# Postural and Time Analysis of Marine Fish Retailers of Odisha


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# Introduction

# Introduction

- Working posture is the posture adopted by a worker while performing work tasks (OSH, 2022).

- Its adaptation depends upon the characteristics of the worker, work station design and the process of work task.

- The work station’s dimension, its spatial position and design must be suited to the physical comfortability of workers so that they can perform the work with a safe working posture.

# Continue.....

- A bad working posture is the key factor for various musculoskeletal disorders (MSDs) such as injury to muscles, nerves, tendons, bones, joints of bones, and cartilage.

- MSDs are the complaints in parts of the skeletal muscle which can start from a very mild complaint to very painful one (Tarwaka et al., 2004).

- The fisheries sector is considered as one of the high risk jobs (ILO, 2012). Here the workers often have to face a wide range of risks.

- In spite of having substantial national differences in the working conditions of this industry, many countries have claimed that the occurrence of lesions and MSDs among fishermen is generally high due to their poor working posture (Jansen, 2003).

# Fish Retailing

- Fish retailing is a traditional occupation that has been a means of livelihood for many in India, with the majority of marine fish retailers being women. CMFRI (2010)

- Women are particularly active in postharvest fisheries, in marine fishing women comprise about 75 per cent of involvement in fish marketing. ICSF (2010)

- In many countries and in all Indian states women's role in marketing and post-harvest has been highlighted. (Barman 2001; Nandeesha 2004; Nwabueze 2010), Williams et al. (2006), Gopal et al. (2012) and many other studies discussed in review.

# Fish Retailing

- Fisher women are victims of both backwardness and gender discrimination, are struggling to find out a space for them (Gulati, 2003).

- The work performance of fisherwomen in fishing-related activities is un-recognized or under recognized, which is evident through the invisibility of women's roles in many official fisheries statistics (Williams et al., 2002).

# Why marine fish retailers ?

- women form 48 per cent of the marine fisher folk population, with 928 females for 1,000 males

- Among the women fisher folk engaged in fishing-related activities in India, 57% participate in fish seed collection, 73.6% in marketing, and 75.7% in curing and processing (CMFRI, 2010)

- Although women contribute almost equally in the sector, most of their work remains so-called ‘invisible’ and does not receive due recognition. Meetei (2016)

# Rationale of study

## Studies in India

- Occupational workload and hazards faced by of fisherwomen in Maharashtra studied by Tewari et al. (1996)
- Occupational workload and ergonomic problems of prawn peelers studied by Sharma (2011)
- Sengupta and Krajewska (2014) studied in Andhra Pradesh.
- Occupational workload of women in aquaculture has been reported by Sharma et al. (2006)
- Arthi (2020) reported about the hazards of women in fisheries in Tamil nadu

# Rationale of study

- Few studies have been done on this issue in few states.

- ICSF (2010) has recommended that in marine fish retailing, majority of whom are women, face many kinds health problems. So, There is urgent need to pay specific attention to the issues faced by this segment of the workforce, whose numbers run to lakhs.

- In many conferences organized by GAF documentation of women's work has been recommended in International forums

- IIFET conferences from last 3 years have been advocating creating scientific evidences for policy advocacy

# Rationale of study

- Nearly 75% of fish marketing are women dominated in all maritime states of India (CIFT, 2017)
- For the study Odisha is selected.
- As in Odisha, studies on posture and time of fisher women have not reported
- Odisha has highest number of fishing villages, 3rd highest number i.e 517623, of fisher folk population (after Tamilnadu and Kerala)

# Objectives

1st

- To study occupational activities of marine fish retailers

2nd

- To analyze postures adopted and time spent on fish retailing activities by fish retailers

# Literature Review

# Studies in Other Countries

| Author | Country | Key Findings |
|---|---|---|
| Lambeth et al. (2002) | Australia<br>New zealand | Australia:-<br>•Women form only small percentage of vessel owners and crew in wild catch sector<br><br>•Women have **better represented in the processing or post harvest sector and in aquaculture as the shored based activities** are more compatible with women's family and home responsibilities than vessel based activities.<br><br>New zealand:-<br>•In sea food industry 66% of work force are men and 33% are female.<br><br>•Men dominate the wild harvest and aquaculture sector while **women are well represented in seafood processing sector.** |

# Studies in Other Countries

| Organization | Country | Key findings |
|---|---|---|
| FAO (2011) | Cambodia | Women play a **more significant part in fish trading, processing, maintaining fishing gears/equipments such as boats and gill nets, bamboo fence making and repairing fishing gears.**<br><br>50.9% of transportation activities are mostly done by men. |
| | Kenya | **Women do not take part in actual fishing operations but a number of them own fishing crafts and gear.** They use hired labour for fishing.<br><br>The fishing returns is shared equally between the fishing craft owner and the hired crew after setting aside some money for boat and gear maintenance and for daily ration or fishing requirements |

# Studies in Other Countries

| Author | Country | Key Findings |
|---|---|---|
| Sarah et al. (2017) | Mexico | Many **women are involved throughout the fish value chain, with the seafood industry relying heavily on temporary, part-time,** and low cost processing labor provided by women |
| | Peru | **Approximately 1,350 artisanal fishers are women (representing just over 3% of artisanal fishers)** and another 2,050 women are artisanal vessel owners |
| | Senegal | estimated **90% of seafood processors** (approximately 36,000) are women |
| | South Africa | Both men and women in South Africa are involved in various direct and indirect fishing activities |

# Studies in India

| Author | State | Key Findings |
|---|---|---|
| Singh (1995) | Manipur | Both men and women participated in pre-stock and stocking but the post-harvest activities were the domain of women **(sun-drying, smoking, and marketing).** |
| Reena et al.(2011) | Karnataka | Women are involved in four kinds of activities**: fresh fish retailer, fresh fish laborer, dry fish laborer, and dry fish retailer.** |
| Geethalakshmi et al. (2012) | Kerala | Majority of the women in coastal areas of Kerala were engaged in **fish processing activities like fish drying, preparation of value added fishery products andfish marketing** |
| Khader (2013) | Kerala | 50% of fisherwomen of Kerala are engaged in **value additions.** |
| Shanthi et al. (2010) | Tamil nadu<br>Crab fattening | Nearly 28% of the respondents were **engaged in fish marketing as their primary occupation** |
| B.B. Nayak, A. Ghag and Arpita Sharma (2019) Patent No.: 326749, | | have developed a **patented ergonomics fish drying rack after performing posture and time study of marine fisher women of Maharashtra.** |

# Studies in India

| Authors | State | Key findings |
|---|---|---|
| Sharma (2007) | Maharashtra | women are involved in different fishery-related activities but their role is recognized in fisheries in **limited activities like fish processing, marketing, and fish culture.** |
| Gopal et al.(2014) | Kerala | **women were traditionally involved in post-harvest activities in-ring seine fishery but now these activities aren't exclusive to females.** In clam fishing, women stand in water during the tides and capture the clam by handpicking which is time-consuming and prolonged labor-intensive work. They harvest 6kg/ day and then process them. |
| Sharma and Patil (2018) | Maharashtra | Revealed that shrimp farming during 1990's, participation of women was seen in pond construction, seed collection, feed making and post-harvest. But these roles are displaced now creating gender gap in shrimp farming |
| Yadav and Sharma (2017) | Maharashtra | The participation and **time spent by men in the ornamental unit was significantly higher (8 hrs day-1 average) than that by the women (4 hrs day-1 average).** |
| Meetei et al. (2016) | Manipur | The participation of women was found **maximum in aspects of capture fisheries, followed by post harvesting, marketing of fishes and stocking of fish seeds.** |

# Studies in Odisha

| Author | Findings |
|---|---|
| Sigh et al. (2014) | **Dry fish production and marketing was the primary occupation and secondary occupations include wage earnings in shrimp exporting units, ice production units, net mending, poultry, prawn peeling, farming, etc.**<br><br>More than 50% of the women in Puri and Ganjam districts were involved in fish collection/procurement/selling but in other districts, this work was mainly done by men. |
| Ramesh et al.(2019) | **In the lean period, they work as a laborer in, processing company, peeling factory, net weaving, or in the agriculture fields.**<br>Many active fisherwomen involved in fish seed collection on a part-time basis. |
| CMRI (2010) | Majority of the fisherwomen are engaged in making and repairing the fish net in the state of West Bengal (34.15%), followed by Maharashtra (19.21%) and **Odisha (18.08%)** |
| Ganesh and Sharma (2014) | Fisher women are involved in **selling, drying, grading, prawn seed collection, collection of dead shells etc in Chilika lagoon.** |
| Nandeesha (2011) | There are around **30% women are involved in carp culture.** |

# Research gap

- Studies on fisheries activities in Odisha has been done by Sigh et al. (2014) , Ramesh et al (2019) , CMFRI (2010), Ganesh and Sharma (2014), Nandesha (2011)

- From the above review, it has been observed that the studies conducted in Odisha are mainly focused on the women's socio-economic and their livelihood profile.

- However, the time and posture studies are lacking.

# LOCALE OF STUDY


Districts


Puri

Ganjam

# Justification for selecting Odisha

**Production View**

- **Ranks 4th in total fish** production after Andhra Pradesh, West Bengal and Gujurat by contributing 7,58,962 MT of total fish production(2021-22)
- In **marine,** it ranks **8th** with 1,58,321 MT total production(2021-22)
- In **inland, it ranks 5th** with 5,06,608 MT of total production (2021-22)
- Production has **increased by 62%** over the period of 5years
- **Marine Production** Increased by **19%** over last 5 years
- Per-capita consumption is **15.38 Kg** which is **more than** then national average of 9Kg

**Fisheries resources and Fisher folk Population**

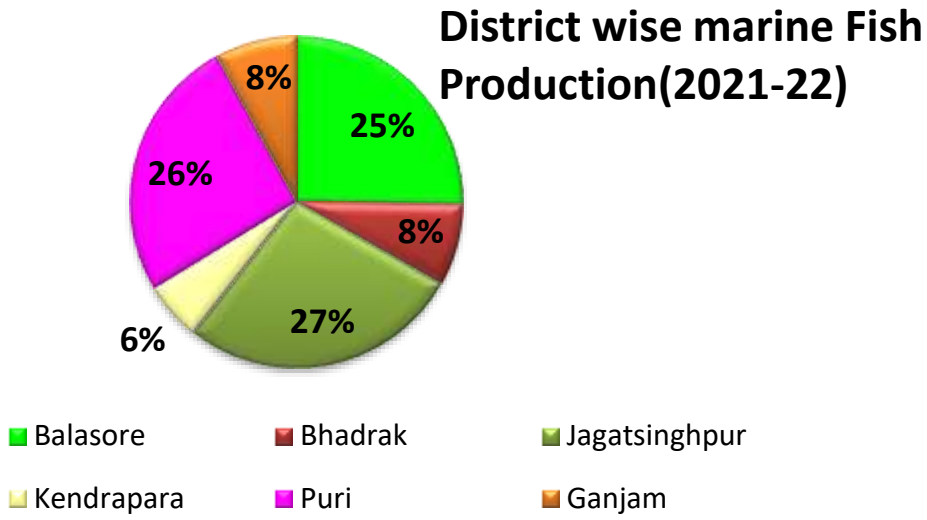
- 6 coastal districts with coastal length = 480 km
- **Highest number** of fishing village = 739
- Marine Fish landing centres = 63
- Fish drying platform = 10
- **3rd Highest** fisherfolk **population = 5,17,623** (after Tamil nadu and Kerala)
- Total number of fisher **women, 2,63,514** which is **50% of the total fisherfolk population** in the state.

**Sources:**

- Handbook on fisheries statistics (2018), Department of Fisheries Ministry of Fisheries, Animal Husbandry & Dairying Govt. of India
- Annual Activity Report (2021-22) Fisheries & Animal Resources Development Department of Odisha)

# Justification for selecting Ganjam

Odisha has total 6 Coastal districts




(Source:- DoF, Govt of Odisha (2020)

**Production View**

• Puri and Ganjam are the major producer of marine fish with the share of 26% and 8% respectively.

**Fisher folk population and engagement**

• Among actual fishermen population in Puri district has highest i.e 82% and Ganjam district has 2nd highest i.e., 68% belonged to full time engagement category in fisheries.

• In comparison to other coastal districts the Ganjam district production share is less but in Ganjam district the highest numbers of fisher women i.e. 13,410 are involved in fisheries selling and drying

(Source: Directorate of Fisheries, Government of Odisha, 2015).

# Justification for selecting Ganjam

## Fisheries Resources

- Ganjam, the southern coastal district of Odisha has a coastal length of 60 km.
- The district has the 2nd highest numbers of landing centers i.e 20
- 3rd highest i.e.6,566 numbers of Fishing gears used in Ganjam district.
- 28 marine fishing villages
- Landings are contributed by motorized and traditional boats using gillnet, seine net (shore seine), long line and hook and line.
- Fisheries Co-operative: 2250
- Nos. of marine Fish market=8
- Nos. of dry fish market=2
- Having one of the India's largest dry fish market-Humma

## Fisher folk population and involvement

- Total fishers population = 37,715
- The highest numbers of women are involved in Ganjam district i.e. 13,410 (18%)
- In Ganjam district 68% belong to full time category where as 20% and 12% are in part time and occasionally involved.

(Department of Fisheries, Ganjam District, Government of Odisha, 2020).

# Justification for selecting Puri

**Fisheries Resource View**

- Highest stretch of coastline i.e. 160 kms. among other 6 coastal districts
- Leading district in Odisha for having the maximum number of fishing gear i.e (12,220). (such as hooks, lines, drift/gillnets, shore seines, bag nets, small purse- seines and boat seines. Naskar(2018)
- Fisheries Co-operative = 7116
- Number of fresh fish Market = 7
- Number of dry fish Market = 2

**Production View**

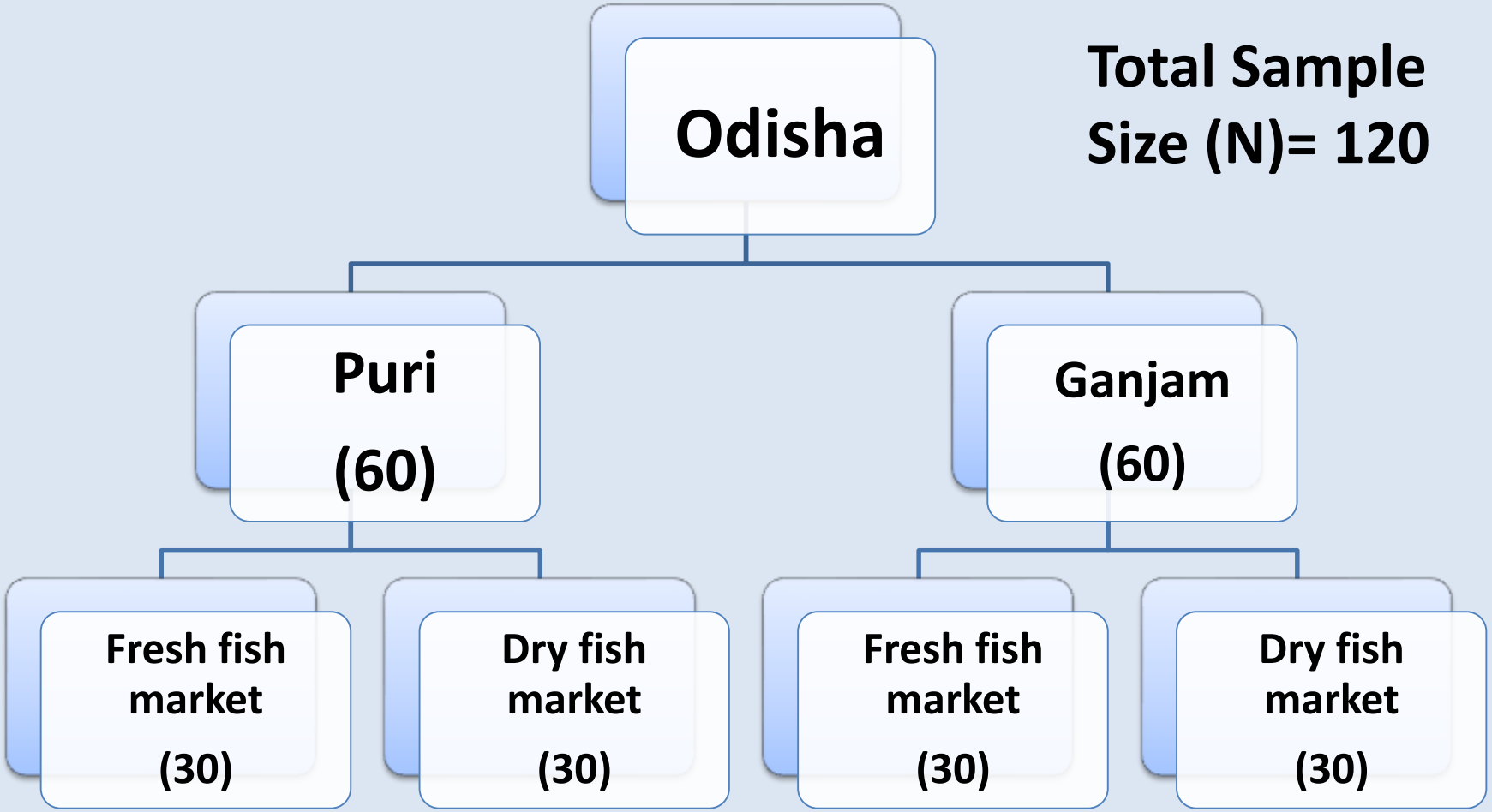
- 2nd highest in marine fish production after Jagatsighpur district.

**Fisher folk Population and engagement in fisheries**

- Fisherfolk Population = 63,829
- Among actual fishermen in Puri district has highest i.e. 82% of fishers belonged to full time category, 11% to part time and 7% to the occasional
- Fisher women are involved in more diverse activities in addition to fishing like fish packaging, wage labour at processing centers, and selling of marine ornaments at the sea beaches during tourist seasons. Chakraborty (2016)

(Source: Department of Fisheries, Puri district, Government of Odisha, 2020).

# Sampling Plan




**Total Sample Size (N)= 120**

# Methodology

- An interview schedule was designed to collect information about the information on occupational activities of marine fish retailers.

**Ovaco Working Analyzing System (OWAS)**

- This is the of posture monitoring used by Karhu et al., 1977 and 1981 in Finland for steel industry workers was used.
- Body positions of fish retailers were analysed using this methods as it is considered to be a practical method for identifying and evaluating working postures.
- OWAS also verifies the safety level of the most common work postures for the back (four postures), arms (three postures), and legs (seven postures) as well as the weight of the load handled (three categories).

# OWAS Code for different body parts

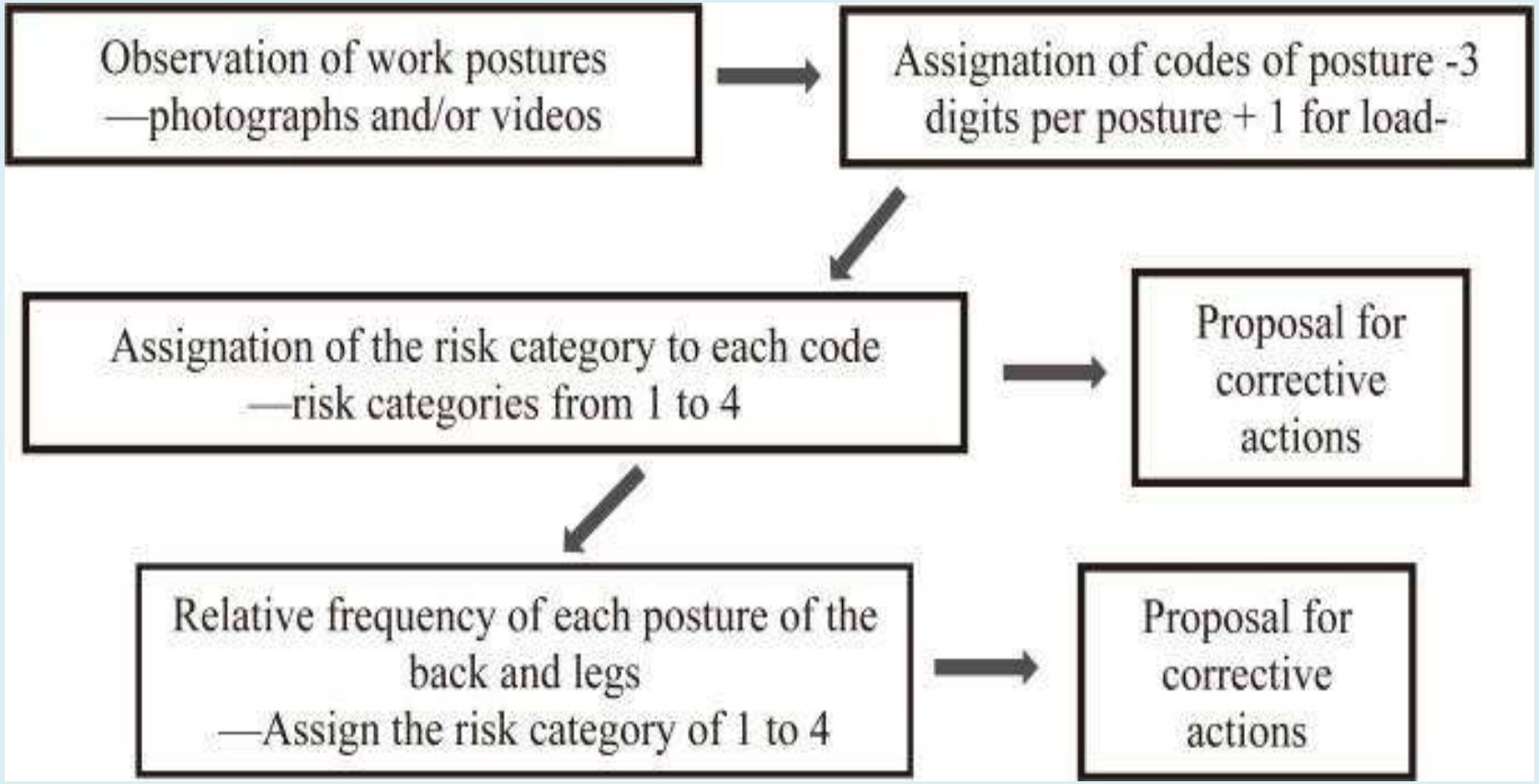
| Body Parts | OWAS Position | Digit |
|---|---|---|
| **Back** | Straight | 1 |
| | Bent | 2 |
| | Twisted | 3 |
| | Bent and twisted | 4 |
| **Arm** | Both arms below shoulder level | 1 |
| | One arm at or above shoulder level | 2 |
| | Both arms at or above shoulder level | 2 |
| **Legs** | Sitting | 1 |
| | Sitting on two straight legs | 2 |
| | Standing on one straight leg | 3 |
| | Standing or squatting on two bent legs | 4 |
| | Standing or squatting on one bent leg | 5 |
| | Kneeling | 6 |
| | Walking | 7 |
| **Load** | Less or equal to 10 kg | 1 |
| | Greater than 10 kg and less or equal to 20 kg | 2 |
| | Greater than 20 kg | 3 |

# OWAS Evaluation and Interpretation

| Back | Arms | Legs | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | | | 2 | | | 3 | | | 4 | | | 5 | | | 6 | | | 7 | | |
| | | Load | | | Load | | | Load | | | Load | | | Load | | | Load | | | Load | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 2 |
| 2 | 1 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 |
| | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 4 | 2 | 3 | 4 |
| | 3 | 3 | 3 | 4 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 3 | 4 |
| 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 4 | 4 | 4 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 2 | 2 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 1 | 1 | 1 |
| | 3 | 2 | 2 | 3 | 1 | 1 | 1 | 2 | 2 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 1 | 1 |
| 4 | 1 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 3 | 4 |
| | 2 | 3 | 3 | 4 | 2 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 3 | 4 |
| | 3 | 4 | 4 | 4 | 2 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 3 | 4 |
| INTERPRETATION OF THE RESULT | | | | | | | | | | | | | | | | | | | | | | |
| 1-No actions required | | | | | | | | | | | | | | | | | | | | | | |
| 2- Corrective actions required in near future | | | | | | | | | | | | | | | | | | | | | | |
| 3-Corrective actions should be don e as soon as possible | | | | | | | | | | | | | | | | | | | | | | |
| 4- Corrective actions for improvement required immediately | | | | | | | | | | | | | | | | | | | | | | |

(Source: Karhu et al., 1981)

# Procedures to apply OWAS



# Results

# Activities of a Fresh Fish Retailers

- Day for a fresh fish retailers start early morning at about 4 AM. Then they proceed to walk on foot while maintaining one empty bamboo basket over their heads to fish landing centres.

- Fishing boats used to arrive in the landing at around 5 AM in the morning. They collect fish from these boats and sort them based on their species. Then they leave for market to sell these fishes.

- After reaching to the market at 6 AM they clean the collected fishes with fresh water and arrange the fishes over their selling platform. They involved in retailing activities till 12 noon.

- After this, they go home and perform all household works. They again come to market at 4 PM in the evening and sell fishes till 9 PM at night.

- It was thus found that women fresh fish retailers work in the fish markets for 13 hours on an average in 2 shifts.

# Activities of a Dry Fish Retailers

Day for a dry fish retailers start at about 6 AM. They reach the market by walking on foot while carrying a bamboo basket full of dry fish on their head.

The major retailing activity is form 8 Am to 11 noon.

Then they go for drying of their collected fish and it takes around 2 hours/day. There after they go home for house work and lunch.

From 2 to 4 PM they go to landing centres to collect low value fish for drying purpose.

Again from 4 to 9 PM they continue retailing activities.

It was thus found that dry fish retailers work in the fish markets for 14 hours on an average in 2 shifts.

# Time and working posture analysis

| Activities | Working postures code | Posture description | f (%) | OWAS Risk Category | Interpretation of Result | Time (Average) |
|---|---|---|---|---|---|---|
| Procurement of fish | 1221 | • Back-straight<br>• Arms- one arm at or above shoulder level<br>• Legs-Standing on 2 straight leg<br>• Load- < 10 kg | 32(53.33%) | 1 | No actions required | 2 hrs |
| | 2141 | • Back- Bent<br>• Arms- Both the arms below shoulder level<br>• Legs- Squatting<br>• Load- <10 kg | 15(25%) | 3 | Corrective actions should be done as soon as possible | |
| | 3141 | • Back- Twisted<br>• Arms- Both arms below shoulder level<br>• Legs-squatting<br>• Load- <10 kg | 13(21.66%) | 3 | Corrective actions should be done as soon as possible | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Arriving at market | 2312 | • Back- Bent<br>• Arms- Both arms at or above shoulder level<br>• Legs-Sitting<br>• Load- 10-20kg | 27 (45%) | 3 | Corrective actions should be done as soon as possible | 30 minutes |
| | 3272 | • Back- Twisted<br>• Arms- one arm at or above shoulder level<br>• Legs- walking<br>• Load- 10-20kg | 33 (55%) | 1 | No actions required | |
| Sorting | 2111 | • Back- Bent<br>• Arms- Both arms below shoulder level<br>• Legs- squatting<br>• Load- < 10 kg | All | 2 | Corrective actions required in near future | 30 minutes |
| Cleaning | 2141 | • Back- Bent<br>• Arms- Both arms below shoulder level<br>• Legs- squatting<br>• Load- < 10 kg | All | 3 | Corrective actions required in near future | 1 hour |

| | | | | | | |
|---|---|---|---|---|---|---|
| Selling | 1141 | • Back- Straight<br>• Arm- Both arm below shoulder level<br>• Leg- Squatting<br>• Load- < 10 kg | 12 (20%) | 2 | Corrective actions required in near future | 9 hrs |
| | 2111 | • Back- Bent<br>• Arms- Both arms below shoulder level<br>• Legs- Sitting<br>• Load- <10 kg | 48(80%) | 2 | Corrective actions required in near future | |

- In comparison to other activities, selling takes up more time, and 80% of sellers in a particular fish market located along the road adopt a back bend while sitting on a chair or tiny stool.

- During selling activities, 20% of the shopkeepers squatted or crossed their legs on a plastic mat.

# Working postures adopted by of dry fish retailers

| Activities | Working postures code | Posture description | f (%) | OWAS Risk Category | Interpretation of Result | Time (Average) |
|---|---|---|---|---|---|---|
| Procurement of fish | 1171 | Back- Straight<br>Arm- Both are below shoulder level<br>Leg-Walking<br>Load- < than 10 kg | 47 (78.33%) | 1 | No actions required | 2 hrs |
| | 1271 | Back- Straight<br>Arm- One arm at or above the shoulder level<br>Leg- walking<br>Load-< than 10 kg | 13 (21.66%) | 1 | No actions required | |
| Arriving at market | 1111 | Back- straight<br>Arm- Both arm below the shoulder level<br>Leg- Sitting<br>Load- < than 10 kg | 42 (30% | 1 | No actions required | 15 minutes |

| | | | | | | |
|---|---|---|---|---|---|---|
| Arriving at market | 1111 | Back- straight<br>Arm- Both arm below the shoulder level<br>Leg- Sitting<br>Load- < than 10 kg | 42 (30% | 1 | No actions required | 15 minutes |
| | 1271 | Back- Straight<br>Arm- One arm at or above the shoulder level<br>Leg- Walking<br>Load- < than 10 kg | 18 (30%) | 1 | No actions required | |
| Sorting | 2111 | Back- Bent<br>Arm- Both arm below shoulder level<br>Leg- Sitting<br>Load- < than 10 kg | All | 2 | Corrective actions required in near future | 15 minutes |
| Cleaning | 2111 | Back- Bent<br>Arm- Both arm below shoulder level<br>Leg- Sitting<br>Load- < than 10 kg | All | 2 | Corrective actions required in near future | 30 minutes |

| | | | | | | |
|---|---|---|---|---|---|---|
| Drying | 4141 | Back- Bent and twisted<br>Arm- Both arms below shoulder level<br>Leg- Squatting on 2 bent legs<br>Load- < than 10 kg | 13 (21.66%) | 4 | Corrective action for improvement required immediately | 2 hrs |
| | 2161 | Back- Bent<br>Arm- Both arms below shoulder level<br>Leg- Kneeling<br>Load- < than 10 kg | 47 (78.33%) | 2 | Corrective actions required in near future | |
| Selling | 2111 | Back- Bent<br>Arm- Both arm below shoulder level<br>Leg- Sitting<br>Load- < than 10 kg | 9 (15%) | 2 | Corrective actions required in near future | 9 hrs |
| | 1141 | Back- Straight<br>Arm- Both arm below shoulder level<br>Leg- Squatting on 2 bent legs<br>Load- < than 10 kg | 51 (85%) | 2 | Corrective actions required in near future | |

- From these tables it is seen that a dry fish retailer spend 14 hours/day in retailing related activity and majority of time spend on selling i.e. 8 hrs/day followed by drying and procurement of fish.

- Study on their postures of different activities revealed that, the postures adopted for **cleaning, drying and selling** could be categorised under OWAS risk category.

- For fish sorting, cleaning and drying a retailer have to sit in squatting position with back and neck bend for a continuous duration.

- For selling activity, the retailers used to sit on chair, small slab or stone on the road side of the market or some of the retailers use plastic chairs with umbrella. In these activity, about 85% retailers have straight back with Squatting on 2 bent legs on slab/stone and 15% have bent back with sitting on chairs.

# Musculoskeletal disorders (MSDs)

- The continuous adoption of these postures caused some of the musculoskeletal disorders (MSDs).

- Through the interaction with both fresh and dry retailers revealed that, they face difficulties in these postures as they have to sit in squatting or cross legged position for a continuous duration.

# MSDs

| Musculoskeletal Disorders (MSDs) | Marine | Dry |
|---|---|---|
| | f (%) | |
| Back pain | 8 (13.3%) | 10 (16.7%) |
| Lower back pain | 16 (26.7%) | 16 (26.7%) |
| Waist pain | 12 (20%) | 12 (20%) |
| Knees pain | 16 (26.7%) | 18 (30%) |
| Thighs pain | 8 (13.3%) | 4 (6.7%) |

# Conclusion

- From this study it can be concluded that marine fish retailers are involved in many retailing activities like collection of fish, arriving at market, sorting, cleaning, drying and selling.
- A retailer spent on an average 13-14hrs/day in these activities.
- A fresh fish retailer spend 13hrs/day and a dry fish retailer spend 14 hrs/day
- Among the various other activities maximum time is given to fish selling i.e. 7-8 hrs/day. Following to OWAS method, the study found that the retailers follow some of the harmful postures during fish collection, sorting, cleaning, drying and selling for which some of the corrective actions are required.
- The fish retailers are also feeling aggravated if their strenuous posture is maintained for a prolonged time.
- This is not only hampers their normal physical activity but it may also result in development of a serious musculoskeletal disorder in the near future.

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