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Research article

ASSESSMENT OF MUSCULOSKELETAL ISSUES AND ITS THREAT ELEMENTS AMONG FISHERMEN IN COASTAL REGIONS OF KARNATAKA

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Abstract

Introduction: The objective of this study was to assess the musculoskeletal disorders and associated risk factors among fishermen in the coastal areas of Karnataka. The musculoskeletal system plays a crucial role in providing support, stability, and movement to the body. However, the demanding nature of the fishermen's job often leads to various musculoskeletal problems, particularly affecting the shoulder, back, knee, and hand.

Methodology: A cross-sectional study was conducted among 368 sea-going fishermen. The participants were selected using systematic random sampling, with one member from each household who is currently engaged in the fishing sector and has more experience. The technique of population proportion to size was used to determine the number of fishermen from each field practice area. Data were collected through house-to-house visits, collected information was summarized using frequency and percentage, mean and standard deviation. The chi-square test was used to compare the outcome measures.

Results: The majority of the subjects were found to have involvement in more than one joint. In the past year, 56% of the subjects experienced low back trouble such as ache, pain, or discomfort, 45% had knee trouble, and thigh/hip trouble followed by upper back (41%), elbow (40%), and neck trouble (37%). Risk factors such as shorting and grading of fish in a bending position and exposure to extreme temperatures were identified among the fishermen.

Interpretation & Conclusion: Based on our study, it can be concluded that multiple joint involvements are common among fishermen. Low back trouble is the most common, followed by knee, hip/thigh, upper back, elbow, neck, shoulder, and wrist/hand issues.

Keywords: Fishermen, Karnataka, Low back trouble, Occupational Hazard.

INTRODUCTION

India has a shoreline of 7516 km. According to Central Marine Fisheries Research Institute fishermen population is about four million comprising in 8645550 households. Fisheries and aquaculture play an important position in economy and livelihood (1). The paintings of marine fishermen are considered one of the maximum risky and existence threatening

professions all around the global. The international hard work enterprise's occupational protection and fitness department estimate that fishing has a worldwide fatality charge of eighty per 10000 people or about 24000 deaths in line with year (2).

The activity demand of fishermen ends in diverse musculoskeletal troubles in particular related to the shoulder, Back, knees, and hands. Constant bending motion and lifting heavy weights places immoderate strain on the spine leading to the of back ache. Shoulder pain can also occur because of heavy weight lifting and repeated throwing and pulling of the net from water (3).

Despite the kind of efforts to control MSD, inclusive of engineering design adjustments, organizational changes or working education applications, those set of problems account for a large amount of human struggling because of employee impairment, regularly leading to permanent, partial or general incapacity. MSD has additionally heavy economic charges for groups and healthcare systems. The charges are due to lack of productiveness, training of new workers, and repayment costs (4).

An article done on musculoskeletal problems as a public health concern in India: A call for motion by way of Sandul Yasobant et al found MSDs represent a burden on society in both direct prices to the healthcare device and oblique expenses thru loss of work and productivity[9]. The worldwide occurrence of MSDs degrees from 14% to as excessive as 42%, but in India, epidemiological studies indicate the community-based totally incidence of about 20% and occupation-specific prevalence located to be as high as 90% in numerous studies. In addition to this, the World Health Organization (WHO) also estimates that 40% of people over the age of 60 years be afflicted by MSD and approximately 80% of the humans have had low back pain sooner or later of their life (5,6).

A have a look at finished on threat assessment of work-associated musculoskeletal issues amongst dentists in Bhopal by using Chetna Batham et al found that extra than 92% of the participants reported pain and soreness in at least one a part of their frame. The most important affected body component is the neck, observed via the lower back and wrist. Work related MSDs are commonplace inside the dentistry (7).

Most members of the public experience joint pain and aches/discomforts at some point in life but fishermen are the most commonly neglected population due to their work practices and environmental factors. Little is known about musculoskeletal problems. MSDs have been studied in other industries but not in fishermen. This study attempts to throw some light on musculoskeletal disorders and associated risk factors among fishermen in the coastal region of Karnataka.

MATERIALS AND METHODS

Study Design: A cross-sectional study of sea-going fishermen living in the field office of K.S.Hegde Medical academy, RHTC Sasihithu, Hejmadi Kodi, at a distance of 33km & 41km from the academy. The survey was conducted from January 2018 to December 2019.

Sample size: As the prevalence from the previous study is 64.8%, the calculated sample size is 368. The formula N=4pq/d2 is used to calculate the sample size where p=open (64.8%) d= error (5 %).

Sample choice: Majority of populace in Sasihithlu and Hejamdi Kodi depends on fishing for his or her livelihood. List of fishermen houses have been acquired from Panchayat and fisheries cooperative society. The fishermen to be covered in the areas had been selected by use of Systematic random sampling. 370 sea going fishermen had been blanketed in the take a look at as in keeping with pattern length calculation. The technique of population proportion to size has been used to determine the number of fishermen from each area exercise location. Sampling fraction changed into calculated for both the examine regions. Sampling fraction for sasihithlu turned into discovered to be three and a couple of for Hejamdi Kodi.

Operational Definition Musculoskeletal Disorder - MSD are injuries or problems of the muscle tissues, nerves tendons, joints, and cartilage and spinal discs. Work-related MSD is conditioned in which; work environment & performance of work contribute significantly to the condition.

Data Collection tool & technique: Informed consent acquired before statistics series. A preferred questionnaire (Standardised Nordic questionnaires for the evaluation of musculoskeletal signs and symptoms) (8) had been used to evaluate the Musculoskeletal disorder due to occupation. Questionnaire on Risk Factors turned into formulated, inner and external validation being executed. It changed into translated to neighbourhood language for clean execution and was linguistically tested. It was consisting of socio-demographic profiles, questions on the musculoskeletal sickness and associated hazard elements. Questionnaire included form of joint affected in the shape of pain, aches, unilateral or bilateral in last 365 days.

Data were accumulated the use of the residence-to-residence visits. The facts collection commenced from the first house next to centre then every 3rd house for sasihithlu and each 2nd residence for Hejamdi was taken for sample series. If the subjects were now not available for three consecutive goes to the following house become taken in consideration.

Inclusion: Regular residents of Sashihithlu and Hejmadi Kodi. Fishermen with at least 1 year of marine fishing experience. One member from each household actively engaged in fishing with most of the fishing experience. Fishermen aged ≥ 18.

Exclusion criteria: Part-time fishermen. Workers with peripheral diseases affecting the musculoskeletal system were excluded from the study.

Statistical Analysis: Data collected will be summarized using frequencies and percentages, mean and standard deviation. The chi-square test was used to compare outcome measures. Risks were assessed using a Likert scale and summarized using means and standard deviations. They are classified as mild, moderate, and severe hazardous substances.

Ethical clearance: The Institutional Ethics Committee approved this study.

RESULTS

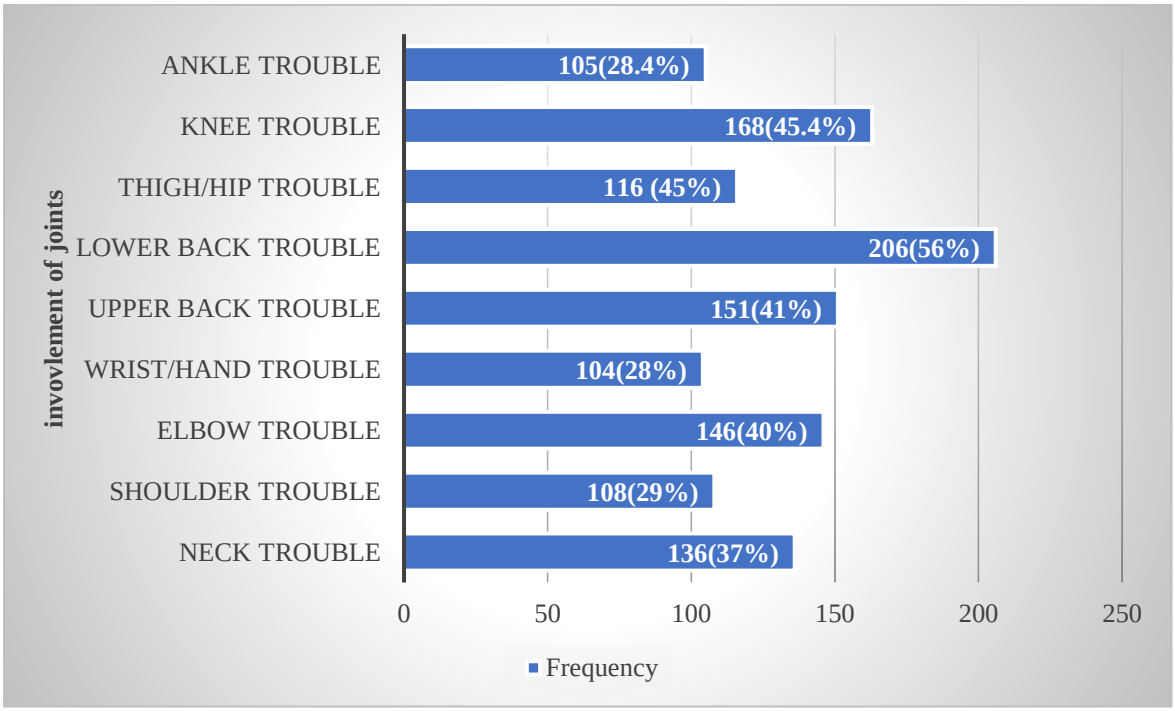
Age of the subjects ranged from 23 years to 60 years and the mean age was 46.15+/-9.5 years. The highest attendance rate was in the age group of 51-60 years (38.6%). Majority of the population belongs to Hejmadi Kodi community (83.8%) & Hindu castes (95%). Seventy percent of the participants were married. The mean age of initial fishing was 21-30 years (49.5%) followed by 10-20 years (48.1%). The average monthly working days were reported to be 22-30 days (63%). Ninety seven percent of the participants had a monthly income of <10000rs/-. The injuries were reported to be back, knee, ankle, followed by elbow joints.

Table: 1 Sociodemographic characteristic of participants(N=370)

Age group (In years)	Frequency(%)
10-30years	20(5.4%)
31-50 years	207(56%)
51-60 years	143(38.6%)
Place of Residence	
Sasihithlu	60(16.2%)
Hejmadi kodi	310(83.8%)
Type of family	
Nuclear	262(70.8%)
Joint	108(29.2%)
Educational status	
Illiterate	2(0.5%)
Primary	201(54.3%)
Middle-high school	146(39.5%)
Pre-University College	15(4.1%)
Diploma/Graduate	6(1.6%)
Years of experience	
< 10 years	63(17%)
10 -20 years	130(35%)
>20 years	177(48%)
Income per month	
<10,000rs/-	360(97.3%)
>10,000rs/-	10(2.7%)
Type of fishing	
Inshore	275(74.3%)
Off-shore	95(25.7%)

Type of boat used	
Non mechanized	103(28%)
Mechanized	267(72%)
Injury in last one year	
No	326(88%)
Yes	44(12%)

Figure1 shows that almost half of the subjects (56%) experienced Low back trouble such as pain, pain or relief, 45% of the participants had Knee trouble and Thigh/Hip trouble followed by Upper Back (41%), Elbow (40%.) and Neck Problems in the past year (37%).



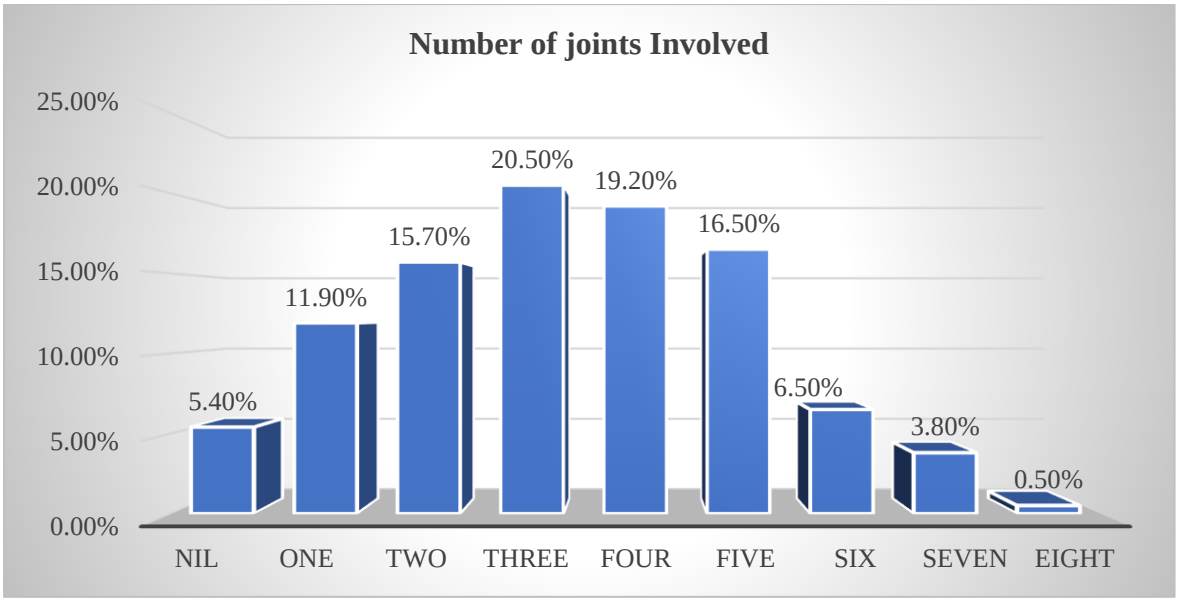
Out of 370 subjects 206 contributors had LBT in closing twelve months, a hundred and seventy (82.5%) had reduce in interest either at work or at domestic due to LBT. Fifty-seven (34%) of members had LBT in remaining one week. 13 of them had records of hospitalization. 31% of topics needed to alternate the obligations or job due to LBT, simplest 38% ever consulted to medical doctors or physiotherapist for LBT in last one.

Majority of subjects with the history of LBT found to have reduce in interest either at home or worked for 1 week (59.4%). 29% subjects had reduced in interest extra than 7 days however less than 30 days.

Twenty-nine percent of subjects had shoulder problem which includes pain, soreness or ache in closing 12 months. 66(61%) out 108 subjects had Right shoulder hassle, 26(24%) had left shoulder problem and sixteen (15%) of them had both the shoulder problem. 28% of them had a shoulder trouble in last 7 days. 4% them had a records of shoulder damage. 21% participants acknowledgedthat, they change duties or job because of shoulder trouble. 23% them ever consulted to doctors or physiotherapist for the same.

Thirty-seven percentage of individuals showed had neck trouble in closing twelve months. Forty-seven percentage of which had decreased hobby because of neck problem. 23(17%) of the had neck hassle in last 1 week. 10% of them had to alternate duties or job due to neck problem, only nine% consulted medical doctor or physiotherapist for the same. Overall joint involvement, majority of participants had three joints hassle (20%), inclusive of soreness in any three joints from above said joints. Nineteen percentage of topics had 4 joints hassle, sixteen% of topics had five joints trouble, only 2 topics (0.5%) had 8 joints hassle in final one years. 5.4% had no joint trouble in remaining 365 days. (figure:2)

Figure: 2 Number of joints involved among the subjects. (N=370)



Following table defined the hazard factors for musculoskeletal sickness. Working in extreme temperature (3.35 +/1.2) and sorting/ grading a fish in beside the point position (3.65+/-1.4) determined to be a prime chance element for muscular-skeletal ailment a number of the fishermen. Other threat factors like working>8 hours continuously (2.35 /-1.4), lifting heavy weight for <4 hours (2.23 +/-0.7) and standing on deck for than four hours (2.70 /-1.1) discovered to impacts the musculoskeletal systems and causing a few or other soreness.

Table: 2 Risk factors for musculoskeletal trouble among participants. (N=370)

Risk Factors	Mean+/-SD
Work more than 8 hours	2.35+/-1.460
Work at night	2.22+/-1.095

Stand for more than 4 hours during work	2.70+/-1.162
Lift heavy weight for >4 hours	2.05+/-0.869
Lift weight for less hours	2.23+/-0.768
Transfer heavy object from one to another place	2.23+/-1.027
Sorting and grading of fish in inappropriate manner	3.65+/-1.482
Vibration on deck	2.22+/-0.773
Extreme temperature	3.35+/-1.215

DISCUSSION

This observer has assessed the musculoskeletal ailment together with pain, ache or discomfort in predominant joints of frame specifically Neck, shoulder, elbow, wrist, lower back, hip/thigh, knee and ankle. Furthermore, this study has additionally attempted to evaluate the chance, thing that may possibly lead to any of above joint's problem.

More than half of our subjects had been in age group of 31-50 years (56%). Whereas look at achieved by using Dabholkar, et al [8] a showed that majority (38%) have been in 31-40 years in age observed by 21-30 years (31%) and best 14% had been in 51-60 years of age.[9]

This study found that almost 1/2 of participants started fishing at age of 10-20years (48%) while, 49.5% began on the age of 21-30 years and most effective 2% of participants began fishing between 31-40 years of age. In terms of years of familiarity 47.8% of our contributors had experience of greater than two decades, at the same time as 21% of subjects belongs to of 15-20 years, this is because majority of our members started out fishing as early as 10 years& majority of them belong to age group 31-50 years. Which was found to be higher than Dabholkar, et al and Mahmoud El-Saied El-Saadawy et al in, where participants had an experience of nearly 10 years. [(8,10).]Though the subjects worked 25 days a month, their average monthly income was 5001-10,000 (57%), and 40% of them were found to earn Rs. Social security among fishermen is inadequate. This was found to be similar to other studies (10,11).

Cardiovascular, respiratory and skin diseases are known diseases among fishermen but musculoskeletal diseases are the most common among the fishermen.[12] Back problems (56%) such as pain, ache and MSD major ones found in fishermen. Other joints such as the knee (45%), elbow (40%), shoulder (29%), and wrist/hand joints 28% are also commonly involved. Multiple joint involvement is more common compared to single joint involvement.

While a study by Dabholkar et al8 Mumbai found that 92.4% of the participants had LBP reported higher than our study while other joint involvement was also low. Transferring heavy loads in the bending, sorting and sorting fish in the bending, discharging and hauling are the main causes of LBP in fishermen. Dabholkar et al [8] stated that 64.8% had shoulder problem which is little better than our study while 31.4% had a knee hassle that is little lesser than our examine. As noted earlier 15 participants had a history of knee injury which may be a purpose for better prevalence of knee trouble in our cases. As our subject's assessed the musculoskeletal trouble in closing twelve months, the share of cases was much less than evaluate to the alternative studies.

Other observers discovered that the hand/wrist hassle were 25% in their participants which turned into much like our observe. However, different research, also said the same findings. A look at finished in Netherlands showed that in total, 37%, 22%, and 15% of employees stated lawsuits of low returned, shoulder/ neck, and hand/wrist at some stage in the beyond twelve months, respectively (13,14). Whereas every other observe showed that fishermen have better risk of Diseases of the musculoskeletal gadget and connective tissue (84%) than ailment of eyes, digestive tract or respiration gadget (15).

The occupational health hazards of fishermen are high, long hours, harsh weather conditions, exposure to extreme temperatures, isolated working conditions, working long hours inadequate rest, adverse weather conditions, all play an important role in the daily lives of fishermen. It should be handled daily (16).

Heavy lifting at work is considered an important risk factor for low back pain (LBP). Factors related to physical activity have been identified as potential risk factors for LBP. Several lifting guidelines have been developed in the workplace to prevent complex LBs. According to these guidelines, 25 kg is an acceptable weight limit in proper lifts but fishermen use heavier and longer gear (17,18,19) This study has the following limits and was not adopted any detailed history of MSD injuries. Verbal measurement of pain and trauma history may influence recall. Laboratory tests and prescriptions were not analyzed for the presence of the disease.

CONCLUSION

India employs about 14.5 million people in fisheries. Karavali, the coast of Karnataka, stretches for 300 km between Mangalore in Dakshina Kannada state and Karwar in North Kannada state. However, India has such a long coastline and millions of people dependent on

the fishing industry are the negatives. They live in poor socio-economic conditions with poor education.

This study concluded that most of our population had musculoskeletal problems. Most of them had multiple joint involvement (2,3 joints). There were cases of LBP followed by knee, hip/hip, upper back, elbow, neck, shoulder and wrist/arm joint problems. They recognized ergonomic hazards including repeated hauling and casting of the net and the practice of repeatedly moving forward to lift and change heavy objects They were well aware of the hazards of fishing. Most fishermen did not prioritize health.

Acknowledgment

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Conflict of interest

This study has no conflict of interest.

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