Review Article

Socio-demographic profile, nutritional and health status of fishermen: A Review

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Abstract

Fisheries sector is considered as fast-growing sector in India. At present fish production has increased over time, but it doesn't change the economic conditions of the fishing community. Fisheries' daily income is very low and varied depending upon capture of fish and their income isn't steady. Fisheries aren't only engaged in fishing, they also engage in other jobs because fisheries get less amount of profit of margin and this occupation is not continue all over the year. Various study reported that their educational and economical status was not satisfactory. Large family sizes, lack of regularity in alternative occupation, lack of own fishing gear is the main cause of poverty of fishermen. Most of them lived in mud made house or katcha house and addicted to tobacco or alcohol. Few studies revealed the dietary iron deficiency, low iron absorption, protein and micronutrient deficiencies and infections which lead to poor nutritional status of the fisherman. Study also reported that fishermen are a special group with some unfavorable life styles and vulnerable for injuries, skin and respiratory problems, filarial and certain other diseases. Based on the literature, it may be stated that there is need to specifically target and improve the occupational lifestyle of fishermen and various interventions like nutrition and health promotion activities, educational issues to be addressed.

Keywords: Fishermen; Health; Nutrition; Poverty

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Introduction

Fishing and fish industries is an important sectors in many developed and developing countries including India to generate income and as employment. India has most manifold livelihood occupations in the world but most of the people engage on agriculture and its allied sectors including fisheries. Though agriculture is decreasing the contribution its GDP due to modern industrialisation and urbanization, fisheries sector, allied sector of agriculture has increased its contribution to the GDP is about 5.23% in 2019 [1, 2]. Broadly two forms of fishing is inland which fulfils the local demand and marine fishing which is considered foreign exchange earners and nutrition suppler for vast population[3]. Now, India has earned second position to produce fish with a total production of 13.7 million metric tonnes in 2018-19 including inland sector (65%).

Fish production has increased over time, but it doesn't change the economic conditions of the fishermen,

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as still nearly 61% of the fishermen families were comprised BPL categories and average family member was 4.63 [4].

Various study revealed their unsatisfactory educational and economical status. High family size, lack of alternative occupation, lack of owns fishing gear and other infrastructures are the main causes of deprivation of fishermen. The living conditions are very miserable and they live under improper housing conditions. Fisheries aren't only engaged in fishing they also engage in other jobs because fisheries get less amount of profit of margin and this occupation is not continue throughout the year [5-7]. In this review we have taken an attempt to explore the livelihood status of fisheries in terms of socio demographic, economic, and nutritional and health status of fishermen in the different parts of India.

Socio-Demographic Profile

Age

People of different age groups are involved in fish capturing. Kalita and Deka (2015) in their study reported that the age of the fishermen varies from 21-60 years or more. In their study, they classified the age of the fisher into four groups as young aged (21-30 years), early middle aged (31-40 years), late middle aged (41-50 years) and old (51-60 years or above). It was also noted that the majority of fishermen was in the age range between 41 and 50 years (37.5%) and the least age group of fishermen was in between 51 and 60 years or more (12.5%) [5].

In another study, Jeeva *et al*. (2009) claimed young age group (6.94 %) followed by middle age and old age groups are involved in fishing 52.78 % and 40.28 % respectively [8]. Kumbhar (2017) reported from ekrukh water reservoir of north solapur tahsil district of solapur in Maharashtra that most of the fisheries's age in between 35 to 54 years of age group [9].

In Chandakhola Wetland of Dhubri, Assam, a study was conducted on 100 families of fisheries by Sheikh and Goswami (2013) and showed that 52.5% fisheries in the age group of 31 – 50 years and 25% fisheries involved in the age group of 18 to 30 years and the rest are above 50 years of age. It is also reported that middle age group constituted the majority of fishermen [6]. Saxena *et al*. (2014) also mentioned the age of fisheries with the range between 40 to 54 years [10]. Another one study by Panigrahi and Bakshi (2014) reported four groups of people engaged fishing activity as 8.75% (12-18 years) followed by 50.83% (19 to 40 years), 26.25% (41 to 60 years) and only 14.16% fisheries above 60 years of age. This study also revealed that majority of fisheries in middle age group[11].

Education

CMFRI Census (2010) has been profiled the educational figure engaged in fishing community in all over India. The census showed that about 57.8% of the fisher were educated with different levels of education i.e. 15.0% of male fisher and 13.9% of female fisher had primary level of education while 13.2% of the males and 10.9% of the females fisher had completed higher secondary level of education. About 2.7% of the male and 2.0% of the female fisher had education above higher secondary level. Total 42.2% of fisher was unschooled, while 21.0% were males and 21.2% females [4].

Study conducted in Maharashtra reported that maximum number of subjects from native population (nearly 40-50%) had completed secondary education and the migrant population (nearly 40%) acquired primary education [12]. Devi *et al*. (2012) showed that 34% of the fisher pursues middle school and 34% of fisher pursues high school [13]. Study conducted by Sheikh and Goswami (2013) on socio-economic condition of fishers revealed that 63% of respondents are illiterate while 37% are literate. Among the selected fishermen 53.33% completed IVth standard of education, 46.66% of them was within the class interval of IVth to Xth standard [6]. Shankar (2010) also documented the figures of education that 46.66% of the fisher had primary level of education, while 26% of the fisher had middle level of school education. A very few i.e. 2.6% had higher secondary whereas illiterate fisher had 13.33 % [14]. Survey conducted by Kadam (2015) documented poor educational status of fisheries and stated about 45.26% and 54.73% of the fisher was literate and illiterate respectively. Among the literate fishermen, 53.48% of fishermen had primary level of education while 46.51% of middle school level[15].

Income

In a study, Prabhavathi and Krishna (2017) reported that the income of fisheries from fishing activities was not satisfactory. Study revealed that 40% of fisheries earned between INR 1 to 2000/- a year and

28% of fisheries earned INR 2 to 3000/- a year. Very few number of fisheries earned above INR 4000 to 6000/- a year [16].

Another study by Jacob and Rao (2016) documented economical status of fishermen in coastal villages in Andhra Pradesh. They revealed that 90% of traditional fisheries lived below poverty level and did not receive any banking system. They earned INR 2, 500 to 3,000 per month for a household of five members and additional income come from agriculture (paddy, tobacco, coconut, cashew nuts, sugarcane, maize) and salt production [17]. Panigrahi and Bakshi (2014) reported that most of the fishing families (49.16%) earned between INR 2, 500 to INR 5000 per month [18]. Another study in Parbhani district of Maharashtra State reported that the income is INR 500 – 1000 per month in the age of 20-30 years and INR 1500- 4000 in the age of 50 – 60 years. Fishermen do not have fishing work continuously in a year. They are grouped into different deviation like full time, part-time and occasional on the basis of fishing days [15].

Women Participants

There is significant role of fisheries women to improve economic and living standard. Fisheries women engages in various fishing activities like fish handling to vending in the market and they are also help in making fishing tools and fish harvesting [16]. It is accounted that about 1, 50,000 women involves in fish processing related work in the country [19]. Fisheries women experience hard to work. They reach early of the day at the landing sites and collect fish for selling in the market. Some of the fisheries women engage as labourers in this landing place. However, most of the women sold fish in door to door [20].

Dwelling house types and sanitation

Mary *et al.* (2015) commented that housing condition is one of the most important indicators of economic status of the family. They reported four categories of house were namely Pucca house, Semi-pucca house, Mud-tiled house and Rental house. Study reported that fishermen lived in Pucca houses (3%), semi-pucca houses (70%), mud-tiled house (25%) and 2% of fisheries stayed in rental house. The housing condition of this study, revealed that poor economical status even though most families has own house [18]. Sheikh and Goswami in their study observed that kacha type and semi pucca type house of respondents was 85% and 15% respectively [6].

Another one study was conducted in Tinsukia District of Assam, India by Kalita and Deka (2015). They classified into four types of housing categories of fisher i.e. with straw (27%), Kacha house with tin roofing (45%), Semi pucca house with tin roof and brick wall up to base of the window (18%) and Pacca house with tin roof with brick walled and concrete floor (10%). The study found that most of the housing condition was kacha house with tin roofing where as only 10% of the people have pacca houses [5].

Nayak and Mishra (2008) propounded that the pacca house as day dream of fishermen, their study showed that 90% of fishermen lived in mud built huts that ched with leaves. Semi pucca house had in a very few of them. Most of them lived in kacha constructions or huts due to lack of economical strength [21]. In other study, Sheikh and Goswami (2013) also found out that none of the respondents were any sanitary latrine in their house [6].

Family Type and Size

In a study, Shankar (2010) reported that fisher had joint family (57.33%) and nuclear family (42.66%). Study also reported that 30.66% of the fishermen constituted of less than five members and 69.34% constituted of more than five members in their family [14].

Study conducted in Assam, India by Kalita and Deka (2015) classified into three groups as small, medium and large family. The study reported that 40% (marked as medium family) of the respondent had family size 5-6 members followed by 25% (small family) of the respondent had family size 2-4 members and 35% (large family) had 7 or above family members [5]. Other study conducted by Kumar *et al.* (2018) found that 18.75% of the fishermen had a family size of 2 to 4 members, 37.50% had of 5 to 6 members and 43.75% had of 7 or above [22].

Religion and Caste

Marine fisheries's family belonged to different religions as revealed in a lot of studies. CMFRI census 2010 documented that 75.47% of fishermen households were Hindus, 15.21% Christians and 9.28% Muslims in all over India. The census also showed that dominant religion among marine

fisheries households in all the maritime state and union territories in India were Hindus. But Kerala formed dominant religion of Christians (42.7%). Hindus and Muslims of marine fisheries households had 29.0% and 28.3% respectively. Hindus and Muslims only marine fisheries belonged to Gujarat and Daman and Diu, India [4].

Panigrahi and Bakshi in their study documented that respondents were belong to Hindu, Muslim and others communities around 58.75%, 37.91% and 3.33% respectively [11]. CMFRI census 2010 also documented that 16.6% was SC/ST among the marine fishermen households. No SC/ST marine fishermen household was found in Goa, India. Among the maritime States, 59.3% and 54.8% of the fishermen households belonging to SC/ST constituted in Orissa and West Bengal respectively. But SC/ST families of fisheries were very less in Puducherry, Andhra Pradesh, Daman and Diu and Kerala of India [4].

Membership in co-operatives

All over India, 32% of the fisher involved in co-operatives and out of that 22.1% of the fisher involved in fisheries co-operatives and 9.9% involved in memberships of other co-operatives. Most of the fisher (43.9%) of Tamil Nadu was taken a membership in fisheries co-operatives while Kerala and Maharashtra was 21.6% and 9.8% respectively [4].

Associated occupational pattern

Rao *et al*. (2016) pointed out on occupational pattern of fishermen as 'active fisher folk' which further grouped into two subgroups viz., 'actual fishing' and 'fish seed collection' [23]. In another study in Tinsukia District of Assam, India, Kalita and Deka (2015) reported that fishing was not only occupation in that area. They were also engaged in banana and seasonal vegetable cultivation. Data revealed that 22.5% of fisheries was also engaged in the nearby tea gardens as labour, 62.5% of people engaged only fishing for their only income source, 10% of people engaged banana cultivation along with fishing and 5% of people in fishing also engage with vegetable cultivation [5].

Types and ownership of fishing crafts and gears

CMFRI Census (2010) revealed that 194,490 crafts are used in the marine fisheries sector in India out of which 72, 559 (37.3%) were mechanized, 71, 313 (36.7%) motorized and 50, 618 (26.0%) non-motorized. Out of total mechanized craft 28.9% were trawlers, 42.8% gillneters and 19.1% dolnetters. Motorized crafts which were owned by fisherfolk were 60.3% of fibre glass boats, 12.5% of plywood boat, 10.3% of plank built boats and 8.9% of catamaran. Non-motorized crafts which were owned by fisherfolk were 54.3% of plank built boats, 25.4% of catamaran and 9.8% of dugout canoes [4]. In other study, Prabhavathi and Krishna (2017) focused that only 16% are own craft, 25% are joint and 59 % goes to lease system[16]. Sharma *et al*. (2010) explained in his study that different kind of fishing gear applied by different kind of fishing operation. In family fishing, Gill net is used due to low cost gear. In large scale fishing, drag net, scoop net and hook lines are also used. Distribution of net in the left bank of river Narmada were 10% Scoop-nets, 6% Cast nets, 13% Hook-lines net, 18% Drag-nets, 53% Gill-nets and Right bank net distribution were 17% Scoop-nets, 3% Cast nets, 14% Hook-lines net, 32% Drag-nets and 34% Gill-nets etc [24].

Alcohol and tobacco addiction

In 2015, Rane *et al.* (2016) conducted a study among 825 fishermen in Udupi Taluk of Karnataka. They reported that 64.2% fishermen were tobacco addicted, 45.6% were alcoholic. The study also found that the fisheries with poor health status who were alcoholic and taking any form of tobacco [25]. Mutalik *et al.* (2017) revealed that among 28% of fisheries was addicted to alcohol and 35% were addicted to smokeless tobacco [26]. In other study, Prabhavathi and Krishna (2017) found that among the fishermen community 86% get addicted to drinking and smoking habits (liquor and tobacco). They further reported fisheries addicted to bidi/cigarette and liquor were 11% and 65% respectively and 10% in both bidi/cigarette and liquor [16]. Study in Tamil Nadu by Annadurai *et al*. (2018) pointed out that among the fisheries 17.1% were smoking tobacco user and 22.9% smokeless tobacco user [27, 28]. Kadam (2015) showed that smoking, betel-nut chewing and alcohol consumption in fishermen community are common habits [15].

Risks factors of fishermen health

Changeable contingent weather, potentially dangerous gear and ship movement are evoked for high mortality rate of fisheries [29, 30]. It was also revealed that tropical cyclone which is life threatening event in the deep

sea, unsafe working conditions, different types of natural hazards, days with little rest, robust physical effort, equipment failure, continual economical and psychological stress are also risk factor of fishing. Incidence ratio of fishermen injuries was more compared to general population [31, 32]. Pukkalla and Sharma (2018) categorized the occupational risk factors for fishermen's health as injuries and fractures due to certain falling, Illness/Morbidity due to the nature of equipment used, musculoskeletal problem for working patterns and morbidity for duration of work [33]. Health hazards depend on different types of fishing operation, operation circumstances, vessel shape and size, style of equipment etc. Fishermen in larger vessels have higher risk of accident or death due to heavy machinery crushing than small vessels[34].

Health and Nutritional status

Hygiene practices

Poor hygiene conditions of the coastal villages in Goa reported by Modassir and Ansari (2011). Study documented that there is a lack of sanitation, regular water supply, drainage system and proper toilet [20]. These environmental circumstances favour the spread of different diseases [35]. Another study also indicated that poor sanitation is the major cause of typhoid, malaria, dermatitis manifestation, gastroenteritis, intestinal infections and encephalitis [20].

Morbidity Pattern

Health is an activity of all the integrated development of the society and the health status is one of the indicators of the quality of life. Regarding health status, a cross sectional study on fishing community in Thiruvallur District of Tamilnadu was conducted by Parasuram *et al*. (2015). Total 780 subjects were covered and they had illness in the last six months. The study documented that orthopaedic and respiratory problems were 14.4% and 13.6% of the fisheries respectively. Problems of gastrointestinal and skin were 10.9% and 9.7% respectively. Gynaecological problem, ENT and Cardiovascular disease were 6.9%, 8.3%, and 3.6% respectively. Eye disorder, disorders of central nervous system and genito-urinary tract disorders were found in 4.2%, 3.5% and 2.6% fisher respectively [28].

John *et al.* (2015) showed that 30.3% of the fisherman community of Kutch Coast, Gujarat was affected by skeletal fluorosis. Their study also showed that fluorosis had high in aged and male fisheries among tobacco and alcohol addicted group [36]. Study by Annadurai *et al*. (2018) revealed that hypertension had l39.05% due to high intake of salt from dry fish intake [27].

In other study Asawa *et al*. (2014) found that prevalence of periodontal disease (85.4%) and dental caries (82.6%) among fishermen were high in compare with non fishing group [37].

Nutritional Status

There is limited studies were performed on nutrition, health and physical fitness of the fishermen though physical fitness is very important for the occupation of fishing. Laxmi (2018) reported that iron nutritional status of fishing community was very unsatisfactory in Nellore District of Andhra Pradesh. Study revealed the dietary iron deficiency, low iron absorption, protein and micronutrient deficiencies, infections, infestation, and low socio economic leads to poor nutritional status including anaemia [38].

In another study, Pal *et al.* (2014) used anthropological method to assess the nutritional status of the fishermen. The study documented that chronic energy deficiency was found among 43.50% of fishermen and under nutrition in terms of MUAC was 21.7 % [39].

In the study of Annadurai *et al.* (2018), nutritional status of fisheries was reported as underweight, overweight, obese stage-1 and obese stage-2 by 16.2%, 37.6%, 3.8% and 1.4% respectively [27] and the nutritional status was measured in terms of body mass index (BMI) [40]. Sengupta and Sahoo (2011) reported in their study about nutritional status of fishermen in terms of BMI and BSA, though BMI had not significantly differed compared to control group. They suspected that such type of result comes due to their young age [41].

Conclusion

Fishing is not simply a job but it is a way of life with its own tradition and values. Fish is an important source of diet for large number of people and fishing plays an important role in supporting livelihood. But yet fishing community is considered as backward community and low status occupation and fishermen have low social status and culture. Few existing literature reported that fishermen are a special group of population with some unfavourable life styles and vulnerable to different illness. Majority of the

causes were associated with their occupation and personal lifestyles and habits. There are not many scientific studies in such an economically important occupational group. Very little research have been conducted and reported on fishermen's health and nutritional status and hygiene practices. Even in India, the research on this group of population is scanty.

Few studies from different parts of India regarding socio-demographic and nutritional profile indicates development of somewhat but that is not sufficient. Specially, due to scarcity of research on nutritional profile which evaluates health status and fitness for fisheries, it is difficult to conclude about health status of fishermen. However, large family size, lack of education, discontinue fish capture in a year, unavailability of modern fishing gear/net and lack of alternative employment in the time of non season of fish capture are the important causal factor of poverty which ultimately leads to poor nutrition and health status.

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Author's Contribution

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