Original Article

Musculoskeletal Disorders among Traditional Bangladeshi Fishermen

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Abstract

Background: *Fishing is one of the most important economic activities in riverine Bangladesh. We studied musculoskeletal disorders (MSDs) among Bangladeshi fishermen which is generally high.*

Objective: *To study patterns and extend of MSDs among Bangladeshi fishermen.*

Materials and Methods: *A total 150 fishermen enrolled with at least six months employment history attended at out-patient department of Physical Medicine and Rehabilitation of Khwaja Yunus Ali Medical College and Hospital of Sirajganj district, Bangladesh, in this cross-sectional study using a random sampling procedure. The Nordic Questionnaire was used to assess work-related musculoskeletal disorders. To determine the significance of age, BMI and working experience with pain and discomfort in different regions of the body, Pearson Correlation test was done.*

Results: *Musculoskeletal disorder among fishermen due to extreme physical demand during the hauling of fishing nets on the raft in Jamuna River and its tributaries with the prevalence significantly higher. All body region were affected by musculoskeletal problems, among them the highest prevalence found in lower back and lowest in upper back (37.3%) region. There were significant associations of age with wrist pain (P=0.039), lower back pain (0.025) and knee pain (0.021). There was no significant association of BMI with any pain or discomfort. Total working experience of fishermen had significant association with pain or discomfort within last 12 months in shoulder (p=0.008), wrist (0.023), lower back (0.022) and knee (0.001).*

Conclusion: *Long hours of fishing in a traditional fishing boat with age-old equipments adopting inconvenient ergonomic posture can lead high prevalence of musculoskeletal problems among fishermen.*

Key Words: *Musculoskeletal disorders, Traditional, Fishermen, Nordic pain questionnaire*

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Introduction

The fishery sector is of foremost importance for food security and employment.[1] Fish production delivers the majority share of animal proteins to billions of people around the globe. For good measure, hundreds of thousands of people could afford their means of support in this industry. More than 40 million people are laboring in the fisheries industry universally, encompassing a substantial percentage of the global population.[2] Traditional or small-scale fisheries (SSF) contribute 82% of the total production, and large-scale fisheries play a part in the rest, with a growth per annum of 2.71% in Bangladesh perspective.[3] Just over 12% of the 165-million population of Bangladesh bank on fisheries and aquaculture-related activities for their bread and butter.[4]

Traditional fishermen use basic fishing gear, akin to hooks and line, nets, and traps, and dominate multi-species riverine fisheries.[5,6] Orthodox fishermen use small and low-cost fishing boats with underwritten funds. Fishing is considered one of the primeval and probably most audacious occupations, with a great threat of work-related risk, specifically musculoskeletal injury.[7,8] Global studies suggest that musculoskeletal disorders and occupational injuries are more common among fishermen than in any othermétier.[9] Albeitconsiderable national differences in the working conditions of the fishing industry do exist.[10-17]

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However, in Bangladesh earlier study shown 75% fishermen feel musculoskeletal problem during fishing.[18]

Materials and Methods

We conducted this cross-sectional study in the department of Physical Medicine and Rehabilitation of Khwaja Yunus Ali Medical College and Hospital of Sirajganj district, Bangladesh. Sirajganj district is blessed with a complex network of Jamuna River and its tributaries. Many people of this area are dependent on fishing for their subsistence. A Cohort of 150 male fishermen employed in the year January 2022 to December 2022 with at least six months of employment history were eligible for this cross-sectional study. Non-cooperative, mentally ill and fishing experience less than 6 months were excluded from the study. The ultimate sample size for the study was 150 which were selected by convenient sampling. A semi-structured questionnaire format was developed considering the fishing community and their living status to find out the required data.

After a thorough explanation of the study's goal and assurances of the confidentiality and anonymity of the information acquired, the subjects signed a written consent form and were asked to complete the questionnaire. The participants identified pain areas on a schematic of the human body, and the intensity of the pain was measured using the Visual Analogue Scale. The ethical committee of Khawaja Yunus Ali Medical College granted ethical approval for this work. The height and weight of the subjects were measured using a weighing machine with a height measuring rod. The usual formula was used to compute the body mass index (BMI).[19-21] The standard Nordic Musculoskeletal Questionnaire, a validated instrument for the musculoskeletal problems was used for this study to assess work-related musculoskeletal disorders (WMSDs).[22] A sequence of objective questions with multiple choice replies makes up this questionnaire. Because of their poor educational background, a face-to-6 face interview was deemed to be more dependable in gathering accurate information from them. The questions were divided into three categories: Workers' general information, such as age, years of experience, and so on.[23]

The data was presented as a mean with standard deviation. The incidence of pain or discomfort and work prevention were described as percentage according to Nordic pain questionnaire. To determine the significance of age, BMI and working experience with pain and discomfort in different regions of the body, Pearson Correlation test was done. SPSS 26.0 version was used to conduct the complete statistical analysis.

Results

After completion of data analysis, the results were organized in the tabular form and figures as necessary respectively. The tables and figures were described below. The findings of the study were presented in the subsequent pages. All the respondents were male.

Table-I shows the distribution of the fishermen by age. The age of the respondents were between 18 to 65 years and their mean age was 37.35± (6.93) years. Among the 150 respondents most (58.0%) were 31-40 years of age. Among them 72.7% were Muslim and 27.3% were Hindu. Among all respondent 90% were married and 10% were currently single or unmarried. Among all respondents 65.3% had primary education. Whereas, 32.7% were illiterate and only 2% had secondary educational qualification. Among the all respondents most (75.3%) family income was 500-9999 taka, 10% were ≥10000 taka and 14.7% of families monthly income was ≤5000 taka.

Table I: Socio-demographic Characteristics of the respondents

Characteristics	Frequency	Percentage (n=150)
Age (Year s)		
<20	4	2. 7
21 -30	26	17.3
31 -40	87	58.0
41 -50	22	14. 7
51 -60	9	6.0
>60	2	1.3
Minimum age 18 years, Maximum age		
65 years and Mean age 37.35± (6.93) years		
Religion		
Muslim	1 09	72.7
Hindu	41	27.3
Marital Status		
Married	135	90
Single/Unmarried	15	10
Level of Education		
Illiterate	49	32.7
Primary	98	65.3
Secondary	3	2.0
Monthly family income		
≤5000	22	14.7
5000 -9999	113	75.3
≥10000	15	10.0

The mean BMI of the fishermen was 21.06±3.95 kg/m2. Out of 150fishermen, majority (73) were within normal limit. 53 fishermen were underweight and only 11 were overweight. Whereas 13 of them were obese. The range of BMI was from 15.89 to 34.10 kg/m2. The mean working experience of fishermen was 8.45±4.75 years, ranging from 6 months to 20 years.
We interviewed 150 fishermen and enquired about their musculoskeletal pain or discomfort according to Nordic Pain Questionnaire. First, we asked about any history of pain or discomfort within last 12 months in different regions of body. Most (86.7%) of them complained of low back pain within last 12 months of their work whereas the least complained area of involvement was upper back (37.3%). The second most affected region was wrist/hand (81.3%). Just more than three-fourth of fishermen experienced shoulder pain (75.3%) and one or both ankle/feet pain (77.3%) during last year. The incidence of pain or discomfort in other regions of the body were as follows – one or both knee pain 71.3%, neck pain 64%, hip pain 42.7% (Table II).

Table II: Incidence of pain or discomfort within last 12 months in different regions of body

Region	Yes	Right	Left	Both	No
Neck	96 (64%)				54 (36%)
Shoulder	113 (75.3%)	60	36	17	37 (24.7%)
Elbow	85 (56.7%)	35	29	21	65 (43.3%)
Wrist/Hand	122 (81.3%)	48	41	33	28 (18.7%)
Upper back	56 (37.3%)				94 (62.7)
Lower back	130 (86.7%)				20 (13.3%)
One or both hips/thighs	64 (42.7%)				86 (57.3%)
One or both knees	107 (71.3%)				43 (28.7%)
One or both ankles/feet	116 (77.3%)				34 (22.7%)

As low back pain was the most frequent complaint, among them 23 (17.7%) fishermen had history of work abstinence during last year. 13.9%and 10.6% of fishermen were absent from work who were suffering from the wrist/hand pain and shoulder pain respectively. Work abstinence due to pain in other regions were negligible (Table III).

Table III: Incidence of work abstinence due to any trouble within 12 months who had pain by regions

Region	(%) of fishermen who had a history of work abstinence	(%) of fishermen who had no history of work abstinence
Neck (n=96)	9 (9.4%)	87 (96.6%)
Shoulder (n=113)	12 (10.6%)	101 (89.4%)
Elbow (n=85)	0 (0%)	85 (100%)
Wrist/hand (n=122)	17 (13.9%)	105 (86.1%)
Upper back (n=56)	0 (0%)	56 (100%)
Lower back (n=130)	23 (17.7%)	107 (82.3%)
One or both hips/thighs (n=64)	1 (1.6%)	63 (98.4%)
One or both knees (n=107)	3 (2.8%)	104 (97.2%)
One or both ankles/feet (n=116)	5 (4.3%)	111 (95.7%)

The last question was whether they suffered from any trouble during last 7 days who had pain in last 12 months. Out of 130 fishermen with history of lower back pain, 72 complained troubles during las week. Whereas wrist/hand and shoulder problems were present in 67 and 61 fishermen respectively. 52 had neck problems within last 7 days. Pain and discomfort in other regions during last week also reported in the Chart-1.

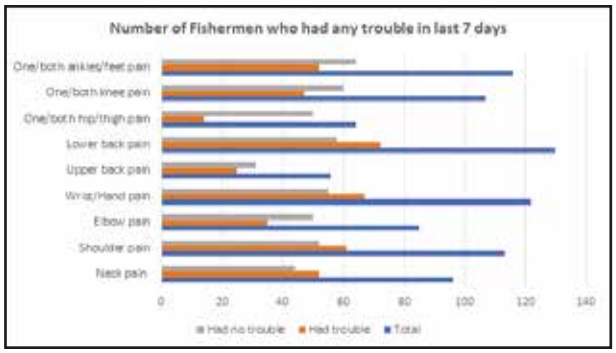

Chart-1

Pearson correlation test was done to see the significance of age, BMI and working experience with pain or discomfort in different body regions. There were significant associations of age with wrist pain (P=0.039), lower back pain (0.025) and knee pain (0.021). The other regional pain had no significant correlation with age. There was no significant association of BMI with any pain or discomfort. Total working experience of fishermen had significant association with pain or discomfort within last 12 months in shoulder (p=0.008), wrist (0.023), lower back (0.022) and knee (0.001).

Discussion

The goal of the current study was to determine how common musculoskeletal disorders were among the fishermen. 150 participants' replies were compared between the groups. In one or more body locations, the respondents had musculoskeletal diseases.

If not treated properly musculoskeletal complaints becomes fatal owing to adopting a repetitive non-ergonomic posture for a long period. The symptoms could be temporary in nature if the inciting causes removed but if work-related MSDs are not properly addressed it could turn into a permanent ailment.

The prevalence of MSDs among fishermen in Nigeria, Turkey, Brazil and Bangladesh ranged from 68% to 95% contrary to a developed country Spain which was only 29%.18,[24-27] However, in Bangladesh it is 75% in particular according to Mandal et al.

In our study Most 130 (86.7%) fishermen complained of low back pain within last 12 months of their work which almost resonates with the study from Brazil (83%).[28] Out of 130 fishermen with history of lower back pain, 72(54.3%) complained troubles during last week. As low back pain was most perennial complaints, among them 23 (17.7%) fishermen had slipped away from work during last year. The second most affected region was wrist/hand (81.3%) which was comparable to a Danish study.[29] Just more than three-fourth of fishermen experienced shoulder pain (75.3%), a very close number to a Brazilian study that was (71%) in last 12 months.[30] Among them

wrist/hand and shoulder problems were present in 67(54.9%) and 61(54%) fishermen respectively in last 7 days. In our study about13.9% and 10.6% of fishermen were absconded from their daily routine as a consequence of wrist/hand pain and shoulder pain respectively. The incidence of pain or discomfort in other regions of the body were as follows – one or both knee pain 71.3%, one or both ankle/feet pain (77.3%), neck pain 64%, hip pain 42.7%.Work refraining due to pain in other regions were insignificant.

The Pearson correlation test was done to see the significance of age, BMI and working experience with pain or discomfort in different body regions. Age is a critical variable in fisheries activities.[31] Our study signifies that middle age group was dominant (58%) which was almost close to the findings of Minar et al. done on the fishermen of Kirtonkhola River near the town of Barishal.[32] There were significant associations of age with wrist pain (P=0.039), lower back pain (0.025) and knee pain (0.021). other regional pain had no significant correlation with age. There was no significant association of BMI with any pain or discomfort. Total working experience of fishermen had significant association with pain or discomfort within last 12 months in shoulder (p=0.008), wrist (0.023), lower back (0.022) and knee (0.001).

Conclusion

The working postures of traditional fishermen in Bangladesh have some problems which need to be corrected. There are lots of work to do to improve the working environment. The lack of occupational health studies in our country is striking, and this urgently calls for establishment of occupational health studies in all medical institutions including occupational injury registers and services with constant safety monitoring in fishing, handloom workers, garment workers and all other related manual laborers.

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