

Occupational Health Risks and Etiologies among the Jalari Community of Northern District of Andhra Pradesh, India

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ABSTRACT The perceived health risks of fishermen in India have not been studied in any satisfactory detail by scholars. The paper examines the occupational risks for fishermen under the categories of a) injuries and fractures due to falls; b) illness/morbidity due to the equipment used; c) musculoskeletal disorders due to the nature of the work; d) morbidity due to the timing of work; e) habits and addictions as part of their work socialization. Further, the stress being experienced by the fisherfolk and the perceived consequences of such stress on their physical and mental health is also not dealt with earlier. This paper examines the aspect of the double burden of increased morbidity and reduced economic returns on the fisherfolk, as well as the consequences of economic stress on the social health of the people in terms of strained relationships with community members both within and outside of the family.

INTRODUCTION

According to the 2010 marine census of the Central Marine Fisheries Research Institute (CM-FRI), India, there are 3,288 marine fishing villages and 1,511 marine fish landing centres in nine maritime states and two union territories in India. The total marine fisherfolk population was about four million comprising 864,550 households. For fishermen, fishing is one of the major economic activities and food sources. However, the decrease in fish yield and change in marine ecology have an impact on the livelihood patterns of fisherfolk.

Fishermen communities suffer from a variety of morbidity due to poverty as well as poor hygiene standards due to illiteracy. The insufficient civic facilities in their habitations including poor access to safe drinking water compound their health problems. Their poor economic status, as well as the belief in the supernatural causation of illness, hinders the utilization of services of qualified biomedical providers. The illnesses suffered by the men are, however, perceived to be by and large due to their occupation. The occupational risks are becoming increasingly important for fishermen owing to the diversification of occupations and also due to increased risks while dealing with modern technologies. International agencies such

as the World Health Organization (WHO) and the International Labor Organization (ILO), have also expressed concern over occupational risks and their impact on the health of individuals, households and community members.

The occupational risks for fishermen have been increasing in India, too, over the decades due to various factors (Kurien and Paul 2001; Ramanaiah 2006; Ansuya et al. 2014). As the fisherfolk were forced to adopt technological innovations like mechanized boats, and new fishing practices with hooks and lines and nets to cope with poor yields, the nature of risks changed. This paper deals with occupational risks faced by Jalari in the north coastal region of Andhra Pradesh, India. This paper is thus attempted with the following objectives.

Objectives of the Paper

The three major objectives of this paper are:

1. Explain the concept of risk as perceived by the Jalari;
2. Examine the types of morbidity suffered by the fisherfolk due to natural factors relating to their occupation;
3. Report on the habits and addictions as part of the work socialization of fishermen and the consequences of them on their mental and social health.

MATERIAL AND METHODS

The study was conducted among the Jalari of Peda Jalariapeta village in Vishakhapatnam district of Andhra Pradesh. The Jalari, one of the fishing communities in India, are primarily inhabiting the north coastal region of Andhra Pradesh, India. They are marine fishermen, like the Vadabalija community in the same region. Both quantitative and qualitative data collection techniques were employed for the purpose of this study. The qualitative data was recorded during their narratives about nature of their work, risks faced, and perception of health and illness. Similarly, information relating to the working environments and organization of work of the men is elicited through key informant interviews and open ended interviews. The native terms used by the respondents in these descriptions are adopted in this paper to the extent possible. The qualitative data was preferred for aspects like perceptions of risk, the etiologies attributed to different illnesses, working hours, food habits etc. The data on morbidity and aspects relating to addiction, smoking and drinking of alcohol is collected through the administration of an interview schedule to 97 men. The fieldwork was carried out during the months of January to June 2017.

RESULTS

The results of the study as evident from the analysis of the qualitative and quantitative data are presented under the following headings.

The Concept of Risk among the Jalaris

The notion of occupational risk has been introduced relatively recently into the Jalari community. The informants revealed that they learned the term 'risk(s)' from the members who worked along with them in big vessels in Visakhapatnam and other ports of India. While some elderly Jalari recalled that they learned about 'risk' while working with non-Jalari members from outside of Visakhapatnam region on the big vessels, some others reported that they heard the term first from the *thella dhoralu* (Englishmen). 'Risk' as they understand it now is designated as '*aapada*', '*kastam*', '*baadha*', and '*pramad-am*'. These terms are used as synonyms and stand for 'factors that contribute to ill health

owing to work undertaken for livelihood'. However, Jalari informants also mentioned that their work is a 'risky job' because there is no guarantee of returns commensurate with the time and energy spent by them on the sea and offshore. The meagre returns, of course, cause them *kastam* (hardships). This is in addition to their experience of '*baadha*' (sorrowfulness) due to injuries and ill health on account of their occupation.

The Jalari speak about the chances of suffering *chinna pramadalu* (minor accidents) and *pedda pramadalu* (major accidents) while involving in fishing activities. They are more generally concerned with *pedda pramadalu* that result in loss of life due to heavy winds and waves in the sea causing their boats to capsize. They say that the risk of minor injuries can be averted through precautionary measures and preventive behaviors, but the major accidents are difficult to obviate as they occur due to the fate of the person or family, or because of the wrath of supernatural beings or ancestors, or due to the work of *deyyalu* (ghosts) and *bhoot-alu* (demons). On a general note, however, Jalaris state that accidents during work are due to one's *karma/vidhi* (fate). To avoid the wrath of the supernatural beings and also for protection from the ghosts, they invariably worship the *Ganga Devi*¹ before starting a fishing expedition by taking seawater into their mouth. The blessings of *Ganga* are sought both to avert accidents and also for good yield.

In addition to supernatural concerns, however, the Jalari also are certain of the effect of nature on their livelihood activities. Hence, they say that the most risky period of their life is during June to October. The chances of high winds, and tides in the sea during these months is a strong concern for them. They claim some knowledge of different kinds of *odishi*² (sea current) and also about which kind of *odishi* will tip their boats or change the course of their journey in the sea. However, that knowledge is insufficient to predict how and when *odishi* is generated during June to October. They consider these months as *gadusu nelalu/penku nelalu/aggi nelalu* which metaphorically refer to weather that is unpredictable, unwilling to calm down and highly unsafe for their activity in the sea.

Morbidity due to Natural factors

The Jalari explain occupation-related morbidity in terms of: a) Injuries and fractures due to

falls during the work; b) Illness/morbidity due to the nature of the equipment used; c) muscular-skeletal disorders due to the nature of the work carried out; d) morbidity due to the timing of work; e) habits and addictions as part of their work socialization. The respondents narrated how injuries are caused at their workplace and also the long-term effects of their occupation on health.

Injuries and Fractures

After the fishermen reach the shore, the equipment, as well as the catch of fish, is emptied and then the boat is carried for parking in the beach. When they go on fishing expeditions, they need to carry the boat into the sea from where it is parked. Injuries while carrying these boats are reported to be frequent. Injuries occur if the boats tip over due to massive tides and fall on them. Leg fractures and torn muscles are reported to be common results of such accidents. It is estimated that out of the approximately 3,000 community members who are involved in fishing in Peda Jalaripeta, 10-15 members meet with such accidents in a week. Many times these accidents force the members to abstain from work for a week at least. During the monsoon season, not only are the accidents more frequent but also they are more serious, requiring rest for months at a time.

Illness/Morbidity due to the Nature of Equipment Used

Fishermen have adopted technology to facilitate their work and increase productivity by enabling them to cover a greater distance on the deep sea. Mechanized boats constitute one of the important technologies that they have adopted. Though the fish yield has increased and the working hours have reduced due to this adoption, it is not without health risks for them. Firstly majority of them, and especially the aged men (above 50 years) say that this has reduced the amount of physical exercise for them, and they believe that a lack of sufficient exercise is making their bodies more susceptible to pain.

Injuries and fractures are also said to be common due to skidding in the boat. The fishermen pointed out that since the mechanized boats are made of fibre, they are more slippery than the traditional boats that are made of wood, and

therefore the chances of falling in the boat are higher.

The narratives on the experiences of recent episodes of accidents and illnesses suffered revealed the folk etiologies of fishermen. The mechanized boats are believed to be causing respiratory problems in the long run due to the inhaling of smoke emitted by the engines. In addition, the sound of the engine too is said to be causing ear problems. The fishermen also feel that the contact with oils, rust and dirt during cleaning or repair of the engines has some health consequences for them. The mechanized boats are also assumed to be causing health problems due to increased heat in their body. The fibre is assumed to not only absorb more heat but also transmit the heat into their bodies throughout the day. The transmission of heat is said to be disturbing the hot/cold balance in the body, thereby causing illnesses.

Morbidity due to Nature of Work Carried Out

The work of fishermen exposes them to the direct sun. They believe this not only leads to excessive thirst but also creates an imbalance of fluids in the body, leading to headaches, eye irritation, fatigue and sometimes dehydration. Owing to limited space and difficulty in carrying their goods and equipment, fishermen carry only about two litres of water per person. This is often not sufficient for consumption needs, and dehydration is therefore common. These illnesses are of course not taken to be major ones and do not force them to completely abstain from work. When the fishermen experience them, they are given rest to recover. In case of complaints of a headache, a common recommendation for recovery is to drink some alcohol and relax for a period of time. For other illnesses attributed to exposure to sun, they consult the local semi-qualified health workers on their return to shore.

The fishermen mentioned that their work involves a lot of physical exhaustion and standing for long hours. The force they need to apply while tossing the fishing nets as well as to change the direction of boats in the sea does cause them bodily pain. Almost every Jalari involved in fishing has this complaint. It is said that this ailment is not serious and that remedies are available for the problem. These common remedies are like application of ayurvedic balms, hot water bath and rest. However, almost every fisherman re-

mains absent from work and takes rest for a day to recover from bodily pain after working for 4 to 5 days continuously.³ The fishermen actively participate in the work till they attain the age of 70 years. Absence from work due to body pains increases with age.

Skin allergies like itching are reported by the fishermen. These allergies are attributed to either direct exposure to sun heat or *uppu naachu* (dense sweating due to humidity in the sea and salt-water evaporation), to poor personal hygiene, contact with dirt in the fishing nets, or to fungus in the boats. Further, they claimed that skin allergies are caused by a certain variety of fish in their catch. One in ten fishermen is expected to have this problem at any given point of time. Generally, the allergic reaction subsides in 2-3 days with the use of some home remedies. Since the fishermen perceive that skin allergies could be due to accumulation of dirt in their boats and other equipments that they use, they take preventive action to reduce the incidence of the skin allergies. The boats and the other equipment are cleaned thoroughly at least once a week.

Illness Due to Working Hours and Timings

The Jalari men attribute their illnesses not only to the physical stress that they experience on boats but also to the working hours. In this context, they describe two types of fishing: day fishing and night fishing. Generally, for day fishing expeditions they start in the early morning around 3 a.m. and return around 4 p.m. If the catch is completed early, they may even return as early as 2 p.m. Thus, they work for about 10-12 hours a day for this type of fishing. For night fishing they leave the shore around 5 p.m. and return in the early morning. The decision of whether to engage in day fishing or night fishing is dependent on the season. In certain seasons, fish are available only during the night, and in other seasons certain varieties are available only during the daytime.

The health consequences of sleeplessness during the season when they are compelled to fish at night is very much recognized by the Jalari. They also say that since the night fishing is undertaken during winter, the snow and cold sea breeze will badly affect their health. Cough, cold, headache, body ache, irritation of eyes, fevers and cracks in heels and lips are reported

to be common illnesses caused by night fishing in winter.

The Habits and Addictions as Part of Their Work Socialization

The Jalari men not only say that their work is physically strenuous but also feel that it is mentally cheerless. They say that the long working hours and odd timings, the feelings of loneliness, the demand for being ever attentive, and the physical activity for the operation of heavy equipment and boats require a lot of training. The seniors with whom they work in the initial years provide the training for necessary adaptations to their activities in the sea and on shore. The work socialization involves not just learning knowledge and skills for effective role performance as an abled fisherman, but also towards coping with the stress due to work and work-related issues. Thus, the formation of habits of smoking, chewing of tobacco products and drinking of alcohol as stress relievers is seen as part of their work socialization. These habits among men especially, do not carry any stigma and in fact, are seen as normal attributes for fishermen. Smoking and chewing of tobacco products are assumed to generate heat in the body that is required to offset the cold in the mid sea due to humidity and breeze. The older folk also think that they did not face severe health consequences due to smoking and chewing of tobacco products as tobacco was grown without any fertilizers and pesticides. Today, the ill effects of these habits are realized by the fishermen. However, they are socially accepted and justified by the community members as necessary evils. The justification comes in terms of reasoned action, in spite of the perceptions of personal vulnerability to diseases and also the perception of the severity of the diseases. Detailed analysis of data relating to the habits and addictions of Jalari male members involved in the fishing activity is presented below.

Addiction to Alcohol

About half the adults with fishing as their major occupation reported that they regularly (on all days of the week) consume alcohol. Social acceptance of alcohol consumption and the importance of alcohol in work socialization are revealed by the fact that 38.26 percent of the

adult Jalari men reported that they were introduced to alcohol before the age of 20, and almost eighty percent of the men started consuming alcohol before the age of 30. The quantity consumed varied between 90 ml to 540 ml per day for the men surveyed. While 19.15 percent reported consumption of 360 ml per day, another 70.21 percent indicated consumption of 180 ml per day. The average expenditure on liquor for those consuming on a regular basis comes to approximately Rs. 500 per week. Interestingly, 95.74 percent of those consuming alcohol stated that they take it for relief from the pressures of work or for overcoming body pains. However, 25.53 percent of the respondents who are habituated to alcohol also attributed their consumption to the illness that they were currently suffering from. Their most frequently reported illness was chest pain. The Jalari men are aware of the health consequences of alcohol consumption, as are its effects on family life and social relationships.

Addiction to Chewing of Tobacco Products

A total of 23 out of the 97 adult Jalari men whose major occupation is fishing⁴ reported an addiction to one or other type of tobacco product. Chewing tobacco has been more recently introduced as an alternative to smoking among the Jalari. The proportion of those who are addicted to this among those in the age group of 30-40 years is higher than for those in the age group of 61-70 years. Out of those who reported addiction to tobacco chewing at the time of the survey, 43.5 percent belonged to the age group of 30-40 years. The quantity chewed by each Jalari in a day varied between 20 grams to 100 grams. Those who reported consumption of 90-100 grams constituted 13.05 percent of the total addicts.

The age at which the men started chewing tobacco revealed that a little over one-fifth of them started at less than 15 years of age and as many as 82.5 percent were introduced to tobacco chewing by the age of 35 years. Thus the number of years chewing tobacco for the Jalari men who get addicted will be anywhere between 40 and 70 years. The ill effects of chewing of tobacco products are known to the Jalari men. Six members out of the 23 who are addicts attributed their current illness to chewing tobacco. However, seventy-four percent of the respon-

dents out of 97 adult fishermen surveyed attributed one or more illnesses to chewing tobacco.

Addiction to Smoking

Smoking of cigars is even more socially accepted for both the genders. Since women too smoke, the boys learn to smoke from either of the parents or from the peers. Almost one-fourth of the adult men engaged in fishing reported smoking on a regular basis. Out of the 34 who reported smoking in this study, almost one-fourth professed to have started before the age of 10. More than seventy-five percent of them started smoking before the age of 20. The intensity of smoking slightly varied for the respondents. About thirty-seven percent of smokers reported smoking 20 to 30 cigars per day and spending anywhere between Rs. 200 to Rs. 700 per week. However, smoking is seen as a functional alternative to chewing tobacco by many men. Thus men who are addicted to both smoking and chewing tobacco are few. Respondents reported the smoking of both *beedi* and branded cigars. The distribution of smokers by age revealed that the younger men were less inclined to smoking than the older ones. Out of those who reported smoking, the men below 40 years of age comprised only 20.6 percent. The reason for this according to the older men is that the younger men do not prefer to smoke *chutta* or *beedi* and the branded cigars are expensive. However, the younger men claimed that the health consequences of smoking are too severe. They stated that smoking would lead to asthma (respiratory problem), heart attacks, paralysis and cough, and so they avoid doing it.

DISCUSSION

The World Health Organization is concerned with how work-related stress has the potential to negatively affect an individual's psychological and physical health, as well as an organization's effectiveness. Mental health problems and other stress-related disorders are recognized to be among the leading causes of early retirement from work, high absence rates, overall health impairment, and low organizational productivity.

Research regarding the working conditions and health status of communities engaged in fishing, particularly in developing countries, is scarce (Percin et al. 2012). As observed by Gup-

ta (2003) and Schoembucher (1988), the research focus tends to be on agrarian societies in South Asia with relatively less attention given to the study of the maritime communities. However, published studies do point out that the fishing is one of the most risky and dangerous occupations when compared to many others (Remmen et al. 2017). The risks that fishermen are exposed to both directly and indirectly through their lifestyles that are adapted to fishing are revealed only in some studies. Petursdottir et al. (2001) considering the data for the period 1982 to 1984, reported that the rate of fatality of fishermen was 18 times higher than the national average (143/100,000 person-years compared with 8.1/100,000); in Denmark, during the years 1989 to 1996, the rate was 25-30 times higher than the rate for those employed on land; in the United States in 1996, the death rate in fishers was estimated at eight times that of persons operating motor vehicles for a living, 16 times higher than occupations such as firefighting and police work and over 40 times, the national average. Similarly, the International Labor Organization's occupational Safety and Health Branch estimated that 24,000 fatalities had occurred worldwide per year in the fisheries sector. The fatality rate for Sri Lanka's offshore fisheries is estimated to be ten times greater than in Norway (Dahle 1990); in the West Africa Coast, the canoe fatality rate is in the range of 300 to 1,000 per 100,000 fishermen (FAO 2000) and in South Africa, fatality rates are 585 per 100,000 fishermen (FISH Safety Foundation 2000).

The study by Myers (2004) pointed out that equipment is made for adolescents and adults and not made with children in mind. This leads to occupational accidents in the case of children employed in the industry. In addition, Myer mentioned that economic restructuring, with its unstable market forces which result in unemployment and inequality, are negative features of globalisation. The impact of negative features is high in most of the low-income countries. Both positive and negative features have contributed towards the easier transfer of hazards in the form of materials, products and production processes that have affected the health of people in general, and also the fishing communities engaged in small-scale fishing.

The more recently published studies on health issues of fishermen dealt with morbidity due to lifestyles of the fishermen. Lucas et al.

(2016) reported that the occupational asthma is because of the consumption of seafood such as crabs, shrimps, lobsters, marine sponges which creates health risks. It is also reported that some of the preservative chemicals also cause respiratory problems among fishermen. Baygi et al. (2016) found a higher prevalence of chronic heart diseases among the Iranian seafarers. It is mentioned that duration of sleep and work activity, lack of leisure time facilities lead to the incidence of cardio metabolic risk factors. They also found smoking is due to work-related stress.

Remmen et al. (2017) reported both physical and mental fatigue among the Danish fishermen. The incidence of occupational risks is due to movement of vessels, weather conditions, working hours etc. In fact, these factors actually effects both physical and mental fatigues which reduce their work performance.

Sønvisen et al. (2017) discussed Norwegian fishers and their occupational health risks that are based on climatic, ergonomic and level of work activity. They claimed that all these factors escalate health problems such as musculoskeletal disorders, absence from work, and illness or injuries. Further, they also stated that the ill health suffered by them will negatively influence their psychological strength and adaptation to work cultures.

Interestingly, many studies conducted earlier too reported similar occupational hazards for the fisherfolk. Novalbos et al. (2008) observed that among Andalusian (Spanish) fisheries, the most prevalent health problems are skin, eye, respiratory, digestive and musculoskeletal conditions. Similarly, Percin et al. (2012) in their studies among the Turkish Aegean region reported health problems such as musculoskeletal problems (for example discopathies, muscular strain, rheumatism) and eye, ear-nose, digestive and urinary problems for fishers. The author also interlinks health problems with unhealthy lifestyle practices. Factors such as migrant status, income levels and working conditions are highlighted in this regard.

Bodhare et al. (2011) observed that several studies have examined etiologies in regard to occupational health problems and the two-way influence of physical and psychosocial conditions in case of fishermen. It is noted that the psychosocial conditions such as job dissatisfaction, lack of job control, job monotony, job

demand, and lack of social support affect the physical health of Jalari and ill health, which in turn, will result in reduced work productivity, increased economic burden, sick absenteeism, work lost and disability. Agnihotram (2005) while observing that the industrialization and globalisation brought changes in occupational morbidity and that this can be attributed to lack of proper awareness on safety measurements, environmental hazards and lack of education also felt that there is an urgent need for greater in-depth research on occupational health in Indian context.

The present study among the Jalaris in Visakhapatnam district by and large concur with the findings reported elsewhere in regard to the morbidity. Further, the issues of reduced fish yield, the increased competition resulting in unstable work hours is observed in this study (Ramanaiah 2006). The psychological and psychosomatic disorders⁵ are found to be on increase due to many factors including the perception of risk and occupation related illnesses. Natural disasters are one of the main threats to the Jalari. As observed by Ghazali (2011), elsewhere, during cyclones and heavy rains, the sea becomes dangerous and poses a challenge for them to earn their livelihoods, leading to psychological stress, which indeed may become one of the causes for their mental and physical ailments. The addiction to liquor and smoking as part of work socialization and as coping strategy to stress experienced in the occupation has many health consequences for them.

CONCLUSION

The Jalari perceive their occupational risks to be considerable. The economic and social consequences of morbidity that are attributed to the nature of the work are also perceived to be harsh. Many Jalari perceive their life situations as an unresolvable dilemma on whether to continue with their traditional fishing or look for alternate livelihood sources. It is also true that a large majority of them continue with their traditional fishing and face the challenges of the occupational risks. The relatively long periods of morbidity on account of their occupational choice results in absence from work and loss of income. Health and social consequences of addictions to smoking, chewing of tobacco products and alcohol as part of their work socializa-

tion is a great concern in every Jalari household.

The unpredictable weather conditions due to climate change, in the Jalari view, are rendering their indigenous knowledge to cope with risks inoperable. They feel that they are now compelled to go deep into the sea for a good yield because of the unavailability of fish (attributed to climate change) as well as severe competition from large-scale commercial fishing. In addition, the Jalari say that they had to adapt their technology to compete with the large-scale commercial fishers. Both these developments, according to them, have multiplied their risk factors.

The Jalari not only recognize that as compared to earlier times, they now experience increased risks, morbidity and mortality but also view that these factors increased the incidence of psychological disorders and psychosomatic disorders among the fisherfolk. The increased morbidity of menfolk is a great cause of anxiety for the womenfolk. The financial outlay on liquor, cigars and tobacco products by men is curtailing the contribution they make to family incomes. The resulting economic stress is emerging as a catalyst for other disputes among family members. The Jalari perceive that the work demands for both men and women are weakening their emotional bonds and also contributing to the poor parental care of children. Similarly, the support to women and children from kin while living in joint and extended families is dwindling.

RECOMMENDATIONS

Based on the study the following recommendations can be made:

1. Awareness on avoidance of injuries through the use of protective gadgets can be improved.
2. Health education on ill effects of smoking, chewing of tobacco products and consumption of alcohol needs to be stepped up.
3. The Jalari youth can be motivated towards other alternate livelihood choices that have less health risks compared to the risks that they face due to traditional fishing.
4. It is important to conduct studies on how the additions among the Jalari men particularly are resulting in increased domestic violence against both women and children in the fishing communities.

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NOTES

- 1 Ganga refers to water and Devi refers to the goddess. Ganga Devi is one who lives in water and controls the conditions in the sea.
- 2 Pressure observed in the sea. Generally, the flowing of water is become more forcible.
- 3 The questions posed on the concept of rest and expected working hours during the interviews reveal that the healthy men should be able to work on all the days of the week. Normally they work for about 10-12 hours a day. As such all men attempt to work as much as possible unless and otherwise they are required to take rest. Rest is thus a force rest for them.
- 4 Surveyed for habits of tobacco chewing, smoking and drinking of alcohol, covering 60 households in Peda Jalaripeta village in Visakhapatnam district.
- 5 *Othidi* (depression), *ontari thanam* (loneliness), *ara manasu* (negative attitudes towards others) are the psychological problems cited. Fatigue, headache, dizziness are the ones pointed out by many that can be considered under psychosomatic disorders.

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