Assessment of Occupational Hazards and Usage of Sea Safety Devices by Fishers of Kerala, India

Arpita Sharma and Sethulakshmi C.S.
ICAR-Central Institute of Fisheries Education
Mumbai, India

Citation: Arpita Sharma and Sethulakshmi (2018) Assessment of Occupational Hazards and usage of Sea Safety Devices by Fishers of Kerala, India in The Fifth International Fishing Industry Safety & Health (IFISH) Conference, St. John’s, Newfoundland and Labrador, Canada. June 10-13, 2018
Dr. Arpita Sharma
Principal Scientist

Indian Council of Agricultural Research (ICAR)
ICAR-Central Institute of Fisheries Education (CIFE)
Deemed University
Panch Marg, Yari Road, Andheri West
Mumbai – 4000 61, India

www.cife.edu.in
Email: arpitasharma@cife.edu.in
arpita_sharma@yahoo.com
Indian Council of Agricultural Research (ICAR)

• ICAR is an autonomous organisation under the Department of Agricultural Research and Education (DARE), Ministry of Agriculture and Farmers Welfare, Government of India.

• It was established in 1929 and its Headquarter is in New Delhi.

• The Council is the apex body for co-ordinating, guiding and managing research and education in agriculture including horticulture, fisheries and animal sciences.

• With **101** ICAR institutes and **71** agricultural universities spread across the country this is one of the largest national agricultural systems.
ICAR’s Divisions and Units

• Crop Science
• Horticultural Science
• Natural Resource Management
• Agricultural Engineering
• Animal Science
• Fisheries Science
• Agricultural Education
• Agricultural Extension
• Knowledge Management
• IP&TM and PME
Fisheries Science Division

Fisheries research institutes

1. ICAR-Central Marine Fisheries Research Institute (CMFRI)
2. ICAR-Central Inland Fisheries Research Institute (CIFRI)
3. ICAR-Central Institute of Freshwater Aquaculture (CIFA)
4. ICAR-Central Institute of Brackishwater Aquaculture (CIBA)
5. ICAR-National Bureau of Fish Genetic Resources (NBFGGR)
6. ICAR-Directorate of Coldwater Fisheries Research (DCFR)
7. ICAR-Central Institute of Fisheries Technology (CIFT)
8. ICAR-Central Institute of Fisheries Education, Deemed University
Central Institute of Fisheries Education: University and institution of higher learning for fisheries science
Masters and Ph.D

1. Fisheries Resources Management
2. Post Harvest Technology
3. Fish Genetics
4. Fish Biotechnology
5. Fish Nutrition
6. Fish Biochemistry
7. Aquaculture
8. Fish Health Management
9. Aquatic Environment Management
10. Fisheries Extension
11. Fisheries Economics

Illustration by S.K. Sharma
Technical Officer, ICAR-CIFE, Mumbai
Marine Fishing Sector

- Along the extensive coastline, there are 3,827 fishing villages and 1,914 traditional landing centres.

- Major industry in its coastal states, employing over 14 million people.
Growth of India’s fisheries sector

• In phase one (1950-1966), landings were mainly by non mechanized traditional crafts

• During the second phase (1967-1986), these vessels were modified to hold outboard engines of 5-9 hp (i.e., motorization), to travel farther and increase fishing effort.

• In the third phase from about 1987 to date increased mechanization
Maritime states and Union Territories

**Nine states**
- Gujarat
- Maharashtra
- Goa
- Karnataka
- Kerala
- Tamil Nadu
- Andhra Pradesh
- Odisha
- West Bengal

**Four Union Territories**
- Daman & Diu
- Puducherry
- Andaman & Nicobar Islands (Bay of Bengal)
- Lakshadweep Islands (Arabian Sea)
Assessment of Occupational Hazards and Usage of Sea Safety Devices by Fishers of Kerala, India
• In India, fishers do encounter with some or the other form of accidents including loss of life.

• Records reveal that in the mechanized fisheries sector in Kerala State alone 16 persons have lost their lives during and three individuals were reported missing during one season.
Kerala

- Coast of Kerala constitutes approximately 10% of India’s total coastline
- Kerala’s share in the national marine fish production is about 20%
- For more than 8,00,000 marine fishers; fisheries is the only source of livelihood
- Total registered fishing fleet in the state consists of
  - 23,129 motorized crafts
  - 2,986 mechanized
  - 1,673 non-motorized crafts
- Development and management programs are implemented by the State Department of Fisheries (DoF)
- One of the focus of DoF is ensuring safe fishing
Regulations

• Merchant Shipping Act
• Kerala Marine Fishing Policy
• Kerala Marine Fishing Regulation Act
OBJECTIVES

1. To document fisher’s knowledge and usage of sea safety devices
2. To assess occupational hazards faced by fishers
TOTAL SAMPLE SIZE = 180

- 15 Traditional
- 125 Motorized
- 40 Mechanized
METHODS

• Personal Interviews
• Focus group discussion
• Questionnaire
RESULTS
PROFILE OF FISHERS

All 180 respondents were male
EDUCATION

- Illiterate: 9%
- Primary: 30%
- Secondary: 53%
- Higher secondary: 7%
- Graduation and above: 1%
• **RESIDENCY**
  96% were from Kerala
  4% were from Tamil Nadu, Andhra Pradesh, and Karnataka.

• **FAMILY TYPE**
  83% had nuclear family
  17% had joint family
FISHING PROFILE

FISHING TYPE

Traditional: 8%
Motorized: 69%
Mechanized: 23%

SIZE OF THE VESSEL

<10 meters: 19%
10 to 20: 78%
21 to 30: 3%
FISHING EXPERIENCE

- 52% of participants have <15 days of fishing experience.
- 44% have 15-30 days of experience.
- 2% have 31-46 days of experience.
- 2% have 47-62 days of experience.

DURATION

- 73% of participants went on a single day trip.
- 16% went on trips lasting 2 to 7 days.
- 11% went on trips lasting 8 to 13 days.
• **REGISTRATION OF VESSEL**
  86% of respondents had registered vessels
  14% of them had unregistered vessels

• **VESSEL INSURANCE**
  88% had vessel insurance
  12% do not have vessel insurance
  This 12% were mainly traditional fishers

• **PERSONAL INSURANCE**
  86% had personal insurance
  14% did not have personal insurance
OBJECTIVE 1

• To document fisher’s knowledge and use of Sea Safety Devices (SSDs)
• There were 13 SSD’s such as

• Life Buoy, Life Jacket, First Aid Kit, Emergency Ration, Fire Extinguisher, Fire Bucket, GPS, Magnetic Compass, Emergency Position Indicating Radio Beacon (EPIRB), Sonar, Echo sounder, Oil Lamp, Signaling Torch, and Batteries
Traditional fishers

- Traditional fishers had low knowledge about SSDs except GPS, magnetic compass and torch.
- Their interests towards use of SSDs was low.

Reasons were

- Lack of training/awareness
- High price
- Lack of space in vessels
- Hindrance in work
- Confidence
Motorised

- Fishers with motorised boats, had good knowledge about some SSDs
- But the usages was less.

 Reasons for less usage were
- Lack of space in vessels
- High price
- Low durability
- Lack of training
- Hindrance in work
- Confidence
Mechanised

• Fishers with mechanized boats had better knowledge and usage of SSDs compared to others

• Fishers with mechanized vessels used most SSDs and their attitude towards SSDs was positive
OTHER STUDIES

• Sreenath and Rajeev, (1995) showed that fishers were knowledgeable of the sea safety measures but the usage was less and magnetic compass is mostly used by the fishers.

• The Times of India report that most boats had not fixed GPS, Echo Sounder that can provide individual safety for fishers at sea.

• Anasuya (2014) among fishers of Karnataka that knowledge and practice regarding safety measures in the fishing occupation are inadequate.
OBJECTIVE 2

• To assess the occupational hazards faced by fishers
TYPES OF OCCUPATIONAL HAZARDS

Vessel hazards

- Sinking
- Grounding
- Fire & Burning
- Collision
- Capsizing

Individual hazards

- Missing
- Injuries
- Death
- Man over board
SINKING

To go below the surface of water or drowning.

• Human error
• Important precautions missed by the vessel’s staff
• Bad construction
• Bad maintenance
• Accidents or collision
• Natural calamities (harsh environment, sea)
GROUNDING

It is the stuck up of a vessel on seabed

- Depth of waterway
- Heavy loads
- Currents and Tides
- Darkness
- Visibility
- Waves
- Wind and Storm
FIRE AND BURNING

• Lightning
• Smoking
• Bad installation of cooking stove
• Excessive heat
• Bad engine installation
• Sparks
• Fuel leakage
COLLISION

• Speed
• Lack of lights and signals
• Darkness
• Improper channels
• Tired crew
• Rough sea, storm, rain, wind, currents
Capsizing (keeling over) is when a boat or vessel is turned on its side or it is upside down. The act of reversing a capsized vessel is called righting.

- Poor stability
- Heavy loads
- Rough sea, storm heavy rain
INJURIES

- Hooking yourself
- Fishhook in the eye
- Fish bites
- Infections
- Vengeful fish
- Slipping off the dock
- Stings and bites
- Cuts
- Injuries from equipment
- Slipping and falling
- Overuse injuries
MAN OVER BOARD

• Careless walking
• Slippery deck
• Ice, water, fish dumping in deck
PERSONS AFFECTED WITH OH

- CAPSIZING: 114
- SINKING: 86
- GROUNDING: 23
- BURNING: 14
- COLLISION: 141
- MISSING: 29
- MAN OVERBOARD: 158
- INJURIES: 170
Occupational hazards

• Most of the fishers suffered with occupational hazards such as injuries, man overboard, collision, capsizing, burning, grounding and mishaps.

• However, traditional fishers reported more occupational hazards
Reasons

• human error
• poor stability of the vessel
• natural calamities
• poor construction/maintenance of the vessel
• fatigued crew
Similar results were reported by Velayudhan (2007) that due to the unusual oceanographic and climatic conditions prevalent in Kerala coast accidents and mishaps at sea particularly during monsoon season result in loss of lives and properties of fishers are frequent.
Accidents at sea on the rise

Vypin-Fort Kochi Boat Accident: 8 Drown as Ferry Capsizes After Colliding With Fishing Boat

August 26, 2015 15:17 IST
By Anu James

Alappuzha (Kerala): Two fishermen were killed and three others reported missing when an unidentified ship collided with their boat off Alappuzha coast in the early hours today, the second incident involving fishermen in the

KERALA NEWS

26 Apr 2016

Fort Kochi Boat Accident: 8 people killed as fishing boat crashes into ferry in Kochi

Published on: 27 Aug, 2015
Published under: General Kerala News

2 fishermen killed after boat collides with ship, three missing

Another fisherman's body found in sunken vessel

Staff Reporter
Medical care

- Hospital care received was less.

- Half of the individual affected with injuries did not take any hospital care.

- Even though injuries were the first ranked occupational hazard among fishers, less hospital care received by fishers.
SUGGESTIONS

• Design SSDs which are size compatible and vessel compatible

• Training and awareness programmes

• SSDs which are affordable to fishers

• Ensuring usage of SSDs among fishers

• Participatory approach
Leaflets on sea safety measures prepared in all coastal languages
NPMF- 2017

- In April 2017, Government of India has notified the 'National Policy on Marine Fisheries, 2017 (NPMF)'

- This provides guidance for promoting 'Blue Growth Initiative' which focus on ushering 'Blue Revolution'

- Sustainable utilization of fisheries wealth from the marine and other aquatic resources of the country for improving the lives and livelihoods of fishermen and their families
Participation was done in a Training of Trainers on Emergency Response and Preparedness organised by FAO and a project entitled Capacity Building of Stakeholders to Integrate Fisheries and Aquaculture in Emergency Response and Preparedness was undertaken at ICAR-CIFE, Mumbai.
Workshops

Diverse stakeholders:
- Disaster Management Cell, Marine Police, Indian Coast Guard, National Disaster Response Force (NDRF), Marine Product Export Development Authority (MPEDA) NGOs, Private sector, Fishing Community, Researchers and Youth

Objective
- Mainstream Fisheries in Disaster Management plans
- Mainstream Disaster Management in Fisheries plans and policies

Policy Advocacy: All states need to have Fisheries Sector Disaster Management Plans
FAO Guidance books

Guidelines for the fisheries and aquaculture sector on damage and needs assessments in emergencies

Fisheries and aquaculture emergency response guidance
Workshop Glimpses
Blue Growth blog

Training of trainers on fisheries and aquaculture emergencies: Arpita’s story

FAO Fisheries and Aquaculture Department worked closely with the Emergency Division to develop a Training Programme on Fisheries and Aquaculture Emergency Response and Best Practice for both practitioners in the field and trainers of these practitioners. Last year, the new training was rolled out.

The Training programme builds upon the Fisheries and Aquaculture Emergency Response Guidance and the Guidelines for the Fisheries and Aquaculture Sector on Damage and Needs Assessments in Emergencies. These guidance documents were the first systematic guidelines available to support those responding to an emergency involving the fisheries and aquaculture sector, and were designed to improve the quality and accountability of preparedness and response to emergencies affecting the fishery and aquaculture sector.

According to Florence Poulain, Fisheries and Aquaculture Officer at FAO who helped develop the guidelines, “The demand for this publication was voiced by our partners. People who depend on fisheries and aquaculture for their livelihoods are increasingly vulnerable to natural and man-made hazards, which are, unfortunately, occurring more frequently and intensively, and hit developing countries hardest. This work draws on best practices and experience in responding to disasters that have affected communities working in fisheries and aquaculture. We are very excited to have these guidelines, and now we are eager to work with professionals in emergency response and in fisheries and aquaculture to help them understand and apply their content in their work.”

A first training of trainers session was held in March 2015 in Fucel, Italy.
ICAR-CIFE wksp addressed #disaster #preparedness & #fisheries #emergency #response in #India. 2nd wksp 25-27 Feb 2016
Conclusions

- Traditional fishers had low knowledge regarding most of the SSD’s. Fishers with motorized boats had good knowledge about SSDs but the usage was less.

- Reasons were lack of training/awareness programmes, price of SSDs and lack of space in vessels.

- Most of the fishers suffered with occupational hazards such as injuries, man overboard, collision, capsizing, burning, grounding and mishaps.

- Study highlights fishers knowledge, usage and attitude towards SSDs and documents occupational hazards.
Majority reported

- *Fishing is the one and only job that we know and we are professionals in that!*

Also, they added,

- *We are not frightened of any occupational hazard!*

- *We were born and brought in the lap of the sea Goddess, we will live and die here, everything for us is here!*

- *Whatever misfortune happen in the sea, we are willing to accept it!*


Swamy, J. 2009. Risks and dangers in the small-scale fishery of Tamil Nadu, Karamana, Trivandrum, India, South Indian Federation of Fishermen Societies (SIFFS)

Velayudhan T.D. 2007, Safety net for fisher folk study of fishers of kerala coast. Traditional fisher folk of Kerala - An article about their socio-economic organization and the special relationship they share with the sea and the environment.

Images have been taken from internet
ACKNOWLEDGEMENTS

- UN FAO
- IFISH
- Memorial University
- Angela Adrake, Ann Miller, Barbara Neis and Andrew Watterson
- Florence Poulain
- Ministry of Agriculture and Farmers Welfare, Government of India
- ICAR, New Delhi, ICAR-CIFE, Mumbai
- All the fishers
- Department of Fisheries, Kerala
- Fisheries Cooperative Societies