: Body Mass Index (BMI)

Sex	Female (N=359)		Male (N=236)		Total (N=595)	
	BMI	N	%	N	%	N
Under weight (<18.5)	48	8.06	18	3.02	66	11.1
Normal (18.5-24.99)	190	31.93	139	23.36	329	55.3
Overweight (25.00-29.99)	93	15.63	59	9.91	152	25.5
Obese (≥ 30.0)	28	4.7	20	3.3	48	8.1

Prevalence of MSDs was more in females i.e. 47.6%, as compared to 38.5% in males, it increased with age groups. The prevalence of MSDs was more in the lower socio economic status as compared to higher socio economic class. This difference was found to be statistically significant. MSD with type of work was not statically significant (P>0.05) (Table 3).

Table 3: Association between musculoskeletal disorders (MSDs) vs. Socio-economic & demographic variables

Variables	MSD's			Chi square Test	P-value	Significant at 5% level
	Yes	No	Total			
Sex						
Female	171	188	359	4.756*	0.029	Yes
Male	91	145	236			
Total	262	333	595			
Age group						
18-29	66	150	216	60.188*	<0.001	Yes
30-39	62	104	166			
40-49	58	46	104			
50-59	40	24	64			
60-69	23	9	32			
70+	13	0	13			
Total	262	333	595			
Types of work						
Light work	124	136	260	5.117	0.077	No
Moderate work	114	175	289			
Heavy work	24	22	46			
Total	262	333	595			
Socio-economic classes						
Class I upper	114	176	290	26.431*	<0.001	Yes
Class II upper middle	69	105	174			
Class III lower middle	35	35	70			
Class IV upper lower	30	8	38			
Class V lower	14	9	23			
Total	262	333	595			

*Statistically significant at 5% i.e., P<0.05.

From Table 4, it was concluded that 45.7% of those having MSDs had history of substance abuse, while 42.8% having MSDs had no history of substance abuse.

Table 4: Association between MSDs respondents and substance abuse

Substance abuse	MSDs				Total		P-value
	Present		Absent				
	N	%	N	%	N	%	
NO	154	40.5	226	59.5	380	100	*P=0.018, $\chi^2 = 5.613$
YES	108	50.2	107	49.8	215	100	
Total	262	44.1	333	55.9	595	100	

*Statistically significant at 5% i.e., P<0.05.

On observing Association between Musculoskeletal disorders (MSDs) vs. BMI (Table 5) it was noticed that Body Mass Index (BMI) had statistically significance association with prevalence of MSDs (p<0.05). MSDs were highest in subjects in obese category 66.6%, followed by 53.9% in those with pre-obese.

Table 5: Association between musculoskeletal disorders (MSDs) vs. BMI

BMI	MSD's			Chi square Test	P-value	Significant at 5% level
	Yes	No	Total			
Underweight <18.5	20	46	66	24.599*	<0.001	Yes
Normal (18.5-24.99)	128	201	329			
Over weight (25-29.9)	82	70	152			
Obese (≥ 30.0)	32	16	48			
Total	262	333	595			

*Statistically Significant at 5% level i.e., P<0.05

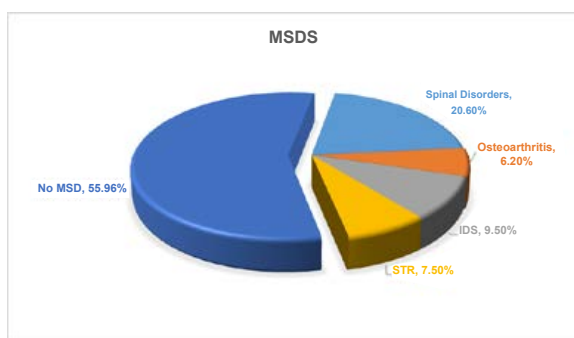


Figure 1: The Prevalence of MSDs of the respondents

As shown in Figure 1, out of 595 respondents, 262 who had MSK disorder were further screened for specific MSDs, majority 123 (20.6%) had Spinal Disorders followed by Osteoarthritis in 37 (6.2%) while the no. of respondents diagnosed as unclassified ill-defined aches and pains (IDS) were 57 (9.5%) and 45 (7.5%) were diagnosed as soft issue Rheumatism (STR). In present study, no confirmed case of Rheumatoid arthritis was found because the study was based on high index of clinical suspicion.

DISCUSSION

Prevalence of MSDs was more in females i.e. 47.6%, as compared to 38.5% in males, which shows that females were affected more than males and the difference was found statistically significant. The study by Pingle et al. also revealed that 28.2% of total females had RMSD, which was significantly very high as compared to 8.1% males [8]. The prevalence increased with age groups which was found statistically highly significant at 0.01% i.e. P<0.001. MSDs was 30.5% in 18-29 years age group, 37.34% in 30-39 years age group, 55.7% in 40-49 years age group, 62.5% in 50-59 years age group, 71.8% in 60-69 years age group and 100% in above 70 years age group. A study by Woolf [1] revealed that prevalence of MSDs increased markedly with age. That led to change of job due to pain or inability. Light work led to a higher prevalence of MSDs i.e. 124 (47.3%) because of their activities, which are carried out with inappropriate postures over a number of years. 114 (43.5%) of subjects with MSDs had moderate type of work and heavy work was performed by 24 (9.16%). It is revealed in studies by Talwalker [9] and Suman et al. [10], the high occurrence of musculoskeletal complaints in tailoring, house work, house maid, nurse etc. is due to fact that this works involves monotonous, highly repetitive tasks, performed in a sitting working posture, with upper back curved and head bend over [10]. Body Mass Index (BMI) had statistically significant association with prevalence of MSDs (p<0.05). MSDs was highest in subjects in obese category (66.6%), followed by those with pre-obese (53.9%). Thus, the study revealed that obesity is one of the important risk factor for development of MSDs. The relation of substance abuse with MSDs was statistically significant at 5% (p<0.05), showed that, the respondents, who had history of long term use of any form tobacco consumption had developed MSD in longer period. Tiwari et al. found smokers to be at higher risk for development of low back pain (LBP) than non-smokers [11]. MSDs were more in the lower socio economic status as compared to higher socio economic class. The study revealed that 60.9% of subjects with MSDs belonged to class 5 [12]. 78.9% to class 4, 50% to class 3, 39.65% to class 2 and 39.3% to class 1. Sidhu et al., found that 68% of the respondents with MSK, belonged to low socio-economic status [13]. The most common Musculoskeletal symptoms were joint pain (28.06% in present, 25% in past and 23.3% in both), followed by spine pain/back pain (25% in present, 20.5% in past and 20% in both). Muscle pain was in 17.4% in present, 15.3% in past and 14.11% in both. In present only 11.76% had difficulty in daily self-care activity (like bathing, washing, walking, etc.) 10.3% in past and 9% in both. This study reveals that the percentage of respondents, having a specific kind of musculoskeletal symptoms in past, remains the same or even increases in present. The ICMR (Delhi center) study reported only present symptoms. The incidence of MSDs was 93.2% [7].

CONCLUSION

The prevalence of musculoskeletal disorders was 44% in the study subjects. MSDs in majority had spinal disorders in 20.6%, osteoarthritis (OA) in 6.2%, IDS in 9.5% and STR in 7.5%. No case of RA was present in the study population.

It increased with advancing age and was more in females as compared to males. Majority of the subjects were illiterate. In present study, light workers had higher percentage of MSDs as compared to moderate and heavy workers. Prevalence was more in lower socioeconomic class. Half the respondents were non-addicts. There was a significant association between BMI and prevalence of MSDs. When respondents were screened for specific musculoskeletal symptoms, majority of them had joint and spinal/back pain as major complaints.

LIMITATION OF THE STUDY

1. The prevalence estimates used are generally or cumulative (i.e. lifetime) prevalence estimates, when the distinction between point and cumulative not always being clear, and sometimes being difficult to determine for conditions that wax and wane.
2. Definitions used in the clinical practice maybe impractical to use for community based studies. Some conditions have no standard case definition; others have competing or evolving definitions, based on mainly they use of different information (e.g. symptoms signs, radiographic finding examination). Due to financial constraints it was not possible to do investigations and thus community based diagnosis was made based on clinical findings and examination.

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