

Occupational Health Hazards of Marine Fishermen in Cuddalore District of Tamil Nadu- An Empirical Analysis

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Abstract

Background: Fishermen communities are involved in dangerous and complex professions and have diverse and untold constraints like working overtime in the sea- nightshifts and late-night returns from the sea which worsen their health conditions.

Objective: To examine the occupational health hazards among fishermen in the study area.

Methods: A community-based cross-sectional study was conducted among 372 fishermen in the selected villages of the fishermen community in Cuddalore and Parangipattai based on Random sampling from December 2021 to March 2022.

Results: The occupation-related health hazards were cough, Fever, Diarrhea, Skin issue, Headache and body pain which adversely affects the well-being and status of fishermen. A high rate of Gastric disease and cough are found in Indira Nagar as Z- score values are 2.29 and 2.44 respectively. Viral fever is highest in Songalikuppam as Z- score value is 1.09. Body pain and Skin disease are most common in Sonakuppam as indicated by the Z- score values (1.56) and (0.97) respectively.

Keywords: Hazards, Gastric, Oral, Random Sampling, Hygiene

Introduction

Fish and fisheries are an important sector in most of the developing and developed countries of the world from the standpoint of income and employment generation (Bailey & Jentoft 1990). The role of fisheries in the Indian economy is gaining momentum due to the introduction of advanced techniques to increase the yield per unit area of water and its role in earning foreign exchange (Basavakumar et. al., 2011).

Good health is essential not only for the personal development of an individual but also for the development of a nation as a whole. Health is very essential to lead a happy life for an individual, and also necessary for all productive activities in society. Disease results from a complex interaction between the man, the agent and the environment (Perez & Dragicevic, 2009). Disease arises when there is maladjustment of the individual with his environment. The health of workers on a large scale will also be influenced by conditions prevailing at their workplace. An example of one such occupation in which the environment plays a major role is fishing. Fishing is a hazardous occupation, involving irregular diet, stress, alcoholism, tobacco and pernicious habits. Fishermen have lower socio-economic status and their illiteracy adds to their poor oral hygiene, which may influence general and oral health. The world's aquaculture workers regularly contend with hazardous conditions (Watterson, et. al., 2020). The fishermen working on-board a fishing vessel or in port, are often exposed to occupational hazards. The work involves transporting and operating heavy equipment and handling of sometimes dangerous catches. Commercial fisheries can have severe health consequences, and cause accidents, injuries and fatalities. Health and safety in fisheries are complex issues with multiple aspects. Fishing is performed under unpredictable and rapidly changing weather and sea conditions, yet many fishing vessel crews are lacking any form of protection. Many fishing crews, particularly in small-scale fisheries, have only informal and self-employed work arrangements, lack proper employment contracts and have limited or no access to social security,

including pensions, disability and health insurance. The majority of fishermen worldwide have not received any basic safety training nor have access to safety gear and protective equipment while working on board, which leads to occupational hazards.

In Tamil Nadu state, Cuddalore district is one of the prominent fishing centres. the fishermen are confronted with a lot of economic problems and faced a great challenge to maintain their good health status. Osteoarthritis of the knee among them may result from working and living in the vertical environment of a moving ship. High incidence of hypertension may be related to ischemic heart disease and cerebrovascular illness. This may be influenced by poor eating habits, which include higher sodium intake, accompanying high consumption of salted fish or higher prevalence of tobacco making, poor health awareness and other social and environmental factors which are common among fishermen. Fluoride levels are also high in some coastal areas and excessive exposure to them can give an increasing number of adverse effects. These may range from mild dental fluorosis to crippling skeletal fluorosis as the level and period of exposure increase. Apart from that, there are reports that excess fluoride consumption promotes cancer, and hip fracture leads to a stillbirth or birth defects and has detrimental neurological effects. Fishing is one such hazardous occupation, which involves irregular diet, stress, alcoholism, tobacco and pernicious habits. Fishermen have lower socio-economic status and their illiteracy adds to their poor oral hygiene, which may influence general and oral health. The access of fishermen to dental services is very limited, making regular check-ups and treatment of caries difficult. Fishermen have poor oral health when compared to the general population.

Review of Literature

A literature review refers to a critical summary of research on the topic of interest, often prepared to put a research problem in context (Polit and Beck, 2008). It is an account of what has been published on a topic by accredited scholars and researchers. The review of related literature not only provided a conceptual frame of reference but also suggested the methods, procedures, sources of data and statistical techniques appropriate for the solution of the problem.

Gopal, (2015) highlighted that young fishermen were at high risk for occupational injuries, which could be prevented by adequate job training, effective follow-up and reduced demands for efficiency from beginners. The researcher also stressed the importance of general health insurance apart from life insurance for the fisheries workers as they were also prone to major illness, surgeries and hospitalisation.

Jacob et al., (2013), from a study on Indian fishermen, concluded that the longer the working hours in the sea, the greater the problem with their work and their health. The results of the study revealed that there was a nearly 60% prevalence of moderate stress and a 35% prevalence of severe stress among Indian fishermen.

Velvizi & Gopalakrishnan, (2017) assessed the factors contributing to the occupational health hazards among rural tribal fisherwomen fishing in Pichavaram mangrove forest areas. The results indicated that out of 250 respondents, 182 subjects had skin softening, 155 suffered from catfish bites, 135 reported lesions caused by oysters and 134 had fingernail cavity problems. 33 reported lightning and storming risks, 73 were affected by itching and skin rashes and 43 suffered from stomach ulcers.

Myers et. al., (2018) analysed 53 manuscripts which showed that musculoskeletal disorders were widespread across the fishing sector. Other hazards included bites and stings from aquatic animals (some of which may be life-threatening), vessel engine noise, dermatoses, and other skin afflictions, solar ray-induced eye diseases, and respiratory exposures such as to protein aerosols that could cause asthma. While fish harvesters were protected from respiratory problems when working on the well-ventilated deck and dermal hazards, musculoskeletal, bite and sting, ocular, engine-related hearing loss, and skin, lip, and eye cancer hazards were reduced by wearing PPE, which are potentially serious risks among fishermen.

Woodhead et. al., (2018) reviewed the literature that identifies the range of health issues and health determinants studied in fishing communities around the world. The findings revealed a wide

variety of documented health issues, but with greater emphasis on physical health and occupational and behavioural factors, with limited attention paid to mental health. Most studies focused on fishers, as opposed to other subgroups within fishing communities. The many health determinants in maintaining viable fishing communities. The study proposed that a social well-being approach could offer an integrative lens through which a better understanding of human health in fisheries can be achieved and used to inform fisheries management that is ecologically and socially sustainable.

Objective

To examine the occupational health hazards among fishermen in the study area.

Research Methodology

Research methodology is a systematic approach to analysing and solving a research problem. The present research has employed an exploratory type of research design.

Sampling Size and technique

Any researcher conducting any research requires sample techniques or sampling methods. The researcher has selected the Cuddalore district as the study area and has chosen only two blocks for the study purpose. In the two selected blocks, four villages have been selected on the basis of purposive sampling.

The Sample size has been calculated by using the Taro Yamane formula (1967)

Taro Yamane Formula

The Taro Yamane (1967) formula has been used to calculate the sampling size in the study area. The formula for determining the sampling size is as,

$$n = \frac{N}{1 + N(e)^2}$$

n=Sample Size, N=population Size and e = sampling error (0.05)

The sample size of the total population is 372 when using the formula developed by Taro Yamane, (1967).

After the calculation of the sample size, a multi-stage random sampling technique has been used to select the respondents.

Data source

The study is primarily based on the primary sources of data collected directly from the fishermen through personal discussions and interviews regarding the various aspects of their health conditions.

Statistical Tools and techniques

After the fieldwork, the data was carefully analysed and edited to ensure accuracy, consistency and completeness. The data has been analysed by using SPSS and EXCEL software. Statistical techniques that have been used in the study are descriptive statistics and Z- score. The framed hypothesis has been tested through one-way ANOVA.

Empirical Results

The health of workers on a large scale will also be influenced by conditions prevailing at their workplace. An example of one such occupation in which the environment plays a major role is fishing. Fishing is a hazardous occupation, involving irregular diet, stress, alcoholism, tobacco and pernicious habits. Fishermen have lower socio-economic status and their illiteracy adds to their poor oral hygiene, which may influence general and oral health.

The Z- score has been used to find out the occupational health hazards of Marine Fishermen

Results of Z- Score

Ward No	Village Name	Headache	Fever	Gastric	Body Pain	Skin Allergy	Cough
1	Sonakuppam	-0.18	-0.83	-0.44	1.56	0.27	0.71
2	Songolikuppam	0.63	1.09	-0.44	-0.24	0.97	-0.55
3	Pudhupettai	0.10	0.05	-0.44	-0.24	0.49	0.66
4	Indira Nagar	-0.54	0.48	2.29	-0.97	-0.63	2.44

Source: computed

The above table presents the occupational health hazards of marine fishermen in the study area through Z score analysis. The results of the Z score revealed that Headache is one of the most common medical diseases which affects marine fishermen. The reasons are skipped meals, overstrain, changes in fishing time, particularly alcohol, sun heat in fishing time and fish selling time. From the above table, it has been found that the number of affected persons with headaches is highly concentrated in Songolikuppam (0.63), followed by Pudhupettai (0.10), Sonakuppam (-0.18) and Indira Nagar (-0.54).

Viral Fever Viral fever refers to a broad spectrum of conditions where viral infections are associated with elevations in body temperature. The term encompasses a wide variety of viral infections, some of which can be identified by their symptoms and signs. These viral infections may show generalized symptoms but may target specific organs. The above Table shows the spatial distribution of viral fever in fishermen workers. Viral fever is most common in areas where houses are closely attached. The Z score values are- for Songolikuppam (1.09), Pudhupettai (0.05), Indira Nagar (0.48) and Sonakuppam (-0.83).

A high rate of Gastric disease is seen in Indira Nagar (2.29) whereas, (-0.44), (-0.44), and (-0.44) have been recorded in Sonakuppam, Songolikuppam and Pudhupettai respectively.

Body Pain Musculoskeletal Disorders or MSDs are injuries and disorders that affect the human body's movement or musculoskeletal system (i.e., muscles, tendons, ligaments, nerves, discs, blood vessels, etc). WHO recognizes that musculoskeletal health conditions contribute greatly to disability across the life course in all regions of the world. In particular, the WHO recognizes that musculoskeletal conditions significantly impact functional ability. The above table shows the body Pain disorders of the fishermen in Sonakuppam (1.56), whereas, (-0.24), (-0.24) and (-0.97) were found in Songolikuppam, Pudhupettai and Indira Nagar respectively.

Skin Disease Skin infection is most common in fishermen workers. Skin infections are commonly caused by bacteria that live on the skin without causing harm, but they can cause infections like boils and abscesses if they enter the body through broken skin. Skin bacteria can spread between people. This occurs more readily where there is crowding, close physical contact, poor personal hygiene, uncovered wounds and sharing of personal items. Less commonly, skin infections are caused by bacteria found in fish and marine. From the above table, it is found that skin disease is most common in the coastal area of Indira Nagar (0.97) whereas, (0.49), (0.27) and (-0.63) were found in Sonakuppam, Pudhupettai and Sangolikuppam respectively.

Cough disease is mostly seen in fishermen in Indira Nagar (2.44) whereas, (0.71), (0.66) and (-0.55) were recorded in the villages of Sonakuppam, Pudhupettai and Sangolikuppam respectively.

A common reason for these diseases is caused by contaminated water in the harbour and some micro bacteria in the fishnet. Because fishermen spend a long period with their legs immersed in water for loading and unloading of fish in the harbour, they develop a skin infections.

Conclusion

The fishermen residing in seashore areas had encountered various occupational health problems such as heat, cold-related problems, environmental and systemic problems. Fishing is a hazardous occupation, involving irregular diet, stress, alcoholism, tobacco and pernicious habits. Fishermen have lower socio-economic status and their illiteracy adds to their poor oral hygiene, which may influence general and oral health. Fishermen have prolonged hours of continuous work, which are found to be correlated with high cigarette and alcohol consumption. The diet lacks fruits and vegetables and meals are eaten at very erratic intervals. Fishermen are prone to excess ultraviolet radiation due to constant exposure to the sun. The occupation-related health hazards were cough, Fever, Diarrhea, Skin issue, Headache and body pain which adversely affects the well-being and status of fishermen.

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