

A Cross Sectional Study on Health Profile of Fishing Community in Andaman and Nicobar Islands

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Abstract:

Background and Aim: Fishing is a dangerous occupation, in which fishermen are exposed to health risks both on and offshore. Due to the unique geography and demography of the Andaman and Nicobar islands, there is a lack of in-depth understanding of health issues affecting people associated with fishing in the island. Hence, present study was done to understand health profile of fishermen and demographic factors associated with it.

Materials and Methods: A cross-sectional study was conducted among 150 fishermen of Junglighat fishing colony, South Andaman district. The pre-designed and pre-validated questionnaire was used for collecting data about the health profile of fishermen. Descriptive statistics and Chi-square/Fisher Exact test were used for statistical analysis.

Results: The behavioral risk factors like use of tobacco products, alcohol were present in 28.6 % and 28.0% fishermen respectively whereas 82.6% fishermen had exposure to intense sunlight, 37.3% had exposure to loud noise. NCDs like overweight/obesity (50.7%), hypertension (28%), diabetes (18%) were quite prevalent among fishermen. Eye diseases and skin diseases were also prevalent among fishermen. Fishermen (90.7%) mainly preferred nearby tertiary care government hospital for seeking treatment of their illness.

Conclusions: The fishermen face various challenges and risks for good health. The common health problems found among fishermen were hypertension, obesity, diabetes, injuries, skin and eye diseases. Fishermen should be provided health education for adoption of healthy lifestyle to prevent NCDs. Fishermen should be provided health safety devices along with training to prevent various occupational hazards.

Keywords: Fishermen, Health Profile, Injuries, Risk Factors.

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Introduction

Background and aim:

The livelihoods of over half a billion people globally is supported by fisheries.[1] Fishing is one of the oldest occupations in the world. [2] The history of fishing in India dates back to the days of the Harappan civilization. The fishermen have faced storms, floods, and climate change over the years. Fishing is a dangerous occupation, in which fishermen are exposed to health risks both on and off-shore. [3,4] Fishermen face various challenges like working in isolated locations, long working hours, exposure to cold, rough seas, equipment problems, lack of safety devices and psychological stress and economic insecurities.[5,6] Hence, fishermen are exposed to various health-related risks.[7] Despite these facts, there is a lack of in-

depth understanding of health issues affecting people associated with fishing.

Fisheries play a significant role in India's national economy as it provides a livelihood for an estimated 10 million people. [8] Andaman and Nicobar Islands are a group of 571 islands, out of which 37 islands are inhabited, at the junction of the Bay of Bengal and the Andaman Sea. The islands have vast potential for fishing development in view of its coastlength, continental shelf area and large exclusive economic zone (EEZ). There are 5944 fishermen families and 26521 fisher folk population in the entire Andaman and Nicobar Islands.[9] The geography and demography also imposes challenges to the health of fishermen in the islands. Hence, the present study was done to

understand the health profile of fishermen and the demographic factors associated with it.

Materials and Methods

Andaman and Nicobar Islands consist of three districts, South Andaman district, North and Middle Andaman district and Nicobar district. South Andaman is the most populous and developed district among these three districts. A cross sectional study was conducted from March 2023, May 2023 among the fishing community in Junglighat (south Andaman) because Junglighat is most important and largest fish landing center of the South Andaman district. In Junglighat Machchi Basti, approximately 1400 fishing households and a few non-fishing households reside with a total population of 5800 (approx).[10]

The permission was taken from the Municipal counselor of the area before conducting the study.

The individuals who were primarily involved in fishing occupation were included in the study. The individuals less than 18 years or involved in an occupation other than fishing were excluded from the study. A total of 150 individuals involved in fishing were selected from the study area via stratified random sampling.

A pretested self-designed questionnaire was used for collection of data regarding the health profile of fishermen in the study area in Andaman and Nicobar Islands. The expert opinion was also taken for validation of questionnaire. The questionnaire included information regarding socio-demography, behaviour risk factors like consumption of tobacco, alcohol etc. and environmental related risk factors like exposure to sunlight, rainfall, cyclones, noise,

health problems of fishermen during the last 6 months. The socioeconomic status of the fishermen was classified by BG Prasad classification 2022.[11] The level of health care accessed by individuals for such illnesses was included in the questionnaire. Health education sessions were given by a team of investigators at the end of survey in the fisherman colony. The ill people identified in the survey were referred to nearby health centers for further management.

The simple descriptive statistics analysis was done by calculating percentage, mean, median, standard deviation. The statistical tests like Chi square, Fisher exact test were used to see association between health-seeking behaviour and health problems.

Results

The socio-demographic characteristics of fishing community members are mentioned in Table 1. The majority of participants (80.6%) belonged to 30-59 year of age group. Fishermen belonging to 18-29 years were 19 (12.7%) whereas the elderly i.e. more than 60 years were only 10 (6.7%). Among all the participants, the males were 112 (74.7%) and female were 38 (25.3%). Many of the participants (54%) were illiterate whereas 61 (40.7%) studied only up to 8th class. The individuals belonging to family size ≤ 4 were 117 (78%) whereas individuals belonging to family size >4 were 33 (22%). According to modified BG Prasad classification 2022, 62(41.3%) belonged to category 4 whereas 44(29.3%) belong to category 3. The mean per capita income of fishing community participants was Rs. 4160.52 with a standard deviation of 3495.79.

Table 1: The socio-demographic characteristics of the participants among fishing community of Andaman and Nicobar Islands

Age	Frequency	Percent
18-29	19	12.7
30-59	121	80.6
> 60	10	6.7
Gender		
Male	112	74.7
Female	38	25.3
Education		
Illiterate	81	54.0
Up to 8th class	61	40.7
9th - 12th	8	5.3
Family size		
≤ 4	117	78.0
>4	33	22.0
Socio-economic status		
1 (8217 and above)	9	6.0
2 (4109-8216)	25	16.7
3 (2465-4108)	44	29.3
4 (1233-2464)	62	41.3
5 (<1233)	10	6.7

The exposure of environmental risk factor is described in Table 2. The exposure to sunlight during fishing was reported by 33(22.0%) fishermen whereas 89(59.3%) reported exposure to sunlight and rainfall.

The exposure to cyclone in addition to rain and sunlight was observed by 20 (13.3%). However, 25

(16.7%) fishermen reported that they were not exposed to adverse weather conditions during fishing.

The exposure to loud noise during fishing was reported by 56(37.3%) persons whereas 94 (56.7%) fishing persons did not report exposure to loud noise during fishing activities.

Table 2: The exposure to environmental risk factor among the participants among the fishing community of Andaman and Nicobar Islands

Exposure to adverse climatic conditions	Frequency	Percent
None	25	16.7
Rainfall only	1	0.7
Sunlight only	33	22.0
Sunlight, rainfall,	89	59.3
Sunlight, rainfall,cyclone	20	13.3
Exposure to loud noise		
No	94	62.7
Yes	56	37.3

The distribution of behaviour risk factors for various noncommunicable diseases is mentioned in Table 3. The tobacco products including cigarette, gutka, bidi were used by 43(28.6%) whereas 107(28.6%) reported that they do not consume any tobacco products. Similarly, alcohol was consumed by only 42(28.0%) participants whereas the rest did not consume alcohol. The illicit substance like cannabis was consumed by only 3 (2.0%) fishermen.

Table 3: The behavioral risk factor among the participants among the fishing community of Andaman and Nicobar Islands

Consumption of cigarette, gutka, bidi	Frequency	Percent
No	107	71.4
Yes	43	28.6
Consumption of alcohol		
No	108	72.0
Yes	42	28.0
Consumption of any other substances (cannabis etc.)		
No	147	98.0
Yes	3	2.0

The common illnesses of the fishing community have been mentioned in Figure 1. Diabetes Mellitus was observed in 27(18.0%) fishing people, whereas hypertension was observed in 42 (28%) in the fishing community.

Overweight/obesity was observed in 76(50.7%) participants Three patients had angina attacks in

past. The skin diseases were observed in 24(16.0%) participants whereas 29(19.3%) participants had eye or vision problems.

The injuries were observed by 27(18.0%) participants. Most of participants observed injuries like the skin abrasions followed by contusions during fishing activities.

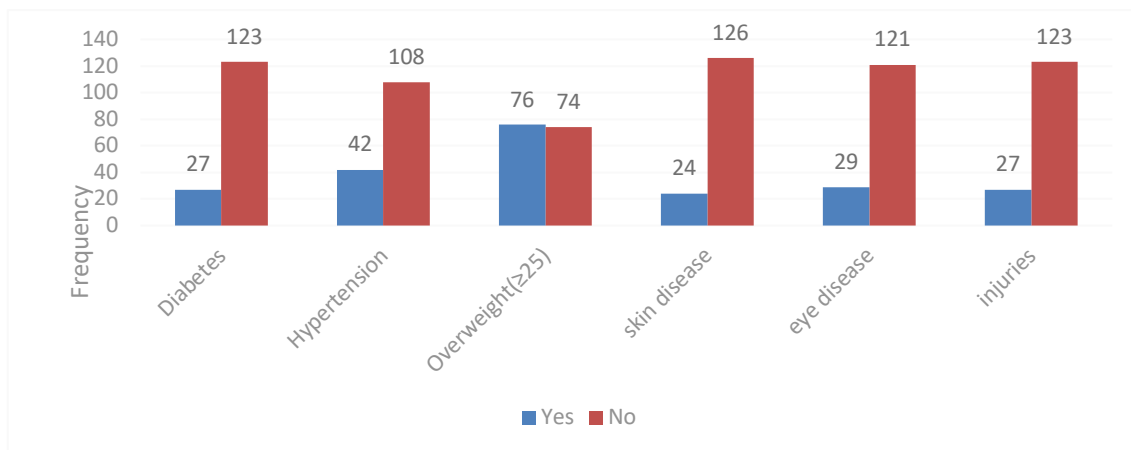


Figure 1: Distribution of common illnesses found among the participants among fishing community of Andaman and Nicobar islands

The level of access to health care facilities by the fishing community is described in table 4. The most of the fishing community (90.7%) accessed medical facilities from tertiary care level hospital, whereas primary level of health care facilities was accessed only by 14 (9.3%) fishing people. No significant association was found between the level

of health care access and the type of illnesses (diabetes mellitus, hypertension, angina, skin and eye diseases) of the fishermen.

But, the significant association was found between the BMI of the fishing people and the level of health care accessed by them. The p value was 0.028.

Table 4: The association of common illnesses and health care access pattern among fishing community members of Andaman and Nicobar Islands

		Health care access		Total	P value (fisher's exact test)
		Tertiary Care(GB Pant hospital Port Blair)	Primary care (urban PHC)		
Diabetes Mellitus	Yes	22	5	27	0.095
	No	114	9	123	
Hypertension	Yes	39	3	42	0.565
	No	97	11	108	
Angina	Yes	2	1	3	0.244
	No	134	13	147	
Skin disease	Yes	21	3	24	0.575
	No	115	11	126	
Eye disease	Yes	27	2	29	0.603
	No	109	12	121	
Injuries	Yes	22	5	27	0.095
	No	114	9	123	
BMI	<25	71	3	74	0.028 [#]
	≥25	65	11	76	
Total		136	14	150	

Chi-Square Test

Discussion

The current study aims to analyse common health illnesses and various risk factors among the fishing community in Andaman and Nicobar Islands. The study explores the demographic profile of the fishing community, various behaviour and environmental risk factors like cyclones, rainfall, loud noise etc, and behavioral risks like smoking, drinking alcohol prevalent in fishing community in island. The study also explores common illnesses in the fishing community and type of health care facilities accessed by them. Better health facilities can be provided to this community in the islands on the basis of findings of the study.

Age plays an important role in fishing activities. In the present study, 80.6% of the participants belonged to 30-59 years of age group whereas fishermen belonging to 18-29 years were 19 (12.7%). Similarly, 70 % of the fishermen were 36-60 years of age in Cuddalore district, Tamilnadu.[12] Another study from Greece also reported that there were no fisherman in study population of less than 25 years of age.[13] These findings indicated the younger people are not very enthusiastic to take fishing a full time profession because the economic productivity in fishing is not very high.

The educational level of fishermen in Junglighat colony was found to be low as 81 (54%) fishermen were illiterate whereas 61 (40.7%) studied only upto 8th class. Similarly, in a study of Bangladesh, 20 % of fishermen were illiterate, 32% were primary incomplete and only 42% of completed primary level education.[14] Various studies from India and other countries also reported that the education level of fishermen are not good and only a few fishermen were studied higher than secondary level.[15,16] These studies reported that the fishing people were ignoring healthy lifestyle and various safety measures due to their poor education level.

The socioeconomic status of the fishing community in study population was not as good as 62(41.3%) belonged to category 4 and 10(6.7%) belonged to category 5 of BG Prasad socioeconomic classification. Kanchana S et al reported that intermediaries play prominent role in fish trading in Junglighat and Wandoor fish landing centre and fishermen are able to get only a lower percentage of the final price of fish, which leads to poor economic condition of fishermen.[10] The poor economic conditions led to lack of education and healthy nutrition choice among the fishermen in the islands. A qualitative study conducted in coastal region of Bangladesh reported that the poverty and lack of education were the main reasons for health

problems of fishermen. In current study, 78% of fishermen had small family size of ≤ 4 as income and expenditure of family is influenced by family size. Dey SC et al also reported similar findings.[17]

The exposure to intense sunlight leading to sunburn is an important environmental risk observed by fishermen in the current study. Warthan et al also reported that approximately one third of fishermen were exposed to sunburn during their long hours of river work which might cause problems like heat stroke and heat cramps.[18] The sunburns were also reported by fishermen working for long hours at rivers in Bangladesh study.[14] The problems of heat stress and heat exhaustion were reported by more than half of fishermen in a study from Tamilnadu, India.[12]

The natural hazards like heavy rainfall and cyclones are also frequently faced by fishermen in Andaman and Nicobar islands. The fishermen reported that heavy rainfall hampers their daily activities and increases their life risks. The tropical cyclones which are very common in Andaman and Nicobar islands create serious life and livelihood threats to fishermen in the islands. Similar problems were also faced by fishermen in a study done in neighboring country, Bangladesh.[6]

The exposure to loud noises was reported by 56 (37.3%) fishermen which can predispose them to harmful effects of noise pollution. The fishermen working in engine room also reported exposure to loud noise and hearing problems in an Indian study.[12] Fishermen working on board of boats <39 HP and non-maintained boats of 104 dB also reported exposure to loud noises at-least above 90 dB in Bangladesh study.[6] Fishermen in another study from Alaska also reported noise induced hearing problems like hearing difficulty and work interference. Some fishermen also reported noise induced hearing loss.[19]

Tobacco and alcohol are important risk factors of various non-communicable diseases like diabetes, hypertension, angina and cancer etc. The prevalence of tobacco and alcohol in the study participants was 28.6% and 28.0% respectively. The long working hours and their being away from family were major reasons for such habits among fishermen. Such risk factors are found in fishermen not only in Andaman and Nicobar islands (India) but across the other countries in the world. A Scottish study reported that 38% of the fishermen were current smokers and they smoke significantly more during fishing trips, whereas 80% of fishermen consumed alcohol and only 7% of those that drank considered their alcohol consumption was harmful to their health.[20] Another Turkish study reported that 81% of fishermen were smokers; nearly two thirds of fishermen smoked 20

cigarettes per day and were alcoholic.[21] Another study also pointed out that the fishing community tends to engage in unhealthy behaviour (smoking, marijuana use, alcohol use).[22]

Overweight and obesity is also an important preventable risk factor for non-communicable diseases. The fishermen with a BMI of ≥ 25 were 76 (50.7%) in the Andaman and Nicobar islands. In contrast, in a Greek study, a total of 78% of fishermen were overweight to obese. Another Danish study reported that the prevalence of overweight people among fishermen was 28.6%, 47% and 42% respectively in the age group of 18-24, 25-44 and 45-64 years respectively.[23] In Greek study also, the presence of risk factors like obesity, use of tobacco products, alcohol might have led fishermen to lifestyle diseases like hypertension, diabetes, cardiovascular diseases etc. Another study from Puducherry also reported that lifestyle diseases like hypertension, diabetes, cardiovascular diseases etc are important health problems among the fishing community.[24] Kirkutis et al also reported that 45% fishermen from Lithuania suffered from hypertension. Thus, overweight or obesity is an important problem for fishermen which can make them unfit for job in the long run.[25] Besides hypertension and diabetes, the eye diseases were found quite prevalent among fishermen in the islands. Redness of eye, discharge from the eyes, irritation and visual impairment were common symptoms related to eye diseases among fishermen. These problems basically arose due to salinity of the water of the sea and direct contact of raindrops into the eyes. Similar eye problems were also reported in other studies among fishermen.[6,8,26]

Skin problems like itching and rashes were also found among some fishermen. Boils and abscesses were also reported among fishermen due to bacterial infection invaded through broken skin. The fishermen spend a long period with their legs immersed in water for loading and unloading of fish in the harbor, which results in developing skin infections among fishermen.[27,28] In addition, according to John et al, people who work outdoors had more risk of skin cancer as compared to people who work indoors.[29]

In the current study, the injuries were observed by 27(18.0%) participants. The abrasions and contusions were the common injuries faced by fishermen during fishing activities. Similarly, injuries like cuts, abrasions and wounds were observed in other studies.[12,28] These injuries happened due to improper or less use of protective tools. In addition, work related stress, physical exertion, equipment failure and being isolated in remote locations also make them prone to injuries and accidents.

The fishermen from the Junglighthat community accessed different levels of government health facilities for the management of their health condition. The tertiary care level hospital i.e. G B Pant Hospital Port Blair was accessed by 136(90.7%) whereas primary level of health care facilities were accessed only by 14 (9.3%) fishermen. The most important reason for preferring a tertiary hospital was that the fishermen colony is located at a close distance of 4 Km from G B Pant Hospital Port Blair. The hospital provides free of cost specialist care to the patients and the waiting time, travelling time to hospital is much less. Similarly, fishermen in other Indian studies also preferred public health facility for their illness.[24]

The present study is the first study done to study the health profile of fishing colony Junglighthat, Portblair, which is the largest fish landing center of South Andaman district. The study team faced the difficulty in contacting fishermen regarding their participation in a study which could have increased the risk of selection bias. This might be considered as a limitation of study. Still the study provides insight on socio-demographic and health profile of fishermen of Andaman and Nicobar Island which would be useful for health planning and betterment of health of fishing community.

Conclusion

The fishermen in the island face various challenges and risks for good health. The poor socioeconomic condition and education level also contribute to various health related risks among the fishermen. The behaviour factors like smoking and drinking, environmental factors like sunlight, heavy rainfall, cyclones and loud noise predispose fishermen to various health problems. The common health problems found among fishermen were hypertension, obesity, diabetes, injuries, skin and eye diseases. The fishermen should be provided health education for adoption of a healthy lifestyle to prevent NCDs. The periodic and regular health checkup should be conducted for the early diagnosis and treatment of these diseases. The fishermen should be provided health safety devices along with training to prevent various occupational hazards.

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