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Rural Livelihood Security: Assessment of Fishers' Social Status in India

Shyam S. Salim*, R. Sathiadhas, R. Narayanakumar, P.K. Katiha, M. Krishnan, R.S. Biradar, Nikita Gopal, Nagesh Barik and B. Ganesh Kumar

Central Marine Fisheries Research Institute (ICAR), Cochin-682 017, Kerala

Abstract

The study has assessed the levels of literacy, health, income and livelihood security of the fisherfolk in India by taking a sample of 4555 fisher households selected from six fisheries sectors (marine capture, inland capture, mariculture, fresh water and brackish water aquaculture and marketing and processing) in 19 states of India. The primary data were collected using a pre-tested survey scheduled during January to December, 2011. The age profile of the fisher household revealed the dominance of the young — one-third with less than 35 years of age and more than half in 35 to 55 years age groups. The literacy rate has been found quite high, about 80 per cent on overall basis. The health status of fisher households has been assessed using birth weight of infants, incidence of mortality among mothers/children during birth, administration of vaccines and health care facilities. It has been found that for a better livelihood security, the respondent households have diversified their income sources beyond fisheries, the major ones being labour, agriculture, and business and non-farm activities. The average monthly income across all sectors was about ₹ 6500, in which about 73 per cent were from fisheries. For economic security, a considerable number (around 40%) of fisher households had savings, the average amount being ₹ 4200 per fisher household. The study has suggested that microfinance enterprises like self-help groups (SHGs) should be promoted to help the fishers to address their problem of indebtedness. There exists huge potential of imparting training to fishers, particularly the young and womenfolk, on fisheries management and diversified enterprises including services delivery.

Key words: Livelihood security, fisheries, economic security, livelihood diversification, microfinance, women empowerment

JEL classification: Q22, Q12, O15, P 46

Introduction

Indian fisheries and aquaculture constitute an integral component of agriculture, providing employment, food and nutritional security to people, particularly to the rural poor. Globally, capture fisheries and aquaculture produced 134 million tonnes (Mt) of fish during 2010 with per-capita food fish supply of 17.2 kg. In 2012, India contributed 5.33 per cent of the world total fish production (4.57% of total capture fish production and 6.63% of aquaculture production). India is ranked, second after China, in the world aquaculture production. Though India is one of the largest consumers of fish in the world, the annual per-capita consumption of fish, at 4.78 kg, is one of the lowest in the world (Salim and Narayanakumar, 2012).

The general awareness about fish as a healthy protein-rich food and health concerns has greatly influenced the consumption of fish in the country. The demand for fish and fishery products is increasing considerably in both domestic and export markets. The total demand for fish is projected to be 11.85 Mt by

* Author for correspondence
Email: shyam.icar@gmail.com

2017 (Planning Commission, 2012). The supply projections will fall short of the demand and therefore, the production and productivity issues of both inland and marine fisheries and aquaculture need to be addressed adequately (Salim, 2013).

Literacy and numeracy are integral to the livelihoods of many small-scale fishing communities. The fishing communities often face educational disadvantage due to geographical and social marginalization (FAO, 2006). Despite educational marginalization faced by many fishing communities, there appears to be a rich culture of literacy with often-high levels of motivation for functional literacy learning.

The assessment of health status of fishing communities is also very important. There are many factors that influence fisher's health. These factors are often interactive and sometimes are outside the individual's control. In India, the weak, marginal section of the society is vulnerable to all sorts of health hazards including TB, lung and skin infection, AIDS, cancer and related ailments and the fishing community is no exception to this (Sengupta and Sahoo, 2011).

The National Sample Survey Organization (55th round) data have shown that male literacy rates within the fishing communities are higher than those of agricultural labourers. In Kerala, the literacy rates in coastal fishing communities have been reported to be 78 per cent, with women higher than men and figures comparable with other rural communities. On the other hand, in Odisha, the figures depict much lower rates of literacy than agricultural communities, particularly among women. However, in the fishing communities these data are collected for isolated locations and specific studies, hence, there is lack of a comprehensive national data base on literacy.

The household income is an important indicator of the socio-economic status in a community. The fisheries sector in India has undergone rapid changes over the past six decades and has developed from sustenance fishing to the level of a multi-crore fishing industry. However the economic and social benefits associated with this transformation have not trickled down to the gross root level of Indian fishing community. The income distribution in this sector is highly skewed in favour of the mechanized operators, who control over 70 per cent of the total fish landings, though they account for only 30 per cent of the fishing community. The per-capita area available per fishermen has gradually declined over the years. The per-capita earnings also vary among fishermen working in the different fisheries sectors (Sathiadhas and Prathap, 2009).

The three parameters, viz. literacy, health and income are important building blocks in the pyramid of socio-economic development of a community. Hence, the present study has assessed the literacy, health and income status of marine and inland fishers, fish farmers and workers in allied activities both in capture and culture systems. The study was initiated to develop a strong data base on literacy, health and income status of fisher folk in India for the use of administrators, policy makers, researchers and academicians.

Data and Methodology

The fisheries in India comprises of marine and inland sectors and with classification into capture and culture sub-sectors. A total sample size of 4555 fisher households was selected across different fisheries sectors in different states and the data were collected using a pretested survey schedule. The sector-wise allocation of sample households is represented in Figure 1.

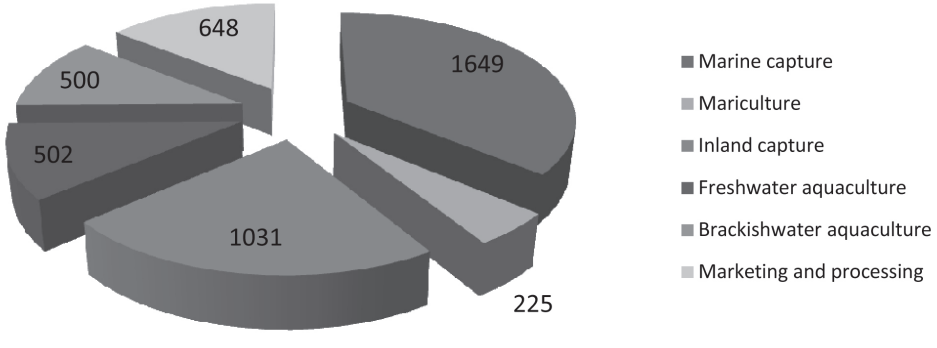

Figure 1. Sampling distribution across different fisheries sector

Table 1. Sampling distribution across different fisheries sectors

Sub-sector	States	Sample (No.)
	Inland fisheries	
Reservoir		
(i) Small	Tamil Nadu, Kerala, Madhya Pradesh and Jharkhand	181
(ii) Medium	Uttar Pradesh and Andhra Pradesh	100
(iii) Large	Madhya Pradesh and Himachal Pradesh	100
Wetlands	Assam , West Bengal and Bihar	100
River	Ganga: Uttar Pradesh , Brahmaputra : Assam, Narmada: Madhya Pradesh, Gujarat Krishna: Andhra Pradesh	250
Estuary	Hooghly-Matlah: West Bengal and Narmada: Gujarat	100
Brackishwater	Lake Chilka: Odisha , Lake Pulicat: Tamil Nadu, Brackishwater: Vembanad	150
Cold water fisheries	Uttarakhand	50
Sub-total		1031
	Fresh water aquaculture	
Ponds and tanks		
Extensive	Assam , West Bengal, Odisha and Tamil Nadu	400
Semi-intensive & intensive	Andhra Pradesh and Punjab	102
Sub-total		502
	Brackishwater aquaculture	
Extensive	West Bengal and Kerala	200
Improved extensive	Andhra Pradesh, Gujarat and Tamil Nadu	300
Sub-total		500
	Allied sectors	
Processing sector	Kerala, Gujarat, Andhra Pradesh and Maharashtra	228
Marketing	Kerala, Gujarat, Andhra Pradesh, Maharashtra, Delhi, Punjab, West Bengal and Madhya Pradesh	420
Sub-total		648

In the marine capture sector, 1649 households were selected from the coastal states of Gujarat, Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu, Puduchery, Andhra Pradesh, Odisha and West Bengal and the state-wise sample households are furnished in Table 2 .The sampling size distribution across different resources and states is given in Table 1.

The primary data, collected during January-December 2011, were analysed using tabular and percentage methods.

Results and Discussion

Age of Respondent Fishers — The age-wise distribution of sample respondents indicated that the flock was biggest (51.7%) of the age group of 36-55 years, followed by the flock of the age group of less than 35 years (30.8%) and the flock of more than 56 years (17.5%).

The sector-wise distribution of respondents in different age-groups (< 35, 36-55 and > 55 years) has been depicted in Table 3.

Male-Female Ratio — The male-female ratio of the respondent-fishers indicated that the male outnumbered the females in the all the fisheries sectors. The average male -female ratio was highest (1.24) in freshwater aquaculture fisheries, followed by brackishwater (1.18), inland capture (1.13), mariculture (1.12), marine capture (1.11) and marketing and processing (1.04).

Family Size — The average family size of fisher household across the different sectors was found to be 4.56, ranging from 3.70 in mariculture to 4.78 in fresh

Table 2. Sample household distribution across different states and sectors

State	Marine capture	Mariculture	Inland fisheries	Freshwater aquaculture	Brackishwater aquaculture	Processing and marketing	All sectors
Andhra Pradesh	140	-	100	52	100	100	492
Assam	-	-	70	100	-	-	170
Bihar	-	-	50	-	-	-	50
Delhi	-	-	-	-	-	50	50
Goa	140	-	-	-	-	-	140
Gujarat	190	-	100	-	100	123	513
Himachal Pradesh	-	-	50	-	-	-	50
Jharkhand	0	-	35	-	-	-	35
Karnataka	190	-	-	-	-	-	190
Kerala	215	125	100	-	100	125	665
Madhya Pradesh	-	-	150	-	-	50	200
Maharashtra	140	-	-	-	-	100	240
Odisha	140	-	50	100	-	-	290
Puduchery	140		-	-	-	-	140
Punjab	-	-	-	50		50	100
Tamil Nadu	214	100	96	100	100	-	610
Uttar Pradesh	-	-	100	-	-	-	100
Uttarakhand	-	-	50	-	-	-	50
West Bengal	140	-	80	100	100	50	470
Total	1649	225	1031	502	500	648	4555

Table 3. Age distribution of the sample respondents

(years)

Sector	Respondents age			
	< 35 years	36-55 years	> 56 years	All
Marine capture	425	887	337	1649
Mariculture	57	142	26	225
Inland capture	366	484	181	1031
Freshwater aquaculture	172	240	90	502
Brackish water aquaculture	168	249	83	500
Marketing and processing	213	355	80	648
Total	1401	2357	797	4555

water aquaculture. It was also found that 46.76 per cent of fisher households had a family size of 2-4 members, 38.99 per cent, had 5-6 members and 13.12 per cent maintained a large family of 7-10 members.

Adult Child Composition — The adult to child ratio was found to be 2.43 for the total sample and it ranged from 1.51 in inland capture to 3.73 in brackish water aquaculture . The male-female ratio of the adult group (>15 years) was found to be 1.10:1.00, whereas the same for the children (<15 years) was found to be 1.14:1.00. Adult males in the age group of above 15 year outnumbered the females in all the sectors and was also noticed among the children (< 15 years).

Literacy Profile of Respondent-Fishers

The average literacy rate of the fisher households was found to be 79.96 per cent and it ranged from 71.22 per cent in inland capture sector to 95.44 per cent in

mariculture. The results indicate that the literacy doesn't seem to be skewed towards any particular sector among the fisher population in Kerala and Tamil Nadu. Among the literates, 32.85 per cent had education up to primary level, 53.88 per cent had education up to secondary level and 13.10 per cent had education above secondary level . Such a high education level among the fisher folk had become possible due to better access to educational facilities.

Health Profile of Respondent-fishers

The health status of the fisher-households was assessed using the child birth weights, incidence of mortality among mother/ child during birth, administration of vaccination and access to health care facilities.

Administration of Vaccination — The average age of administration of vaccination and incidence of discontinuation among infants/ children with age less than 15 years in the different fishing sectors of India was worked out. It was observed that vaccinations for pox, BCG, MMR and polio were been regularly taken by all the households covered under the study. The average age at which the vaccination for different vaccination were administered were as follows: Pox, 1.05 years; BCG, 1.08 years; MMR, 1.21 years and Polio, 4.67 years. The vaccination regime of infants / children was as per recommendations of the Indian Council of Medical Research.

Birth Weight of Infants — The average birth weight of male infants was 2.72 kg and it ranged from 2.60 kg in inland fisheries to 2.90 kg in the case of freshwater aquaculture. The average weight of female infants was 2.67 kg and ranged from 2.57 kg in inland fisheries to 2.80 kg in freshwater aquaculture. Thus, birth weights for both male and female infants were the highest in fresh water aquaculture and were lowest in inland fisheries.

Incidence of Mortality among Mother/ Child during Birth — The incidence of maternal mortality across all selected respondent-fishers was found minimal and with 0.47% maternal mortality rate and 2.66% infant mortality rate. The maternal mortality rate was 7.30pert thousand for marine capture sector and 6.60 per thousand ininland capture fisheries. Theinfant mortality rate was 4.20% in inland capture sector and 3.6% in marine capture fisheries. The mother and infant mortalities were not reported in mariculture, fresh water aquaculture, brackish water aquaculture and marketing and processing sector.

Access to Healthcare Facilities — It was found that there existed considerable access to the primary health centres and hospitals. The average distance to a primary health centre was found to be 3.2 km and it ranged from 1.7 km in mariculture to 2.9 km in brackish water fisheries. The average distance to a hospital was found to be 10.4 km and it ranged from 4.3 km in the mariculture sector to 21.3 km in brackish water fisheries.

Problems in Healthcare — The major problems perceived by the fisher households in healthcare included non-availability of specialists and paramedics in the health centres, difficulty in accessing a hospital due to longer distance**,** problems of cleanliness/ sanitation**,** lack of adequate effective medicines, poor infrastructure, non-availability of drinking water and work-related stress.

Livelihood Security of Respondent-fishers

The income profiling analysed income patterns, respondents involvement in non -fisheries activities and expenditure pattern of fisher households. In addition the quantum of savings, level of indebtedness, sources of lending, purpose of availing loan was analyzed (Table 4).

It was found that for a better livelihood security, the respondent-fishers had diversified their income sources and these included income from fishery, business, agriculture, labour services, and other services delivery. The highest monthly average income generated by the total respondents was through fisheries with the average amount of ₹ 4741 (73.0% of the total income), followed by income from labour (₹ 841, 12.9%), business (₹ 391, 6.0%), agriculture (₹ 347, 5.3%), and other sources (₹ 175, 2.7%).

In each sector, information on income from different diversified sources was obtained and has been recorded on Table 4. A perusal of Table 4 reveals that across sectors, monthly income was the highest in marine capture (₹ 8742), followed by brackishwater aquaculture (₹ 7505), marketing and processing (₹ 7027), mariculture (₹ 6809), fresh water aquaculture (₹ 6166) and inland capture (₹ 2727) with an average of ₹ 6496 per month. It was found that in all the sectors, fishery had the maximum share in income.

Table 4. Average monthly income of respondent-fishers from different sources

(₹ per month)

Sector	Enterprise					
	Fishery	Labour	Agriculture	Business	Other	Average
Marine capture	6757	957	270	577	182	8742
Mariculture	4720	1785	175	85	44	6809
Inland capture	1365	591	322	371	78	2727
Freshwater aquaculture	4976	287	549	274	81	6166
Brackishwater aquaculture	4768	702	751	846	438	7505
Marketing and processing	5865	724	17	194	227	7027
Average	4741	841	347	391	175	6496

Table 5. Involvement of respondent-fishers in different non-fisheries livelihood activities

Sector	Labour	Agriculture	Business	Others	All
Marine capture	331	89	188	131	739
Mariculture	54	9	5	3	71
Inland capture	425	168	144	63	800
Freshwater aquaculture	347	211	223	114	895
Brackishwater aquaculture	272	142	112	16	542
Marketing and processing	87	4	97	20	208
Total	1516	623	769	347	3255

A look at the different livelihood sources revealed that in fishery the income was the highest from marine capture (₹ 6757), followed by marketing and processing (₹ 5865), fresh water aquaculture (₹ 4976), brackish water aquaculture (₹ 4768), mariculture /(₹ 4720) and was the least from inland capture (₹ 1365) sectors. The monthly income through labour, the second most significant livelihood sources, was the highest in mariculture (₹ 1785), followed by marine capture (₹ 957), marketing and processing (₹ 724), brackish water aquaculture (₹ 724) and inland capture (₹ 591). Income from agriculture was also significant to fishers in brackish water aquaculture (₹ 751 per month) and fresh water aquaculture (₹ 549 per month) and inland capture (₹ 322 per month). The monthly income through business was also significant for the fishers of brackish water aquaculture (₹ 846), marine capture (₹ 577) and inland capture (₹ 371) sectors.

Involvement in Non-Fisheries Activities — The study has revealed that a significant number of total fisher-respondents (3255, 71.5%) were involved in non-fisheries activities, which provided an additional source of income. The major non-fisheries activities being undertaken were labour, agriculture and business. The total number of respondents involved was highest in labour (1516), followed by business (769), agriculture (623) and other services delivery (347). The study has clearly indicated the adoption of different livelihoods by the selected respondent households across different sectors, though the contribution of income was not high (Table 5).

Pattern across Respondent-fishers Expenditure

The major household expenditures were on food, clothings, fuel, healthcare, education, entertainment, personal and durables. The average monthly expenditure pattern revealed that, on an average, ₹ 5402 was incurred on the households with ₹ 2078 (38.47%) on food, ₹ 742 (13.74%) for personal expenses, ₹ 787 (14.57%) for durables, ₹ 400 (7.41%) for education, ₹ 493 (9.13%) for clothing and ₹ 391 (7.24%) for medical facilities (Table 6). The average monthly expenditure incurred was reported to be highest in marine capture sector (₹ 6961), followed by marketing and processing (₹ 6384), mariculture (₹ 6369), brackishwater aquaculture (₹ 5936), freshwater aquaculture (₹ 4552) and the least for inland capture (₹ 2215).

Table 6. Average monthly expenditure pattern of fisher households across different sectors

(₹)

Sector	Food	Clothing	Fuel	Medical	Education	Entertainment	Personal	Durables	Total
Marine capture	2741	547	374	665	487	424	893	826	6961
Mariculture	2341	479	340	397	410	240	1916	245	6368
Inlandcapture	1040	211	112	189	246	69	180	165	2215
Freshwater aquaculture	1306	218	109	186	341	100	423	1866	4552
Brackishwater aquaculture	3036	461	390	446	533	249	499	318	5936
Marketing and processing	2006	1042	238	461	385	403	544	1302	6384
Average	2079	493	261	391	401	248	743	788	5403

The results indicated that the expenditure incurred on food was highest in family expenditure. Education, entertainment and social security measures held increasing proposition in the family expenditure across the selected coastal states.

Economic Security — The economic security of respondent-fishers was measured in terms of savings and indebtedness. The study has revealed that a considerable number (2487, 59% of total) of fishers had no/ negligible savings. About 31 per cent of respondent-fishers possessed savings of less than ₹ 50000, 6 per cent had savings of ₹ 50,000 to ₹ 100,000 and 4 per cent of the respondents had savings of more than one lakh rupees, (Table 7). It was found that around 13 per cent of the respondent-fishers from freshwater aquaculture, 11 per cent from brackish water aquaculture and 8 per cent from marketing and processing possessed savings of more than rupees one lakh.

It was found that the average amount of indebtedness per household was ₹ 39,807. The average indebtedness amount was highest for marketing and processing sector (₹ 70643) and lowest for inland capture sector (₹ 21851) (Figure 2). The repayment was highest for inland capture (48%) and lowest for marketing and processing (46%) (Figure 3).

Lending Sources — The major lending sources included banks, co-operatives, private money lenders, friends/relatives and jewellery mortgage. A total of 1966 respondent-fishers had availed loans for various purposes. It was found that banks provided loans to the highest number of respondent-fishers (501), followed by private money lenders (482 fishers).

Sector-wise, the private money lenders were the major source of lending for the marine capture and inland capture sectors. Jewellery loans were found to be a major source of lending in the marine capture and marketing and processing sectors (Figure 4).

Table 7. Economic security of fisher-households in different sectors

(No. of respondent-fishers)

Sector	Fisher-respondents' savings				Total
	Negligible	< ₹ 50000	₹ 50000-100000	> ₹ 1 lakh	
Marine capture	1081	499	59	2	1641
Mariculture	173	32	16	4	225
Inland capture	297	435	77	17	826
Freshwater aquaculture	352	62	42	46	502
Brackish water aquaculture	378	33	36	52	499
Marketing and processing	206	236	21	32	495
All sectors	2487	1297	251	153	4188

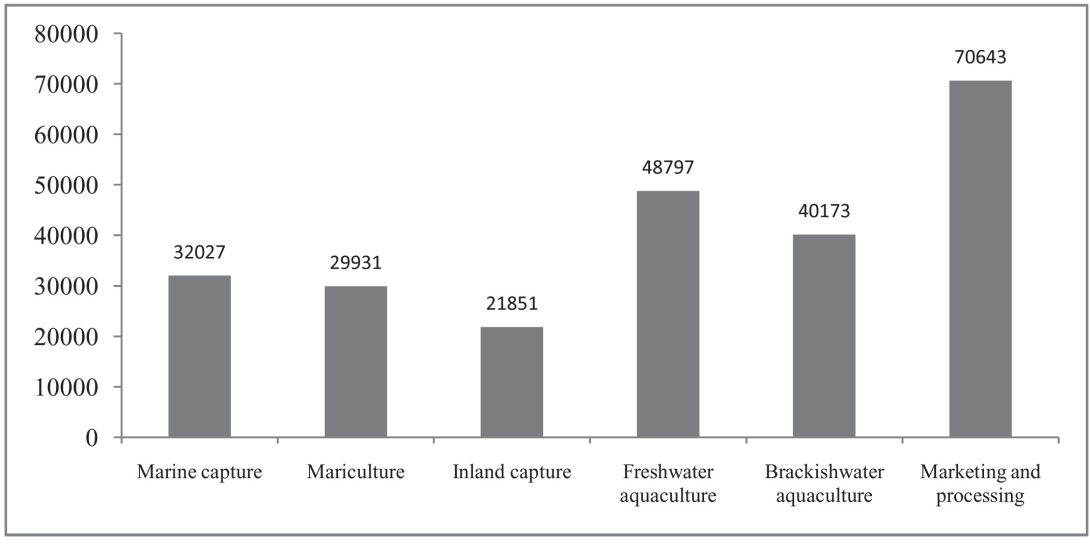

Figure 2. Average level of indebtedness across different fishery sectors (₹)

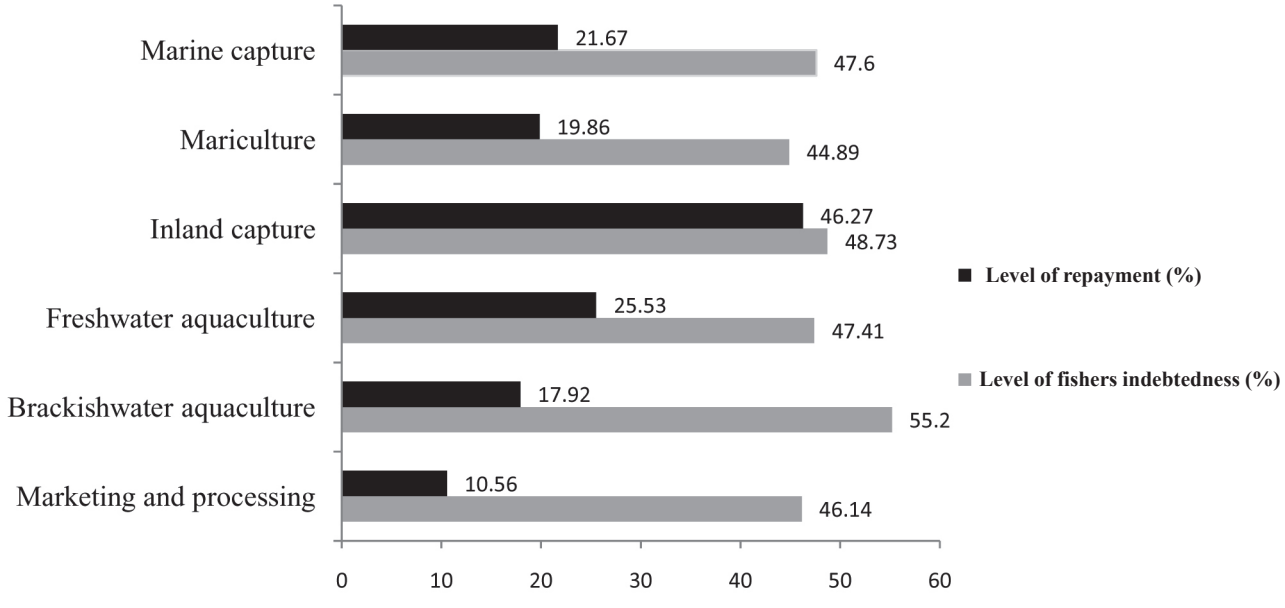

Figure 3. Percentage level of fishers indebted and level of repayment across sectors

Purpose of Availing Loans

The purchase of equipments for fisheries and aquaculture-related activities was found the major purpose of availing loan by 39.4 per cent of the respondent- fishers. It was followed by house construction and land purchasing (9.6%), marriage expenses (9.6%), health care and social security (6.3%) and education (7.1%) (Figure 5). It was found that loans were being utilized for non-performing assets and were being spent for purposes other than those for which loans were sought.

Conclusions

The rural livelihood-security status of the fishers in India has been studied in terms of literacy, healthcare and income profile.

The age-wise distribution has indicated that 51.7 per cent of the respondents were in the age group of 36-55 years and 30.8 per cent of the respondents were in the age group of less than 35 years. Thus, fisheries continue to be the livelihood of more than 82.5 per cent of the respondents. The average male-female ratio

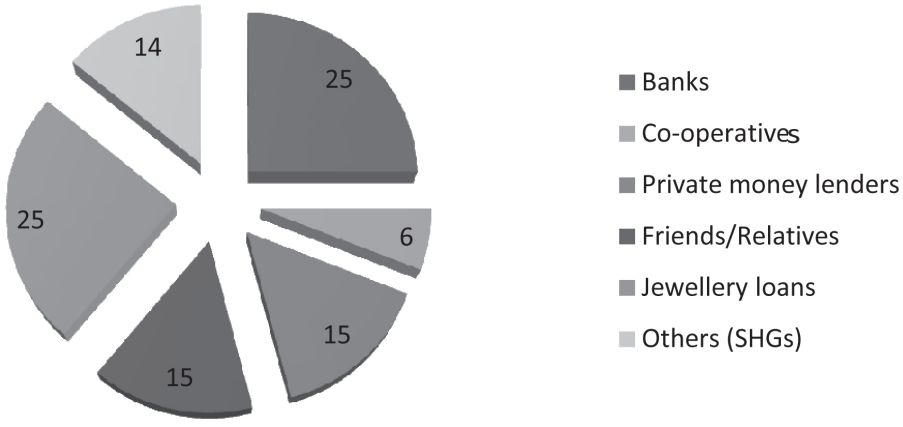

Figure 4. Lending sources across different sectors

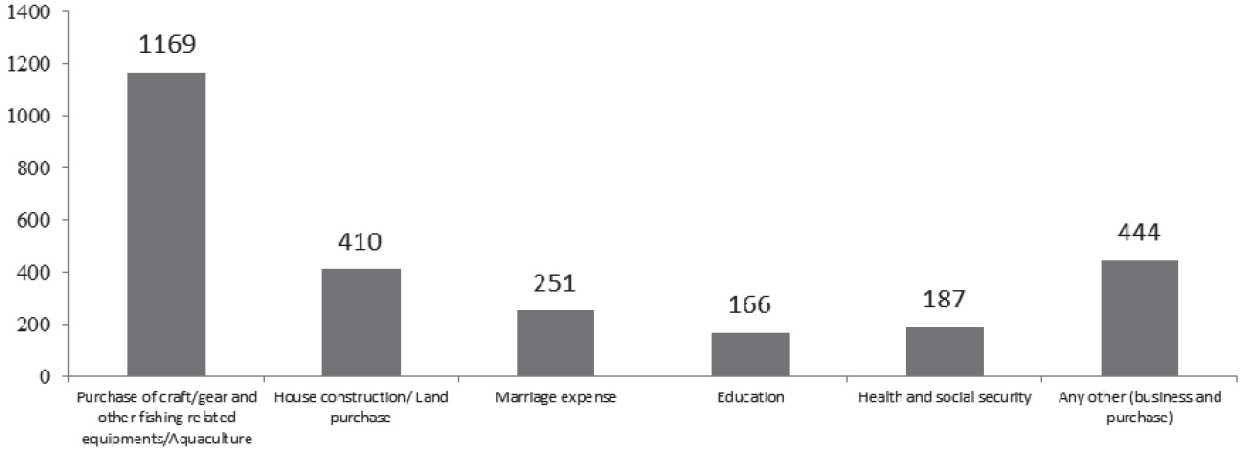

Figure 5. Purpose for availing loans (No. of respondents)

has been found to be 1.13 ranging from 1.04 in marketing and processing sector to 1.24 in the case of freshwater aquaculture fisheries sector. The average family size of fisher-households across different sectors has been found to be 4.56. The adult to child ratio was found to be 2.43 for the total samples. The male-female ratio of the adult group (>15 years) was found to be 1.10:1.00, whereas the same for the children (<15 years) was 1.14:1.00

The average literacy rate of the fisher households has been found to be 79.96 per cent. The literacy does not seem to be skewed towards any particular sector among fisher population. The analysis has indicated improved or increased access to educational facilities.

The health status of the households analyzed by the vaccination schedules for pox, BCG, MMR and polio among the fisher-households, has indicated that the vaccination regime was in tune with the recommendation of ICMR. The weights of most children at birth has been found to be normal with an average weight of 2.65 kg and the incidence of maternal and child mortality was minimal. The results have indicated that there exists considerable access to the primary health centre and hospital and the average distance to access the primary health centre was found to be 3.2 km and 10.4 km for hospitals.

Across different fishery sectors, monthly income was the highest in marine capture (₹ 8742), followed by brackishwater aquaculture (₹ 7505), marketing and processing (₹ 7027),Mariculture (₹ 6809), fresh water aquaculture (₹ 6166) and inland capture (₹ 2727) with an average of ₹ 6496 per month. It was found that in all the sectors, fishery had the maximum share in income.

A look at the different livelihood sources revealed that in fishery the income was the highest from marine

capture (₹ 6757), followed by marketing and processing (₹ 5865), fresh water aquaculture (₹ 4976), brackish water aquaculture (₹ 4768), mariculture /(₹ 4720) and was the least from inland capture (₹ 1365) sectors. The monthly income through labour, the second most significant livelihood sources, was the highest in mariculture (₹ 1785), followed by marine capture (₹ 957), marketing and processing (₹ 724), brackish water aquaculture (₹ 724) and inland capture (₹ 591). Income from agriculture was also significant to fishers in brackish water aquaculture (₹ 751 per month) and fresh water aquaculture (₹ 549 per month) and inland capture (₹ 322 per month). The monthly income through business was also significant for the fishers of brackish water aquaculture (₹ 846), marine capture (₹ 577) and inland capture (₹ 371) sectors.

The study has revealed that a significant number of total fisher-respondents (3255, 71.5%) were involved in non-fisheries activities, which provided an additional source of income. The major non-fisheries activities being undertaken were labour, agriculture and business. The economic security of respondent-fishers was measured in terms of savings and indebtedness. It was found that the average amount of indebtedness per household was ₹ 39,807. The average indebtedness amount was highest for marketing and processing sector (₹ 70643) and lowest for inland capture sector (₹ 21851). The major lending sources included banks, co-operatives, private money lenders, friends/relatives and jewellery mortgage. It was found that loans were being utilized for non-performing assets and were being spent for purposes other than those for which loans were sought.

Policy Options

The fishers in India are undergoing a transformation in terms of improvement in the social security measures which is evident through the improvement in the literacy standards, health profile, income and engagement in the different alternative avocations. It is heartening to note that the social security has improved considerably during the past two decades and is comparable with that of agricultural households in the country. However, there are issues of concerns in terms of increasing drop outs and migration towards other avenues. There also exists a huge scope of imparting training and skill development to alternative avocations so that the fishers could improve their income levels by involving in other activities including services sector. Indebtedness is one area where the fishers need improvement as non-institutional credit still has a significant role in the fisheries financing. There is an immediate need to promote microfinance enterprises like Self-Help Groups (SHGs) to help the fishers in addressal of their problem of indebtedness. There exists a huge potential in imparting training to fishers, particularly the young and women folk, on fisheries management and diversified enterprises including service delivery.

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