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# AN EVALUATION OF OCCUPATIONAL SAFETY AND HEALTH HAZARDS AMONG FISHERMEN IN PONTIAN BESAR, JOHOR

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## ABSTRACT

Malaysian fisheries industry has dynamic and competitive development, and it is not obtained without the support and sacrifices by fishermen as a backbone of the sector. This study was conducted to assess the occupational safety and health hazards of fishermen at Pontian Besar in Johor. The objectives of this study were to evaluate the current state and to propose preventive measures for enhanced occupational safety and to address health issues among fishermen. The respondents consisted of both registered and unregistered fishermen. The tools of the research used were questionnaires and a Hazard Identification Risk Assessment and Risk Control (HIRARC) form, which involved mixed method research. The researchers found 20 hazards identified based on job tasks undertaken by the fishermen that exposed them to some hazards including ergonomic, biological, physical, psychosocial, and natural issues. Six of the 20 hazards (30%) are considered low-risk and seven of the 20 (35%) are recognised as medium to high-risk activities. The result of the study shows that fishermen are highly exposed to ergonomic hazards. All of the suggestions for the preventive measures and risk controls for the hazards are from the officers of Pontian Area Fishermen's Association. This research is expected to raise awareness of the occupational safety and health hazards among fishermen and may be referenced by future researchers, policymakers, and other parties to plan for future developments.

Keywords: Safety, health, hazards, fishermen.

## Introduction

The Malaysian fisheries industry is a dynamic and competitive development. The fisheries sector contributed 12.5% to the national gross domestic product (GDP) in 2018 (Department of Statistics Malaysia, 2019). This sector has employed 128,148 Malaysian fishermen in 2018 (Department of Fisheries, 2019). Fishing is recognized as one of the most challenging and hazardous occupations in the world (International Labour Organisation, 2019). They risk their lives by spending time at sea whether for a few days or a month to get fish and other resources from the sea for survival. Being a fisherman exposes an individual to an occupation with the highest risk and indirect fatality and injury.

In Malaysia, agriculture, forestry and fisheries are all tied in second place after the manufacturing sector for workplace accidents (Department of Health, 2019). The accidents on the job may cause death, permanent disability or serious injuries, albeit ones that do not lead to disability, just lost time for recovery. There were 25 cases, involving fishermen in Pontian Besar, Johor and of these, three cases were fatal (Saat, H.A., 2019). Two of the cases involved

registered fishermen and one involved an unregistered fisherman. In order to avoid bias in this study, the researcher chose registered and unregistered fishermen as respondents for the study at Pontian Besar in Johor. The focus of the study was to evaluate the current state and propose prevention measures for occupational safety and health hazards among the fishermen.

## Literature Review

### Safety

Kjellen (2000) defined safety as the method for individuals working together without suffering damage or mischief to oneself or others, while Sklet (2006) described safety as the state of being shielded from threat, hazard or damage.

### Health

Health can be defined as a positive combination of the idea of sociable, individual assets, and visual capacities of a human (Nutbeam, 1990). This statement has been supported by an international body. The World Health Organisation (n.d.) claimed that health is a full state of physical, mental and social well-being, and not just the absence of illness or infirmity.

Meanwhile, Raphael, D. *et al.* (1997) stated that health can be determined as the capacity to have and achieve objectives, address individual issues, and adapt to a consistent life.

### Hazard

Hazards are defined as a state or object, cause or condition which has the potential where possible to cause harm in the form of injuries or ill health to humans, damage to property and the environment or a combination of any of these harms (Department of Occupational Safety and

Health, 2018). Hazards are a potential source of danger that can result in death or injuries when active.

### Fishermen

A fisher can be defined as a gender-neutral name for a person (male or female) engaged in the fishery (United States Department of Commerce, 2006). In Malaysia, fishing can be categorized as marine catch fisheries, aquaculture and inland fisheries (Food and Agriculture Organisation, 2001). Four fishing zones were developed through a licensing scheme designating zones for different fishing gears, vessel classes and ownership (Food and Agriculture Organisation, 2001).

## Methodology

### Questionnaire

30 respondents were involved in this research which consists of registered and unregistered fishermen. This section reveals the analysis background of the respondents involving 10 aspects which are category of respondent, gender, age, races, religion, educational level, marital status, employment status, work experience, and monthly experience. The data entered was processed to obtain statistics in the form of frequency and percentages.

### Hazard Identification Risk Assessment Risk Control (HIRARC) Form

The HIRARC form introduced by the Department of Safety and Health (DoSH) was used to obtain data for this study and achieve the research objectives. Therefore, a combination of qualitative and quantitative, otherwise known as mix method were used to ensure the research objectives were accomplished. The flowchart of the overall study is shown in Figure 1.

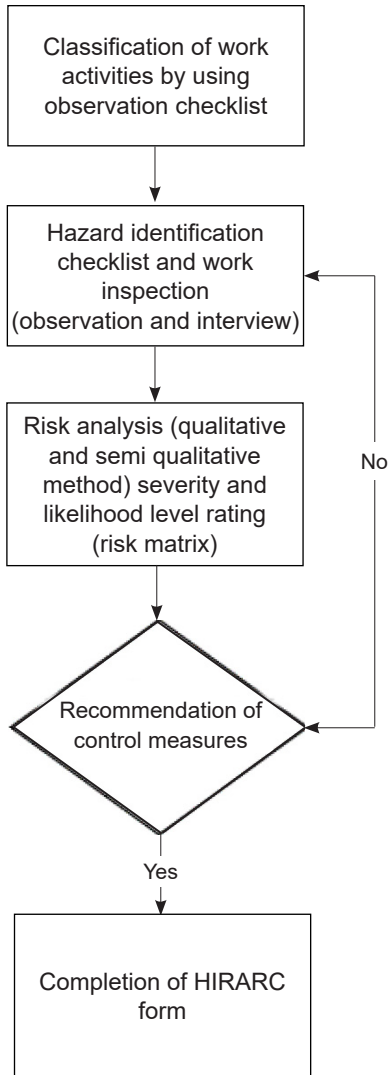


Figure 1: HIRARC form

**Results and Discussion**

Table 1 shows low risk assessment of hazard identification based on job tasks.

Table 1: Low risk assessment of hazard identification based on job tasks

Hazard Identification Job Task	Risk Assessment			Risk Control
	Likelihood	Severity	Risk	Prevention Measure
Fishermen clean the fish with their bare hands	2	1	2	Wear rubber glove
Fishermen clean the fishing boat without any protection	2	1	2	Wear rubber glove
Fishermen work under hot weather	4	1	4	Drink a lot of water, apply sunblock and wear a cap
Fishermen work during rain without any personal protective equipment	4	1	4	Wear raincoat, safety boots and not allowed to go fishing
Fishermen may be bitten or stung by poisonous animals or fish	4	1	4	Wear rubber glove
Fishermen go fishing without proper personal protective equipment	4	1	4	Wear PPE and safety boots

***Fishermen Clean the Fish with Their Bare Hands***

This is a potential health hazard. This hazard could cause bacteria and viruses that cannot be seen by human eyes to infect or affect the fishermen in question. According to the job task, a possible risk control measure that could be taken is to buy and use personal protective equipment. Experts suggest fishermen wear rubber gloves to cover their hands. So, they are not directly exposed to any bacteria, virus or other airborne disease vector.

***Fishermen Clean the Fishing Boat Without Any Protection***

This exposes the fishermen to both safety and health hazards. This hazard could cause bacteria and viruses to infect the fishermen and cleaning the ship without protective gear may also cause the fishermen to be

injured. Experts suggest fishermen wear cotton gloves to cover their hands. So, the fishermen are not directly exposed to any bacteria, virus or other disease-bearing vector. The fishermen are also advised to wear safety boots.

***Fishermen Work under Hot Weather***

The type of hazard is health-related. The job task could cause the fishermen to suffer migraines, fever, dehydration, heat stroke, and sunburn. Experts recommend the fishermen to wear a cap to cover their heads to keep the skin from being exposed directly to the high temperatures and harsh weather conditions. They also suggest the fishermen to wear sunblock to avoid sunburn. Experts also proposed the fishermen to drink much water to stave off dehydration.

**Fishermen Work During Rain Without Any Personal Protective Equipment**

This hazard involves risk to both safety and health. It could cause migraines, fevers, falls, slips, and injuries. Experts suggest fishermen wear personal protective equipment like raincoats and safety boots. The other recommendation to mitigate the risk of the job task is to bar the fishermen from fishing on rainy days; as just as the old adage says, “prevention is better than cure”.

**Fishermen May be Bitten or Stung by Poisonous Animals or Fish**

The risk of being bitten or stung by poisonous animals or fish is a hazard that concerns

safety and health. This hazard could cause injury and exposure to harmful bacteria and viruses. Experts recommended the fishermen to wear proper gloves to ensure that the possibility or the risk of injury is reduced.

**Fishermen Go Fishing Without Proper Personal Protective Equipment (PPE)**

This type of hazard is a safety risk. This hazard could cause injury. So, the best preventive measure to control the risk is to use PPE. Experts advise the fishermen to wear complete PPE and safety boots. This is to reduce the risk of exposure.

Table 2 shows medium risk assessment of hazard identification based on job tasks.

Table 2: Medium risk assessment of hazard identification based on job tasks

Hazard Identification	Risk Assessment			Risk Control
	Job Task	Likelihood	Severity	Risk
Fishermen had to work when haze occurs	4	2	8	Not allowed to go fishing, wear nasal mask and drink a lot of water
Fishing boat had a terrible neatness	4	2	8	Keep all the tools and equipment in a good order
Fishermen pour diesel oil into the boat engine	5	2	10	Wear goggles, nasal mask and safety boots
Fishermen interrupted to the vibration and sound of the boat	5	2	10	Wear ear muffs or ear plugs
Fishermen spend too much time at sea	5	2	10	Take enough rest, drink a lot of water and job rotation
Fishermen smoking during working	5	2	10	Stop smoking
Fishermen do not bring along first aid kit	4	3	12	Bring along a first aid kit

**Fishermen had to Work When Haze Occurs**

One of the type of hazards the fishermen exposed to are risk safety and health. The job task could cause eye problems, breathing difficulties, skin disease, and

boating accidents. This medium-risk hazard requires a planned approach to control the risks and take precautionary measures if necessary. The prevention measure of risk

control could be eliminated if fishermen are not allowed to go fishing in these conditions. The other preventive measure is the use of PPE. In this issue, the fishermen are advised to wear nasal masks and to drink much water.

***Fishing Boat had a Terrible Neatness***

The issue with this job task is the fishermen are exposed to safety risks. Fishing gear that has not been properly stored away could cause injury, and increase the risks of falls and related injuries. Hazard identification shows this to be a medium-level risk. The best preventive measure is administrative controls. Experts recommend that the fishermen keep all the tools and equipment stored when not in use.

***Fishermen Pour Diesel Oil into the Boat Engine***

This activity exposes fishermen to safety and health hazards. It could cause asthma, breathing difficulties, eye problems, and lung cancer. Preventive measures include using PPE. The experts have several recommendations regarding this issue. Fishermen are advised to wear safety boots, goggles, and a nasal mask as basic protection.

***Fishermen Interrupted to the Vibration and Sound of the Boat***

This activity involves a health risk. This hazard could cause ear problems. The researcher found the hazard to be a

medium-risk one. Preventive measures to reduce this risk include using ear muffs or ear plugs.

***Fishermen Spend Too Much Time at Sea***

This is a health hazard. Too much time at sea could cause stress, dehydration, and high blood pressure. To overcome this, mitigating measures are administrative. Experts have advised the fishermen to have enough rest, drink plenty of water, fruit-laced, electrolyte-rich fluids, and put in a schedule for job rotations if the fishermen work in a union or organization.

***Fishermen Smoking During Working***

This behavior exposes the fishermen to safety and health risks. Smoking while at work could cause stress, asthma, lung cancer, and could cause the boat to catch fire. The best risk control is elimination. So, experts suggest fishermen to avoid smoking while working on the boat as anything can happen as outlined in the hazard identification. The habit is also not good for the health of the fishermen.

***Fishermen do not Bring Along First Aid Kit***

This is a safety hazard. Failing to bring along a first aid kit could cause injuries to remain untreated for too long which could prove fatal. In mitigating this risk, experts have suggested the fishermen to bring along first aid kit because first aid kits are necessary for the event of any unforeseen incidents.

Table 3 shows high risk assessment of hazard identification based on job tasks.

Table 3: High risk assessment of hazard identification based on job tasks

Hazard Identification Job Task	Risk Assessment			Risk Control
	Likelihood	Severity	Risk	Prevention Measure
Fishermen use of tools and machinery without proper training	5	3	15	Supervision and training
Fishermen stand for a long time	5	3	15	Training

Fishermen have awkward body posture while managing shots	5	3	15	Training
Fishermen lift heavy loads	5	3	15	Automation and wear cotton glove and safety boots
Poor lighting of fishing boat	4	5	20	Repair and maintenance the lighting of the boat
The fishing boat carry overload	4	5	20	Limit the load
Fishermen face big waves in the middle of the sea	5	5	25	Not allowed to go fishing during monsoon season, and wear safety boots and proper PPE

### ***Fishermen Use of Tools and Machinery Without Proper Training***

This is a safety issue. The use of tools and machinery without proper training could cause injury. This is a high-risk issue that requires immediate action to control the hazard as detailed in the control hierarchy. Administrative control is the best solution as a prevention measure for risk control. Experts recommend that the fishermen need supervision and training.

### ***Fishermen Stand for a Long Time***

Standing for a long time is a health risk. This hazard could cause musculoskeletal disorders. Administrative controls are the best-mitigating factors to control this risk. The experts recommended the fishermen to go for training. Through training, the fishermen will acknowledge the best practices in fishing activities.

### ***Fishermen have Awkward Body Posture While Managing Shots***

Awkward body posture while managing shots is a health risk. This activity could result in musculoskeletal disorders. The issue of having an awkward posture cannot be underestimated. To prevent this issue, administrative controls are best. Experts recommended fishermen go for training.

### ***Fishermen Lift Heavy Loads***

Fishermen face health hazards with this job task. This hazard could affect the musculoskeletal structure of the fishermen, which can cause slips and falls. There are two suggested preventive measures from experts regarding this hazard, which are engineering controls to wit automation and PPE controls, where the fishermen are advised to wear safety boots.

### ***Poor Lighting of Fishing Boat***

Poor lighting of fishing boats is a safety concern. This hazard could cause accidents and falls into the sea. Poor lighting of fishing boats is a high-risk issue. Experts advise fishermen to regularly repair and maintain lighting fixtures on the boats for safety.

### ***The Fishing Boat Carry Overload***

The overloading of the boats is a safety issue. This hazard could cause the boat to sink into the sea. The hazard is high risk, and involves a life and death issue. This matter should not be overlooked. The expert suggests the fishermen to follow the manufacturer's guide on the load that can be carried by the boat. This risk control is used to avoid any mishaps from occurring.

### ***Fishermen Face Big Waves in the Middle of the Sea***

The hazard is a safety concern. This hazard could cause the fishermen to injure, slip



and fall. Fishermen facing giant waves at sea are considered to have the highest risk. Experts suggest the fishermen to avoid from going to the sea during the monsoon season.

### Conclusion and Implication

In a nutshell, the risk faces by fishermen in Pontian Besar, Johor is quite serious. The fishermen are exposed to high-risk ergonomic hazards while conducting their jobs. There are some preventive measures suggested by the Pontian Area Fishermen's Association based on a risk matrix of the hazard involved. This issue should not be overlooked, as fishermen are the backbone of the fisheries sector.

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