International Journal of Research and Review
Vol. 10; Issue: 1; January 2023
Website: www.ijrrjournal.com
Research Paper *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

Prevalence of Musculoskeletal Disorder in Fisherwomen by Extended Nordic Musculoskeletal Questionnaire

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DOI: https://doi.org/10.52403/ijrr.20230107

ABSTRACT

Background: Musculoskeletal disorder are an important public health problem and leading cause of disability worldwide, but yet unknown prevalence among the fisherwomen. The work of these female involve head loading baskets, sitting for longer hours in ergonomically compromised position. Prolonged standing in wet floor and poor sanitation adds to MSD. This study has been undertaken due to lack of study in these genders.

Objective: To assess musculoskeletal related disorder in fisher women with Extended Nordic musculoskeletal questionnaire.

Method: Total 319 subjects participated in the study. With the age group of 25-55 years of age and work experience of minimum 5 years. Extended Nordic Musculoskeletal questionnaire was used to examine the site of pain period wise and details were recorded.

Results: The results revealed there is highest prevalence of low back pain in every age group in duration of 12 months, 4 weeks and current day. The prevalence was 34.8% in low back pain with high exposure of work performed in sitting with trunk flexion.

Conclusion: the study concludes that these genders are highly prone to musculoskeletal disorder.

Keywords: low back pain, musculoskeletal disorders, fisherwomen.

INTRODUCTION

India is second largest producer of fish within the world contributing to 5.43% worldwide fish production. fishing is one of the traditional jobs still being performed, provides food security and it employs over 14.5 million of people, hence fishery is the important sector in India.[1]

Fish is staple food of man residing in coastal regions since long time as it has high protein and nutrient content. According to marine fisheries census 2020, the dividing population of male versus female stands as such: 81.8% of fisher folk are male and 89% is contributed by female. [2]

On thinking of fisheries, the primary picture comes to our mind are the Koli communities contributing to development of massive fishing sector. Anglers and fisherwomen involve in same job but perform different task.

Rowing boat to sea, river and placing nets, catching fishes, loading and unloading of vessels from boats to shores are done by men. All the task prioritizing from production process till working tools is completed by females. They reach the harbour around 3.30 in the dawn, segregate the choice of fishes, Head-carry the heavy loaded baskets and commute to a desired selling destination. There is not distribution of labour at workstation, its administered manually [3]

The task carried in fish market by vendors are probable contact with ice in order of preservation. The work of peeling off a skin is mostly done manually especially in case

of shell of shrimp or prawns, some fishes need scaling, slitting, boning, cutting. Chopping into rings (ring cutting) or into different sizes as per consumer's demands, it is artwork performed by knives varying in their length, weight as well as grips unsuitable for every individual [(4).] Boning knife is used to separate the bone from fish whereas the diagonal slits on pomfret fish is given by fillet knife [5.]

Demands of individual job correlates with functioning of body. According to the 'World Health organization' functioning refers to all bodily functioning, activities and participation while disability refers to limitation of activity due to impairment. Functioning of human body and disability are a dynamic interaction between health condition. Musculoskeletal pain that is persistent reduces productivity, which ultimately results in poor performance, life quality. According to the 2010 Global Burden of Disease report, musculoskeletal illnesses are the second greatest cause of disability globally. An important marker for musculoskeletal (MSK) disorders is quality of life (QOL).[6]

Overstressing of her body due to prolonged working hours such as sitting for at least of 8 hours routinely, adapting to their job with ergonomically compromised body positions such as sitting on wooden bench or plastic cartons, peak hours demand them to stand in damp and moist floor, sole managers of household chores, looking after child as well as financial stability also contribute to dual tasking of these women. [2-6]

One of the main factors contributing to occupational health issues that have an impact on employees, companies, and society is musculoskeletal diseases (MSDs). Work-related musculoskeletal disorders (WMSDs) are the most prevalent type of MSDs that people suffer from as a result of events related to their jobs out of all of these occupational health issues. More than 1.7 billion individuals worldwide are affected by musculoskeletal diseases, which have the fourth-largest impact on the health of the population as a whole and lead to an increasing prevalence of disability.[7]

Although heavy lifting and forceful exertions are rare in the body modification industry, awkward static postures, repetitive motion are common hazards that occur across the profession. They work regardless of any weather. Working in hot and humid uncontrolled season leads them to dehydration and fatigue which makes them uncomfortable to carry out their job as per demands.

Working women are also more likely to develop MSDs, the study finds, as a result of the multiple tasks they complete each day, which include maintaining a static posture for extended periods of time, working long hours, experiencing stress, having trouble sleeping, and performing routine household tasks, all of which cause both physical and mental stress. The findings are in line with a study conducted in 2017 by Deepti Shettar and Mayur S. Sherkhane to analyse the risk factors for MSDs in working women. Women should be made aware of proper movement analysis in order to prevent MSDs, since this will highlight chances for prevention.[8]

According to the Occupational Safety and Health Administration (OSHA), workers may be exposed to excessive physical stress, strain, and overexertion at their workstations if work tasks and equipment do not take ergonomic principles into account. This includes awkward postures, forceful exertions, repetitive motion, and heavy lifting. The first step in eliminating risks and enhancing worker safety is identifying ergonomic risk factors in the workplace.[9]

Taking into account the aforementioned elements, they not only impact bodily function but also have emotional and mental implications

Considering the above factors, they not only affect physical function but also affects them on emotional and psychosocial grounds

MATERIALS

1. Pen and pencil

2. Demographic data form
3. Consent form
4. Extended Nordic Musculoskeletal Questionnaire.

METHODOLOLOGY

Study design: One time observational (cross sectional)
Duration of study: 18 months
Location of study: Metropolitan city
Sample size: The predicted sample size was 384. The participants analyzed were 319 for this study.
Sample population: Fisherwomen between age group of 25-55 years and having work experience of minimum 5 years.
Sampling method: Convenient.

SELECTION CRITERIA

Inclusive criteria:

1. Women willing to participate.
2. Age 25-55 years of age
3. Age of experience should be minimum 5 years
4. Working hours -6-8 hours.

Exclusion criteria

1. Subjects with musculoskeletal conditions like recent fractures, spinal conditions like PIVD, recent
2. surgery
3. Age of experience should not be less than 5 years

PROCEDURE

In this study,319 participants had participated between age group of 25-55 years and who had 5 years of work experiences. The study conducted includes female fisher. Ethical clearance was taken from ethical committee. Permission was taken from individual participants. Subjects who were willing to participate were asked to sign the consent of participation. All the data was collected in demographic data sheet and screening them on basis of inclusive and exclusive criteria. The purpose of the study method and procedure was explained in the beginning. The population was assessed on the basis of pain in particular bodily segments. The duration of pain according to body region was noted ranging from 12 months, 4 weeks and current day. The relative comorbidity was mentioned in the data sheet. Results were plotted in the form of graph and tables.

DATA ANALYSIS

The data was collected was collected on a data sheet and a master chart was prepared using Microsoft excel. The data was statistically analyzed using SPSS version 28.0. data was then plotted in form of tables and graphs.

RESULTS

All statistical analysis was done using SPSS Version 28.0
A total 319 Fisher-women were included in this study out of 384, segregated based on the Inclusion and exclusion criteria.
The working women aged between 25-55 years of age and their dictated working hours was 6-8 hours.
Age group wise distribution of Fisher women shows Highest Number of Fisher-women of about 37.6% belonged to age group of 41-50 years. These is said to be experienced population working with or in support of other family member. To encouraged and keep the younger generation in traditional business. It was found that tough Highest Number of Fisher-women falls in Normal BMI of about 71.2% and still second category falls under overweight of about 21.9%. they still suffer from musculoskeletal disorders.
Highest Number of fisher women suffering from Low Back Pain today is about 22.6%. The values found for prevalence of lower back pain or discomfort in the last 12 months and 111 cases of lower back MSD were 34.8% and second leading disorder was knee pain with 96 cases with 31% respectively. A prevalence of pain in low back was with 108 cases depicting the 33.9% was observed in last seven days.
Highest Number of fisher women suffering from Low Back Pain today is about 22.6%.

Our study found that 89.97 % of Fisher women falls under category of moderate Pain. It was found that there was significant difference between the period wise sites of pain ($p<0.001$).

Table 1: Age group wise distribution of Fisher women

Age groups	Frequency	Percent
<30 years	38	11.9
31-40 years	95	29.8
41-50 years	120	37.6
51-60 years	66	20.7
Total	319	100

Interpretation: Highest Number of Fisher-women of about 37.6% belonged to age group of 41-50 years.

Table 2: Site of pain (12 months) wise distribution of Fisher women.

Site of pain (12 months)	Frequency	Percent
Elbow	4	1.3
Feet	12	3.8
Knees	30	9.4
Low Back	111	34.8
Neck	96	30.1
Shoulder	32	10
Upper Back	11	3.4
Wrist	23	7.2
Total	319	100

Interpretation: Highest Number of fisher women suffering from Low Back Pain within Duration of 12 months is about 34.8%

Table 3: Site of pain (4 weeks) wise distribution of Fisher women.

Site of pain (4 weeks)	Frequency	Percent
Elbow	9	2.8
Feet	22	6.9
Hips	3	0.9
Knees	40	12.5
Low Back	108	33.9
Neck	37	11.6
Shoulder	66	20.7
Thighs	7	2.2
Upper Back	13	4.1
Wrist	14	4.4
Total	319	100

Interpretation: Highest Number of fisher women suffering from Low Back Pain within Duration of 4 weeks is about 33.9%.

Table 4: Site of pain (Today) wise distribution of Fisher women

Site of pain (Today)	Frequency	Percent
Elbow	5	1.6
Feet	32	10
Knees	77	24.1
Low Back	72	22.6
Neck	29	9.1
Shoulder	29	9.1
Upper Back	48	15
Wrist	27	8.5
Total	319	100

Interpretation: Highest Number of fisher women suffering from Low Back Pain today is about 22.6%

Descriptive Statistics	N	Minimum	Maximum	Mean	Std. Deviation
Age	319	22	57	42.22	8.68
Grade of pain	319	4	7	5.35	0.93

DISCUSSION

Fishing employs 5.4 million people in India, of which 70.4% (3.8 million) are fishermen and only 29.6% (1.6 million) are fisherwomen. Fisheries are the most significant source of livelihood for communities living in coastal regions. Lower back musculoskeletal dysfunction (MSD) is one of the leading causes of disability or absence from work worldwide [15] and is regarded as a serious issue in public health.[13] It is also notable for its protracted length, incapacitating nature, and the subsequent provision of illness benefits.

There were 319 female fisher-sellers in this survey. dividing the age group into 25 to 55-year-olds. The assessed ladies worked 6–8 hours per day, 6-7 days per week. Data on demographics was collected. This study included 319 female fisher-seller. Ranging the age category as 25-55 years of age. The working hours of assessed women were 6-8 hrs with 6-7 days per week. Demographic details were taken.

Our study is different in this regards that other studies have focus on only female Fisher population who are involved in post-harvest work such as head carrying, peeling, fillet cutting the fishes and selling in markets. According to a study conducted in Brazil, women who work as seashell gatherers are more likely than others to experience low back pain. The Nordic Musculoskeletal Questionnaire, which was utilised in the previous study, solely assesses pain experienced during the previous 12 months.[14] Our study is unique in that we employed the Extended Nordic Musculoskeletal Questionnaire, which focuses on the location of pain over the past year, the past week, and the present day. This questionnaire aids in the description of

pain in various body parts. Many women exhibit different pain patterns depending on how long they have worked.[15] Our analysis revealed the highest prevalence of low back pain during the previous 12 months, which may be a contributing cause as the spine's loading capacity declines.

Awkward positions, such as standing for a long time, carrying or lifting large objects, bending over, etc. were acquired by fisherman executing the duties in the previous study conducted in Amazonas, Brazil, which is a contributory factor for most musculoskeletal illnesses. This finding show male population were more exposed to prolonged standing. This study used the Cornell Musculoskeletal Questionnaire, which evaluated the level, frequency, and duration of pain bilaterally. Our study found that more females were ergonomically compromised in lifting heavy weight over their heads and bending down to lift and maintain the basket on the floor, despite the fact that they were both employed in the same occupation. This difference was found to be statistically significant between the period-wise site of pain. Females were exposed to repetitive hyper flexing and twisting, which exposed them to cumulative trauma problems. However, knowledge concerning the health and working conditions of fisherwomen and their family is still very scare [16]

In a study with fish processing workers, Nag et al came to the conclusion that psychological factors account for 22.8% reported symptoms of MSD. However, they conducted the same study in industrial worker, who have the same work demands to enhance production as any formal worker with bare minimum socioeconomic status. The population in our study had a fair socioeconomic standing, in sake of running the long term business still they were shown to be psychologically vulnerable. They also have an accelerated work schedule in markets, along with managing house chores with least familial support.[17] hence they have been extensively researched in MSD studies.

A telephonic study was conducted by Norwegian Labor and Welfare Administration (NAV) to assess the MSD and frequency of sick leave, it revealed that fishers had a significantly higher percentage of sickness absence (5.2%). 1,000 registered fishers on board Norwegian fishing vessels participated in a telephone survey in 2014, despite improvements in the physical work in fisheries. Respondents were located using the official Norwegian fisher register; 832 of them were still actively fishing at the time of the poll, and only 2% of them were female.[18] the previous study has least count of male to female ratio. In our study we have found that despite working for longer duration and almost 7 days / week, the frequency of sick leave attend by these women are limited. Which conclude them for higher risk of falling under MSD. It is also found that with longer working hours the grade of pain increase.

A study conducted on artisanal fisherwomen revealed that they have high prevalence of upper limb musculoskeletal disorders. they have used DASH to assessed the upper limb and found that amongst all bodily segments elbow (43.4) was the most affected followed by forearm (38.6). As this was original study, various diseases were detected in the selected population.[19] And it might affect the underlying cause of MSD. In correlation of the previous study, our study has proper inclusive and exclusive criteria under which people with co-morbidities or recent fracture have been excluded. In our study, the prevalence was found amongst hands and shoulder with 20%. The work these females carried manually segregating the fishes on stalls, peeling, chopping, high frequency of contact with ice. This helps us in stating that these populations solely suffer from work-related musculoskeletal disorder.

Pena et al. found that fishers are particularly susceptible to ergonomic and physical dangers such sun exposure without appropriate protection, high muscular overload, excessive repetitive actions, and poor sanitation conditions.[20] Additionally, the workers experience numerous other

morbidities such as frequent respiratory irritation (frequent sneezing and/or coughing at work), headache, blanching of the hands, etc. as a result of the low temperature of the work environment and frequent contact with ice cold, chlorinated water. Despite numerous attempts to address the respiratory [21] and musculoskeletal [22] issues of fish processing workers. In our study, it was discovered that these people' low quality of life is exacerbated by the fact that they live in underdeveloped countries and lack a good work environment, appropriate protective gear, and sanitary facilities, lesser knowledge about treatment plans.

CONCLUSION

This study showed a significant correlation between Musculoskeletal Disorder and characteristics connected to the workplace. MSD was positively correlated with physical demands, and the most frequent physical demands were sitting with the trunk flexed and load carrying, trimming, bonning fishes with crude and improper instruments. Even the lack knowledge and severity of conditions, they continue to perform the task even in the pain. This study is a way to sensitize the professionals of the public health system and experts about the precarious work conditions and their impact on the health of fisher–women, in order to promote better public policies for this population.

Limitation

The age criteria included in this study is very large. As the exceeding age might fall under degenerative changes and leads to cause of pain

Declaration by Authors

Ethical Approval: Approved
Acknowledgement: None
Source of Funding: None
Conflict of Interest: The authors declare no conflict of interest.

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How to cite this article: Renu Saroj, Rutika Shivdikar. Prevalence of musculoskeletal disorder in fisherwomen by extended Nordic musculoskeletal questionnaire. *International Journal of Research and Review*. 2023; 10(1): 52-58.
DOI: *https://doi.org/10.52403/ijrr.20230107*

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