ORIGINAL ARTICLE   **OPEN ACCSESS**

Estimation of Prevalence of Musculoskeletal Pain & Rheumatic Disorders in a Rural Community of Bangladesh

Md. Moshiour Rahman*[1], AKM Mazharul Islam[2], Md. Mostafizur Rahman[3],
Md. Rafiqul Islam[4], Dilruba Yesmin Liza[5], Md. Golam Kibria[6]

Abstract

Introduction: Rheumatic disorders are one of the largest health problems in the world both in developed & developing countries. They are the most common causes of chronic health problems and long term physical disability, work loss and loss of income. The study was conducted among the 15 plus years aged people in selected areas based on broad objective of exploring the prevalence of rheumatic disorders. **Materials and Methods:** *It was an Observational cross sectional study. The study was conducted among the people of nineteen small villages of Sonargaon upazilla in Narayanganj district, Bangladesh. This study was conducted From January 2010 to December 2011. All subjects of the defined area aged ẑ 15 years were included in this study.* **Results:** *The point prevalence rate of definite rheumatic disorders was 23.7%. Age, sex and occupations were associated with the overall prevalence rate. The prevalence was higher (51.8%) in older aged (65years and above) population. Females (34.5%) were affected more than males (18.6%) in this rural area.* **Conclusion:** *These diseases are associated with some form of disability and work loss, as well as loss of income. More community-based studies with the design for the identification of associate's factors for individual rheumatic disease are needed. So that appropriate messages can be given to the community for prevention and treatment of rheumatic disorders.*

Keywords: Prevalence, Rheumatic disorders, Rural community.

Number of Tables: 06; Number of Figures: 02; Number of References: 07; Number of Correspondence: 03.

*1. Corresponding Author:
 Dr. Md. Moshiour Rahman
 Associate Professor
 Department of Medicine
 Patuakhali Medical College, Patuakhali.
 Email : drmdrahman76@gmail.com
 Mobile: 01717-860246

2. Dr. AKM Mazharul Islam
 Associate Professor
 Department of Medicine
 Patuakhali Medical College, Patuakhali.

3. Dr. Md. Mostafizur Rahman
 Senior Consultant
 Department of Pediatric
 250 Beded General Hospital, Patuakhali.

4. Dr. Md. Rafiqul Islam
 Assistant Professor
 Department of Medicine (Gastroenterology)
 Patuakhali Medical College, Patuakhali.

5. Dr. Dilruba Yesmin Liza
 Upazila Health &Family Planning Officer
 Mirzagong, Patutakhali.

6. Dr. Md. Golam Kibria
 Medical Officer
 250 Beded General Hospital, Patuakhali.

Introduction:

Musculoskeletal disorders are common and disabling but are low priorities for public health resources and medical education curricula (Dequeker et al., 2000)[2]. In the world much effort has directed at killing diseases, whereas crippling diseases are relatively neglected and yet the social and economic burden which the later imposes is probably greater.

Prevalence studies for musculoskeletal pain and rheumatic disorders were performed in different western countries and data for major rheumatic disorders are available (Badely et al., 1994)[1] (Reyes-Liernea et al., 2009)[3]. But for giving emphasis on rural communities in developing countries, WHO & International League of Association for Rheumatology (ILAR) jointly founded the Community Oriented Program for Control of Rheumatic Disorders (COPCORD) in 1981. Primary objective of the COPCORD is reduction of community burden of rheumatic disorders, particularly in developing countries (Chaimnuay et al., 1998)[4]. COPCORD has played a crucial role in collecting data on rheumatic complaints and disability in rural areas especially in developing countries. The epidemiological studies of rheumatic diseases by WHO-ILAR-COPCORD have already been performed in urban and rural Filipinos (Dans LF et al., 1997)[5], in rural & urban Indonesians (Darmawan J et al., 1992)[6], And in many others country all over the world. These studies denote the prevalence of musculoskeletal pain has varied from 11.6% to 45.5%.

The Point Prevalence estimates of musculoskeletal pain in rural, urban slum and affluent urban communities were 26.2% (women 31.3%, men 21.1%), 24.9% (women 27.5%, men 22.6%), and 27.9% (women 35.5%, men 18.6%), respectively was reported by COPCORD study group of Bangladesh. The overall point prevalence of musculoskeletal pain was 26.3% but the point prevalence of definite rheumatic disorders was 24% (S. A. Haq et al., 2005)[7]. In Bangladesh commonest rheumatic disorders were osteoarthritis of the knees, nonspecific low back pain, lumber spondylosis, fibromyalgia and soft tissue rheumatism. Their prevalence estimates were 7.5%, 6.6%, 5%, 4.4%, 2.7% respectively, in the rural, 9.2%, 9.9%, 2.0%,

3.2% and 2.5%, respectably, in the urban slum, and 10.6%, 9.2%, 2.3%, 3.3% and 3.3% in the urban affluent community (S. A. Haq et al., 2005)[7]. There were large differences between different communities in the prevalence of pain at any site and of different rheumatic disorders. This difference may be attributed to differences in customs, habits, occupation and living conditions, but may also arise, at least partly, from differences in the methodology, adopted operational definitions and classification of symptoms or diseases.

To determine exactly, the socio-demographic characters, prevalence rate and disability burdens of musculoskeletal pain and rheumatic disorders in Bangladesh it is necessary to collect authentic data from the rural community, so that appropriate preventive measures can be taken to prevent and control the rheumatic morbidities. The population of Sonargaon upazilla of Narayangonj district was selected for community study. For effective supervision, quality control, reduction of cost, as well as compare with previous study the same rural area near Dhaka city was selected for the study.

Objectives

To estimation the prevalence of definite rheumatic disorders in a rural community and also try to search the socio-demographic factors associated with the rheumatic disorders of the study population.

Materials and Methods:

It was an Observational cross sectional study. The study was conducted among the people of nineteen small villages of Sonargaon upazilla in Narayanganj district, Bangladesh. This study was conducted From January 2010 to December 2011. All subjects of the defined area aged ≥ 15 years were included in this study.

Inclusion criteria are subjects of both sex aged ≥15 years were included in this study.

Exclusion criteria are critically ill patients (such as stroke, severe respiratory failure, unconscious patients), mentally handicapped persons (mental defect congenital or acquired preventing or resisting a person from participating in normal life or limiting their capacity to work) and relatives of the residents who had come to visit the study area for short period.

Data Processing

After collecting data were checked thoroughly for constancy and completeness. Data were checked to exclude any error or inconsistency.

Statistical Analysis

All analysis was done by appropriate statistical methods using spss are software for windows.

Ethical Issues

All ethical issues, which were related the research involved with human subject were followed according to the guideline of ethical review committee.

Sample Size

Sample size was calculated by using the following

formula- $$N = \frac{Z^2 \, pq}{d^2}$$

Here,

N = required sample size

Z = 95% Confidence interval (1.96)

P = Prevalence or proportion of occurrence of rheumatic diseases in rural area 26% (0.26)

q = 100-p or proportion of person not affected by the disease, 74% (0.74)

d = Acceptable (allowable) error, 10% of P, 2.6% (0.026)

So, sample size was 1093(one thousand ninety-three). We considered 10% dropout, so approximate sample size was 1202, rounded up to 1200(one thousand two hundred).

 NB: As prevalence studies all subjects in nineteen villages, aged 15 and more than 15 years were included for this study.

Sampling Technique

Sampling was done on the basis of some predetermined idea or subjective judgment. Here study area and study population was prefixed. Field workers with the supervision of the investigator identified persons with musculoskeletal pain by using culturally adapted and validated modified Bengali version of COPCORD questionnaire. Sample was enrolled on the basis of inclusion and exclusion criteria.

Observations and Results:

Total 5005 study subjects were selected for the study. Among them, 4850 (male-2447, female- 2403) were interviewed giving and here total response rate 96.9%. Out of 4850 respondents, musculoskeletal pain and rheumatic disorder positive respondents were 1283 (male-454, female-829) and total Positive respondents rate 26.45%. Male positive respondents rate 18.55% and female respondents rate 34.92%. Rheumatic Disorder positive rate is higher among female then male (Fig.1).
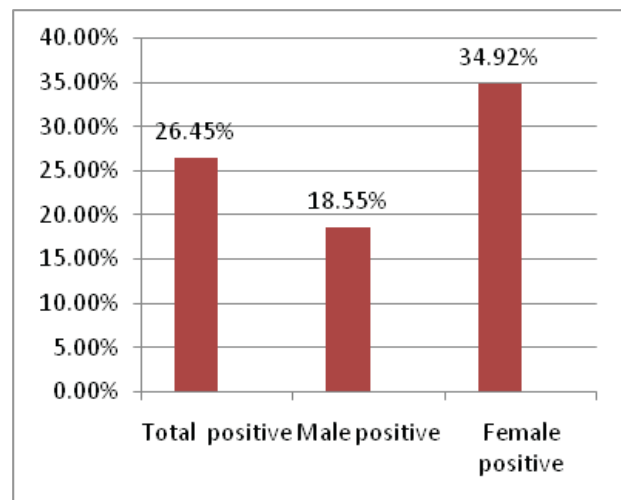

Figure-1: Prevalence of rheumatic disorders.

Prevalence of positive respondents by age group and sex:

The distribution of positive respondents by age group and sex is shown in table-I

Table-I: Point prevalence of musculoskeletal pain by occupational group.

Occupation	Interviewed population		Positive respondents	
	Number	Percent	Positive	Percent
Students	638	13.2	38	5.9
Cultivators	116	2.4	46	39.7
Service (in door)	195	4.0	18	9.2
Retired persons	229	4.7	86	37.6
Housewives	1850	38.1	688	37.2
Day Laborers	63	1.3	24	38.1
Workers	442	9.1	60	13.6
Weavers	667	13.8	186	27.9
Garments worker	56	1.2	7	12.5
Drivers	44	0.9	8	18.2
Rickshaw/Van driver	13	0.3	8	61.5
Businessmen	400	8.2	55	13.8
Tailors	16	0.3	4	25.0
Others	121	2.49	55	45.45

The prevalence of musculoskeletal complaints increased with the increase of age. It was 12.6% in the aged group 15-24 years and 51.8% in 65 years and above aged group (table-II).

Table-II: Prevalence by age group and sex distribution

Age Group	Interviewed population			Positive respondent		
	Male	Female	Total	Male	Female	Total
15 – 24	741 (30.2)#	766 (31.8)	1503 (31.0)	60 (8.1)	130 (17.0)	190 (12.6)
25 – 34	671 (27.4)	618 (25.7)	1289 (26.6)	117 (17.4)	166 (26.9)	283 (22.0)
35 – 44	442 (18.1)	441 (18.4)	883 (18.2)	93 (21.0)	191 (43.3)	284 (32.2)
45 – 54	272 (11.1)	276 (11.5)	548 (11.3)	68 (25.0)	164 (59.4)	232 (42.3)
55 – 64	197 (8.1)	177 (7.4)	374 (7.7)	62 (31.5)	103 (58.2)	165 (44.1)
65 +	124 (5.1)	125 (5.2)	249 (5.1)	54 (43.5)	75 (60.0)	129 (51.8)
Total	2447	2403	4850	454	829	1283

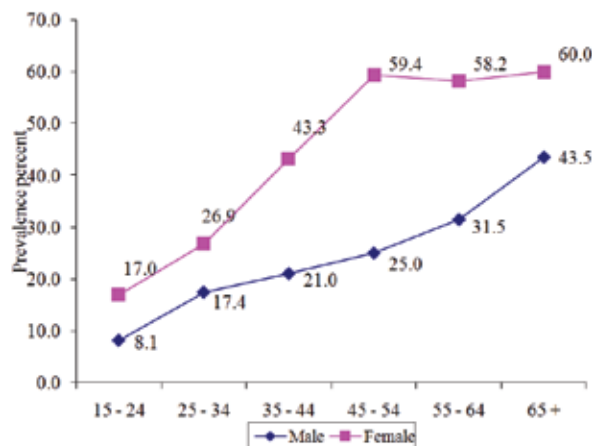#Data in the parentheses indicate percentage

Figure-2: Prevalence of musculoskeletal pain by age group and sex.

Prevalence of musculoskeletal pain by occupation:

By occupation the prevalence of musculoskeletal pain was more common among the Rickshaw/Van drivers, cultivators, day laborers, retired persons and housewives. The prevalence of rheumatic pain was 61.5%, 39.7%, 38.1%, 37.6% and 37.2% respectively among rickshaw/van drivers, cultivators, day laborers, retired persons and housewives (table -III).

Table-III: Prevalence of major rheumatic diseases by occupations.

Occupations	OA Knee (%)	LBP (%)	Lumber spondylosis (%)	Fibromyalgia (%)
Student	0.31	1.88	0.00	0.94
Cultivator	17.24	5.17	4.31	1.72
Sales person	1.54	1.54	1.54	0.00
Retired persons	23.14	3.49	9.17	2.18
Housewife	13.14	11.24	2.81	2.27
Day Laborers	15.87	4.76	1.59	0.00
Worker	3.17	3.85	0.45	1.58
Weaver	1.80	10.49	0.90	1.95
Garments worker	0.00	3.57	0.00	0.00
Rickshaw/Van driver	3.51	5.26	0.00	1.75
Business	1.75	4.00	1.25	1.75
Others	12.04	7.41	2.78	3.70

The frequency of musculoskeletal pain was 19.0% in the smokers and 47.8% in the tobacco leaf users (table-IV).

Table -IV: Prevalence of musculoskeletal pain by habit:

Habit	Interviewed population			Positive respondent		
	Male	Female	Total	Male	Female	Total
Smoking	546 (22.3)#	21 (0.9)	567 (11.7)	102 (18.7)	6 (28.6)	108 (19.0)
Tobacco leaf	183 (7.5)	369 (15.4)	552 (11.4)	73 (39.9)	191 (51.8)	264 (47.8)
Others	19 (0.8)	6 (0.2)	25 (0.5)	5 (26.3)	1 (16.7)	6 (24.0)
Total	2447	2403	4850	454	829	1283

#Data in the parentheses indicate percentage

Table-V: Frequency by Economic status.

Social status	Interviewed population		Positive respondents	
	Number	Percent	Positive	Percent
Upper class	228	4.7	56	24.6
Middle class	714	14.7	187	26.2
Lower class	3908	80.6	1040	26.6
Total	4850		1283	

Economic status of the positive respondents:

The frequency of MSK pain was 24.6%, 26.2% and 26.6% respectively in upper, middle and lower class (table-VI).

Table-VI: Prevalence of MSK pain and rheumatic diseases.

Name of diseases	Male (N=2447)	Female (N=2403)	Total (N=4850)	95% CI
RA	4 (0.2)[#]	28 (1.2)	32 (0.7)	0.47 – 0.93
SSA-AS	20 (0.8)	25 (1.0)	45 (0.9)	0.69 -1.24
SSA-PSA	0 (0.0)	2 (0.1)	2 (0.04)	0.01 - 0.15
Reactive arthritis	1 (0.04)	3 (0.1)	4 (0.1)	0.03 - 0.21
OA other than knee	44 (1.8)	74 (3.1)	118 (2.4)	2.04 - 2.91
OA-Knees	106 (4.3)	275 (11.4)	381 (7.9)	7.13 - 8.65
Fibromyalgia	36 (1.5)	52 (2.2)	88 (1.8)	1.48 - 2.23
Frozen Shoulder	2 (0.1)	11 (0.5)	13 (0.3)	0.16 - 0.46
STR	41 (1.7)	61 (2.5)	102 (2.1)	1.74 - 2.55
SR-UBP	37 (1.5)	37 (1.5)	74 (1.5)	1.22 - 1.91
SR-LBP	115 (4.7)	249 (10.4)	364 (7.5)	6.80 - 8.28
VS (No specific disease)	55 (2.2)	81 (3.4)	136 (2.8)	2.38 - 3.31
VSR-PIVD	6 (0.2)	14 (0.6)	20 (0.4)	0.27 - 0.64
VSR-Radiculopathy	1 (0.04)	9 (0.4)	10 (0.2)	0.11 - 0.38
TRM	19 (0.8)	12 (0.5)	31 (0.6)	0.45 - 0.91
Total (MSK pain)	**454 (18.6)**	**829 (34.5)**	**1283 (26.5)**	**25.23 - 27.71**

* Multiple responses

#Data in the parentheses indicates percentage.

Discussion:

This was an observational cross-sectional study to explore the musculoskeletal pain and rheumatic morbidity in the populations aged ≥15 years in the nineteen small villages of Sonargaon upazilla of Narayangonj district. This study was conducted in two phases. The screening phase was conducted by eight trained field workers and examination phase by eight physicians including two rheumatologists. The response rate during screening and examination phases were 96.9% and 96.8% respectively.

The point prevalence rate of musculoskeletal pain was 26.5% .The prevalence of definite rheumatic disorders was 23.7% and the remaining 2.8% had no identifiable musculoskeletal syndrome. Age, sex and occupations were associated with the overall prevalence rate. The prevalence was higher (51.8%) in older aged (65yers and above) population. Females (34.5%) were affected more than males (18.6%) in this rural area. The commonly affected occupational groups were rickshaw/van drivers, cultivators, day laborers, retired persons and housewives respectively. The highest prevalence was recorded in lower class and then middle and upper class respectively. Among positive respondents tobacco leaf users were more frequently affected.

The most common site of pain of the body was low back (21%) followed by knee (14%), shoulder (7%), hip (7%), and ankle (6%). OA knee 7.9 %,(95% CI 7.13-8.65) was the most frequent rheumatic disease identified in the rural population followed by low back pain 7.5 %,(95% CI 6.80-8.28) OA other than knee 2.4 %,(95% CI 2.04-2.91), STR 2.1%, (95% CI 1.74- 2.55) fibromyalgia 1.8%, (95% CI 1.48- 2. 23) and upper back pain 1.5% (95% CI 1.22-1.91). Rheumatoid arthritis was found in 0.7% of the population and others inflammatory arthritis were uncommon. Females were affected more frequently than males in all cases.

Functional disability in various forms was identified among positive respondents and only few of them had complete inability to do specific tasks. Nineteen percent of rheumatic patients had work loss with a mean duration of 18 days in the preceding 12 months among positive respondents. Majority of positive cases commonly used NSAIDS or analgesic for relieving pain with or without prescription.

Conclusion:

Rheumatic diseases are common in the Bangladeshi rural community. The study revealed wide spectrum rheumatic diseases of which degenerative and mechanical diseases were the main group of disorder. These diseases are associated with some form of disability and work loss, as well as loss of income. More community-based studies with the design for the identification of associate's factors for individual rheumatic disease are needed so that appropriate messages can be given to the community for prevention and treatment of rheumatic disorders.

Conflict of Interest: None.

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