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Research Article

# Occupational health problems and factors contributing to the problem among Fisherwomen.

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**Abstract**

A descriptive cross sectional study was conducted in view to assess the factors contributing to the occupational health problems among fisher women working in fish processing Industries. A 250 samples were selected by simple random sampling technique from five different fish processing industries of Udupi district. The data was collected by using self- reported structured questionnaire and an observational check list was developed to identify the factors contributing to the occupational health problems among fisher women working in fish processing industries. The result shows that out of 250 sample 220(88%) reported of having experienced musculoskeletal symptoms and major factors were faulty body posture (100%), repetitive activity (100%), work environment (75%) and instrument (50%) contributed for the development of occupational health problems. The study concludes that women working in fish processing industries are prone to develop various occupational health problems and strategies need to be developed to limit the problem and to promote their health.

**Keywords:** Fish cutting activity, fish processing industry, Occupational health problems, factors.

## Introduction

Fisheries is an important sector contributing to the family income in India. Approximately about 50% of Indian population constitute of women, out of which one third contributes to the labour force. Ever Indian economy has variety of sectors and amongst those sectors women contribution in fishery sector is significantly high. In India there are around 5.4 million fishers out of which 70.37% are fishermen which accounts for 3.8 million and 29.63% are fisherwomen which accounts for 1.6 million[1]. Increase in the uptake of women in fish processing industries, the type of activity they are involved in and the environment they are exposed to, contributes a great deal to the development of occupational health problems.

In fish processing industry, the workers are exposed to cold environment. Cold work environment can result in different types of adverse health effects on human. Occurrence of health problem leads to decrease in their work performance, productivity and increases the risk for injuries and accidents. If serious health problems occur then, it may result in absenteeism from work due hospitalization or leave.[2] Study conducted on the impact of two sex dependent exposure profiles on musculoskeletal health, in fish processing work area, it was found that the working condition for women was worse than males in terms of work environment, posture and repetitiveness and it was concluded that women are more vulnerable for work related morbidities than males.[3]

Women working in fish processing industries are exposed to many environmental situations like prolong working hours without break in between activities, repetitive activity, not maintaining proper body mechanics while performing their work, not using protective devices while handling the raw iced fishes and its water, handling of sharp instrument and the environmental factors like slippery floor etc. makes them prone to develop occupational health problems. It was estimated that approximately 2% of the people working in factory experience symptoms of repetitive strain injury at any one time[1].

This study was conducted in fish processing industries of Udupi district, to identify the magnitude of occupational health problems and factors contribution to development of occupational health problems among fisher women. As it has a direct impact on the productivity of industry and country's economy it is better to provide information to the health professional regarding the same, for developing strategies that would contribute to the promotion of health of such workers.

**Objectives:**

1. To identify the occupational health problems among women working in fish processing industry.
2. To identify the factors contribution to development of occupational health problems
3. To find the association between occupational health problems and selected demographic variables

## Materials and Methods

A descriptive cross-sectional study was conducted in fish processing industries of Udupi district, Karnataka, India. For this study industries in which only fish cutting is done was identified and taken. Altogether there were 15 such registered industries in Udupi District. By using chit method five industries was selected for the study. The samples of the study were the women working in fish processing industry, age 20 years and above, having work experience of one year and more and are involved in fish cutting activity. A 250 samples were selected by simple random sampling technique from five different fish processing industries of Udupi district. The data regarding occupational health problems was collected by using self- reported structured questionnaire and an observational check list was developed to identify the factors contributing to the occupational health problems among fisher women working in fish processing industries. A demographic proforma was developed to collect the basic demographic information of sample. The study findings were analyzed based on objectives by using SPSS version16.

## Results

Out of 250 samples the data shows that majority 63.2% of women belonged to age group 20-44 years, 66% had educational qualification up to primary, 77.2% were married, 27.6% had work experience in fish cutting of 4-6 years and 78.4% were getting monthly income of Rs.3000-5000. Most of the samples i.e. 70.8% worked for 6 to 7 days per week and 66.8% worked for 7 to 8 hours per day (Table 1). Out of 250 samples, 88 % samples reported of having musculoskeletal, 84.8% had skin problem, and 70% had a history of injury (fall and cut injury) (Fig 1).

Out of 220 (88%) samples those who reported of having musculoskeletal problems, they have problems in different areas of the body i.e. wrist (96.3%), lower back (95,5%), fingers (94.5%), neck (85.9%), upper back (71.4%), elbow (65.5%) and shoulder (61.8%). Each of the health problems was calculated separately out of 100% as some of the samples were having both musculoskeletal as well as skin problem and some samples reported to have all three problems (Fig 2). Further data shows that out of 84.8% of skin problem, 49.2% reported of having experienced mild skin symptom, 30.4% moderate skin symptom and 5.2% severe skin symptom (Fig 3) and 62.8% had experienced cut injury and 32% reported of having experienced of fall injury (Fig 4).

To find the association between demographic variables and musculoskeletal problems chi-square test was used. The data in table 3 shows that there was significant association between musculoskeletal problems and selected demographic variables i.e. age ($\chi_{(1)}$= 16.417, p=0.001), marital status ($\chi_{(2)}$= 40.558, p=0.001) , work experience ($\chi_{(3)}$= 65.300, p=0.001) , no. of working days in a week ($\chi_{(1)}$= 5.031, p=0.025), no. of working hours per day ($\chi_{(2)}$= 5.914, p=0.052). it is inferred that musculoskeletal problem is directly proportional to age, work experience, number of

**Table 1. Frequency and percentage distribution of demographic characteristic (n= 250)**

| Sample characteristics | f | % |
|---|---|---|
| **1.Age in years** | | |
| 20 - 44 | 158 | 63.2 |
| 45 - 60 | 74 | 29.6 |
| 61 and above | 18 | 7.2 |
| 2. **Educational Qualification** | | |
| Illiterate | -- | -- |
| Primary | 164 | 65.6 |
| High school | 80 | 32 |
| PUC | 6 | 2.4 |
| Graduation | -- | -- |
| Others | -- | -- |
| **3) Marital status** | | |
| Single | 52 | 20.8 |
| Married | 193 | 77.2 |
| Widow | 5 | 2.0 |
| **4) Work experience in fish processing industry** | | |
| 1 to 3 years | | |
| 4 to 6 years | 61 | 24.4 |
| 7 to 9 years | 69 | 27.6 |
| 10 years and above | 56 | 22.4 |
| | 64 | 25.6 |
| **5) Monthly Income (in Rupees)** | | |
| less than 3000 | 54 | 21.6 |
| 3000 to 5000 | 196 | 78.4 |
| 6000 to 8000 | -- | -- |
| 9000 and above | -- | -- |
| **6)Number of working days per week** | | |
| 1 to 2 days | -- | -- |
| 3 to 5 days | 73 | 29.2 |
| 6 to 7 days | 177 | 70.8 |
| **7) Number of working hours per day** | | |
| Less than 5 hours | 6 | 2.4 |
| 5 to 6 hours | 77 | 30.8 |
| 7 to 8 hours | 167 | 66.8 |
| 9 hours and above | -- | -- |

Self reported structured questionnaire was used to identify the occupational health problems and presented in Fig 1: n=250

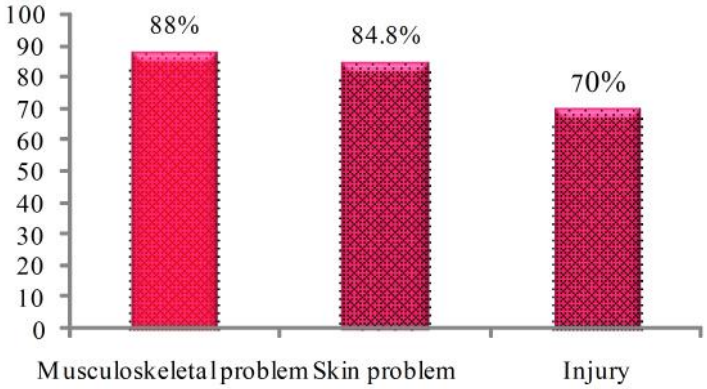


**Fig 1: Types of occupational health problems among fisher women**

**Fig. 2: Description of types of musculoskeletal problems of fisher women.** n= 220

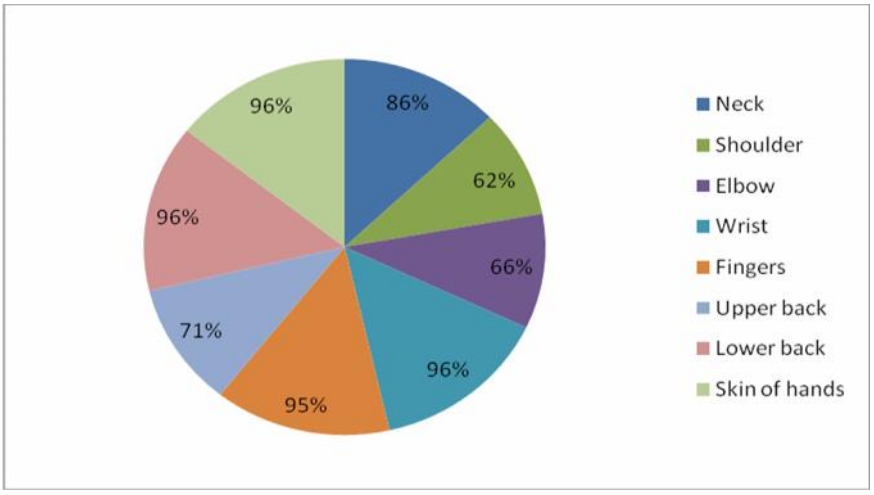


**Fig. 2. Types of musculoskeletal problems of fisher women out of 220 samples.**

**Fig 3: Percentage of women having skin problems** n=212

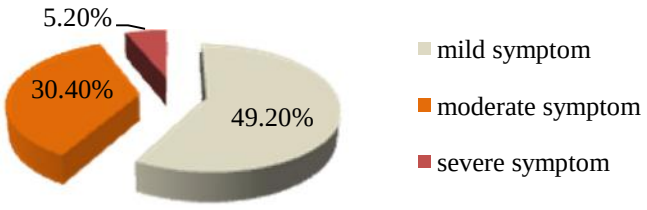


**Fig 3 : Severity of skin problems among fisher women**

Fig4: percentage of women reported having experienced injury (fall and cut) n=250

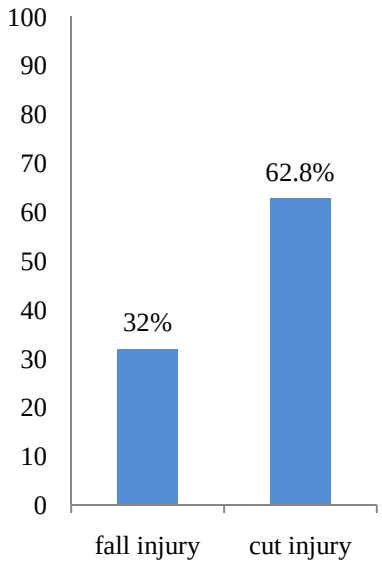


**Fig 4 Types of injuries among fisher women**

working days and hours and it was also observed that the incidence of musculoskeletal problem was more among married women as compared women who were single ( Table 2).

The data further shows that there was significant association between skin problem and selected demographic variables i.e. age ($\chi_{(2)}$= 1.184, p=0.001), work experience ($\chi_{(3)}$= 68.298, p=0.001), no. of working days per week ($\chi_{(1)}$= 53.109, p=0.001), no. of working hours per day ($\chi_{(2)}$= 57.733, p=0.001) (Table 3).

The data shows that there was significant association between fall injury and some of the demographic variables i.e. age ($\chi_{(1)}$ = 30.239, p=0.001) and work experience ($\chi_{(3)}$= 42.708, p=0.001) (Table 4). The data shows that there was significant association between cut injury and work experience ($\chi_{(3)}$= 27.641, p=0.001).

The factors undertaken in the study to identify its contribution to the development of occupational health problems were faulty body posture, repetitive activity, work environment and instruments used. It was found that all the sample maintained faulty body posture (Head and neck is twisted or bent throughout the work, arm is raised away from the body most of the time of work, wrist is bent or twisted throughout the work, maintains the same finger grip throughout the work and Back is bend forward throughout the work), all were involved in repetitive activity (Similar motion of arms and hands are repeated throughout the work and performs tasks continuously without breaks in between work), in respect to work environment it was found that all the samples were comfortably performing their task in respect to the height of the work place but the other environmental factors found to be contributing to development of health problems were: the work environment was cold , free flow of water all over the working area, floor was slippery. The last factor under the study was Instrument used and it was found that the entire sample used knife for cutting the fishes, none of the workers used protective devices like gloves or boots and their hands were in direct contact with the iced, raw fish and fish product all the time of work. Hence the study findings showed that awkward body posture, repetitive activity, work environment contributed, and instrument contributed 100%, 100%, 75% and 50% respectively for the development of occupational health problems.

**Table -2 Association between musculoskeletal problem and selected demographic variables (n=250)**

| Sample characteristics | Subject (f) | Musculoskeletal problem | | $\chi^2$ | df | p value |
|---|---|---|---|---|---|---|
| | | Absent | Present | | | |
| Age | | | | | | |
| 20-44 | 158 | 29 | 129 | 16.417 | 1 | 0.001* |
| 45-69 | 92 | 1 | 91 | | | |
| Marital status | | | | | | |
| Single | 52 | 21 | 31 | | | |
| Married | 193 | 9 | 184 | 40.55 | 2 | 0.001* |
| Widow | 5 | 0 | 5 | | | |
| Work experience in fish processing industry | | | | | | |
| 1-3 years | 61 | 25 | 36 | | | |
| 4-6years | 69 | 4 | 65 | 65.3 | 3 | 0.001* |
| 7-9 years | 56 | 1 | 55 | | | |
| 10years and above | 64 | 0 | 64 | | | |
| No. of working days in a week | | | | | | |
| 3-5 days | 73 | 14 | 59 | 5.031 | 1 | 0.025* |
| 6-7days | 177 | 16 | 161 | | | |
| No. of working hours per day | | | | | | |
| < 5 hours | 6 | 1 | 5 | | | |
| 5 – 6 hours | 77 | 15 | 62 | 5.914 | 2 | 0.052 |
| – 8 hours | 167 | 14 | 153 | | | |

*p<0.05

**Table- 3 Association between skin problem and selected demographic variables (n= 250)**

| Sample characteristics | Subject (f) | Skin problem | | $\chi^2$ | df | P value |
|---|---|---|---|---|---|---|
| | | Absent | Present | | | |
| 20-44 | 158 | 37 | 121 | 22.494 | 1 | 0.001* |
| 45-69 | 92 | 1 | 91 | | | |
| 1 – 3 years | 61 | 22 | 39 | | | |
| 4 – 6 years | 69 | 12 | 57 | 35.153 | 3 | 0.001* |
| 7 – 9 years | 56 | 4 | 52 | | | |
| >10 years | 64 | 0 | 64 | | | |
| 3-5 days | 73 | 39 | 43 | 53.643 | 1 | 0.001* |
| 6-7days | 177 | 8 | 169 | | | |
| No. of working hours per day | | | | | | |
| > 5 years | 6 | 1 | 5 | | | |
| 5 – 6 hours | 77 | 30 | 47 | 46.603 | 2 | 0.001* |
| 7 – 8 hours | 167 | 7 | 160 | | | |

*p<0.05

**Table- 4 Association between fall injury and selected demographic variables (n=250)**

| Sample characteristics | Subject (f) | Fall injury | | $\chi^2$ | df | P value |
|---|---|---|---|---|---|---|
| | | Yes | No | | | |
| Age | | | | | | |
| **20-44** | 158 | 31 | 127 | 30.239 | 1 | 0.001* |
| **45-69** | 92 | 49 | 43 | | | |
| Work experience in fish processing industry | | | | | | |
| **1 – 3 years** | 61 | 7 | 54 | | | |
| **4 – 6 years** | 69 | 13 | 56 | 42.708 | 3 | 0.001* |
| **7 – 9 years** | 56 | 21 | 35 | | | |
| **>10 years** | 64 | 39 | 25 | | | |
| No. of working days in a week | | | | | | |
| **3-5 days** | 73 | 21 | 52 | .495 | 1 | 0.552 |
| **6-7days** | 177 | 59 | 118 | | | |
| No. of working hours per day | | | | | | |
| **> 5 years** | 6 | 2 | 4 | | | |
| **5 – 6 hours** | 77 | 25 | 52 | .018 | 2 | 1.000 |
| **7 – 8 hours** | 167 | 53 | 114 | | | |

## Discussion

In the present study, it was identified that women working in fish processing industries are prone to develop one or the other occupational health problems. Most prevalent health problem among the three occupational health problems being studied was found to be musculoskeletal problem which accounted for 88%, followed by skin problem 84.8% and injuries 70%. The possible reason for the development of musculoskeletal problem is their working condition and environment i.e. long hours of continuous work without breaks in between work, repetitive activity, and the constant posture maintained during their work.

Skin problem commonly reported were skin breakdown, skin rashes, itching, discoloration of skin and roughness. The work area was very slippery and was all the time flooded with water and most of the workers did not use protective devices during their work so these may be the contributing factors for the injuries in such industries.

In the present study, the overall prevalence of musculoskeletal problem among the women working in fish processing industry was 88% (220) out of which upper back accounted for 71.4%, lower back 95.5%, shoulder 61.8%, fingers 94.5%, wrist 96.3%, elbow 65.5% and neck 85.9%. The finding of the present study was supported by Kerstina Ohlsson et.al. concluded that greater time spent with highly repetitive work task, muscular tension, stress, work strain were associated with neck or shoulder disorders.[3]. Another study done by A. Nag et. al on risk factors and musculoskeletal disorders among women in fish processing industry. The finding showed that nearly 71% of the women reported musculoskeletal disorders, upper back 54%, lower back 33%, shoulders 27% and finger 9% and high physical activity, improperly designed tools, poor training and poor job satisfaction, cold and humid environment, awkward posture for long hours[4]. Also supported by A. Saha, et.al. on occupational injury proneness in Indian women showed the prevalence of musculoskeletal pain to be 61.1%.[5]

In the present study, the overall prevalence of skin problem among the women working in fish processing industry is 84.8%.The most common skin problems encountered was skin discoloration, rashes, breakdown, itching and roughness. The findings of the present study was supported by a study conducted on skin temperature and skin symptoms among workers in the fish processing industry by LS Halkier, KP Thestrup on 196 workers employed in the fish processing industry showed that 156 (80%) had experienced skin problems during their work with fish and the symptoms mainly observed were itching, redness and stinging.[6] Another study conducted on Skin symptoms in the seafood-processing industry in northern Norway by Aasmoe L Bang B Andorsen GS, Evans R, Gram IT,and Lochen ML. found the prevalence of skin symptoms among females workers to be 60.2%. the symptoms observed were dry skin, itching, rash, chapped skin and chronic sores.[7]

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## Conclusion

The study concludes that women working in fish processing industries are prone to develop various occupational health problems and strategies need to be developed to limit the problem and to promote their health. some of the factors are not possible to be modified as it is must to carry out the work whereas some of the factors contributing to development of occupational health problems can be modified and strategies can be developed for such factors like maintaining proper body mechanics while performing the work, a training programme can be given before starting with the mainstream.

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