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Socio-economic Status of Gillnet Operators from Ratnagiri Block of Maharashtra State

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ABSTRACT

Gillnetting has been practiced for centuries worldwide and has experienced a remarkable surge in activity in recent times. Gillnets are regarded as highly selective fishing gear, making them one of the most appropriate methods for catching fish from a conservation and stock regulation perspective. In Ratnagiri, gillnet fishing is pivotal in small-scale fisheries and generates employment for the coastal people. Hence, it was necessary to study the socio-economic status of gillnet operators of Ratnagiri, Maharashtra. Therefore, an investigation on socio-economic status of gillnet operators of Ratnagiri, Maharashtra was done. The information was collected randomly from 113 respondents by using an interview schedule. By using descriptive statistics, the data were analysed. The results showed that a majority (69.03%) belonged to the middle age group with secondary education. Most were male (100%), married (95.58%), and owned gill net boats (100%). The study highlighted their housing conditions, family structure, and possession of assets. Gillnet operators faced health issues, and the major constraints included a lack of capital and poor ice supply. The average annual family income was ₹ 2,04,513, with savings at 46.54%. The profit gained from gillnet fishing was ₹ 3,12,092. The constraints faced by gillnet operators were lack of capital, price fluctuation, poor ice supply, spoilage during storage, high transportation cost, unhygienic market place, lack of government assistance. The study suggests targeted training programs for modern fishing techniques, financial education, and income diversification to address challenges and promote overall development in the region. Improved ice supply and storage facilities are also recommended for the fishing community.

Key Words: Block, Gillnet operators, Maharashtra, Ratnagiri, Socio-economic.

INTRODUCTION

The traditional fishing method of gillnetting, practiced for centuries worldwide, has experienced a remarkable surge in activity in recent times. Gillnets can be operated from boats and canoes on inland waters and inshore, decked small vessels in coastal waters, and medium-sized vessels fishing offshore. Gillnets are regarded as highly selective fishing gear, making them one of the most appropriate methods for catching fish from a conservation and stock regulation perspective (Thomas, 2003). The contribution of mechanized gillnet towards fishery in Maharashtra is 8% and had a catch rate of 291.1 kg/unit (CMFRI Annual Report, 2020).

The term socio-economic status (SES) refers to a measurement of a person's or a family's economic and social position in relation to others, based on a variety of factors including income, education, occupation, family affluence, physical assets, social position, social participation, caste, physical strength, political influence, etc (Reza *et al*, 2015).

The collection of socio-economic data focuses on the resources invested, the volume of fish caught, market interactions, and the gains and rewards for individuals involved in these endeavors. These socio-economic data form an integral part of a broader realm of knowledge, encompassing catch and effort data along with

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biological data. The objective of gathering socio-economic data was to evaluate economic effectiveness, cost patterns, livelihoods, employment, profitability, investment levels, financial obligations, subsidies, activity rates, demographic aspects, and ownership arrangements.

Ratnagiri district is one of the important coastal districts of Maharashtra with 167 km of coastline (Yadav *et al*, 2020). There are 46 fish landing centers and one minor fishing harbour is present in this district. Ratnagiri has a 66,685 total fisher folk population. The total number of fishing boats operating in Ratnagiri is 3038 out of which 2267 are mechanized and 771 are non-mechanized. Ratnagiri district has 71,620 fisher folks of which 35,957 are male and 35,663 are female. A total of 14416 active fishermen are residing in Ratnagiri district. The total marine fish production of Ratnagiri district was 65,374 tons during the year 2020-21 (Fish Production Report, Maharashtra; 2020-21). The main objective of the present study was to study the socio-economic status, health status, and constraints faced by the gillnet operators of Ratnagiri Block.

Though gillnet fishing plays pivotal role in Ratnagiri but many constraints were faced by the gillnet operators starting from the economic constraints to the health issues. Hence study of the socio-economic status of fishermen was important because it helps in assessing their income sources and economic contributions, informing sustainable fishing practices and resource conservation, designing targeted policies to address specific needs and challenges, evaluating the impact of fishing practices on the ecosystem. The present study was an attempt to understand the socio-economic status of gillnet operators of Ratnagiri, Maharashtra.

MATERIALS AND METHODS

The study was conducted at the coastal Ratnagiri block, which is located in the Ratnagiri district of Maharashtra on the west coast of India and is situated between 17°18'38.69"N latitude and 73°11'38.14"E longitude and 16°48'24.76"N latitude and 73°18'48.85'E longitude. From the Ratnagiri block, five villages— Kasarveli, Purnagad, Varavade, Mirkarwada, and Rajiwada were chosen for the study.

Random sampling (Snedecor and Cochran, 1967) was used to gather information from each of the study areas. Data related to personal information (Gender, Religion, Category, Age, Education, Marital status, Employment, Occupation, Family size and type, Experience in occupation, Ration card, etc) and constraints was collected by using an interview schedule. The data were collected through face-to-face interviews. The interview schedule was prepared as per McGoodwin (2001) and a formulated interview schedule was used for collecting the socio-economic data of gillnet operators. The present study employed an Interview schedule as the main data collection tool. The respondents for data collection in the present study were the gillnet operators of Ratnagiri block. The data were analyzed by descriptive statistics.

Constraints were analyzed using the weighted average Kant *et al* (2015), Shehrawat *et al* (2016), and Yadav *et al* (2017). Additionally, percentage and frequency distribution were used for the analysis of the data. Statistical analysis was carried out by using Microsoft Excel.

RESULTS AND DISCUSSION

The information related to the profile of gillnet operators was collected and presented in the Table 1. It was observed that the middle age group (40-60 yrs) was dominating with a percentage of 69.03, whereas the young age group (<40 yrs) was 23.89 and the old age group (> 60 yrs) was minimum i.e. 7.07% in the study area. Similar results were found by Baruah and Deka (2016) reported that about 52% of respondents were in the middle age group (31-40 yrs) and a mere 4% were in the old age group (51-60 yrs).

Majumder (2018) studied on socio-economic conditions of fishermen of North-East coastal region of India and Reza *et al* (2015) studied socio-economic and livelihood status of fishermen around the Atrai and Kankra Rivers of Chirirbandar Upazila under Dinajpur District,

Table 1. Profile of gillnet operators along Ratnagiri coast.

Sr. No.	Profile of gillnet operator	Categories	Numbers	Percentage
1	Age(Years)	Young age (<40)	27	23.89
		Middle age(40-60)	78	69.03
		Old age(>60)	8	7.08
2	Education	Illiterate	1	0.88
		Can only sign	3	2.65
		Primary	29	25.66
		Secondary	57	50.44
		SSC	16	14.16
		HSC	5	4.42
		Graduate	1	0.88
		ITI	1	0.88
3	Religion	Hindu	41	36.28
		Muslim	72	63.72
4	Category	OBC	80	70.80
		SBC	33	29.20
5	Marital status	Married	108	95.58
		Unmarried	5	4.42
6	Family type	Nuclear	33	29.20
		Joint	80	70.80
7	Experience inoccupation (years)	< 10 years	17	15.04
		10 to 20 years	70	61.95
		> 20 years	26	23.01
8	House details	Own	111	98.23
		Rental	2	1.77
9	Number of rooms	Two	53	46.90
		Three	48	42.48
		Four	10	8.85
		Five	1	0.88
		Six	1	0.88
10	Extrinsic factors			
	a) Membership	Fishermen cooperative society	99	87.61
		Gram panchayat	6	5.31
		Religious committee	7	6.19
		Bhajani mandal	6	5.31
	b) Indebtedness	Indebted	21	18.58
		Unindebted	92	81.42

Bangladesh and reported that all the respondents (100%) were male. It was observed that cent percent (100%) of the respondents were male.

It was also observed that most gillnet operators (50.44%) had received education up to the secondary level followed by primary level education (25.66%). Similar results were found by Asif and Habib (2017) studied socio-economic condition of fishermen of Jhikargachha upazila in Jessore district, Bangladesh and reported that 42% had secondary level education and 36% had primary level education. Kumari and Sharma (2022) also reported that majority of the fishers were educated up to secondary level followed by primary, higher secondary and graduation.

A majority of gillnet operators (63.71%) in Ratnagiri block were Muslim and 36.28% were

Hindus. Similarly, Haque *et al* (2019) studied socio-economic conditions of Atrai River Jolkor fishermen community in Naogaon district of Bangladesh and reported that 86% were Muslims and 14% were Hindus.

The present study indicated that OBCs were dominating with a percentage of 70.80%, whereas SBCs were around 29.20% in the study area. Similar results found by Devi *et al* (2012) studied socioeconomic and cultural profile of fishers around the Loktak lake of Manipur, India and reported that 66% were under OBC.

The study revealed that 95.58% of gillnet operators were married and about 4.42% of gillnet operators were unmarried in the study area and similar results were reported by Bera and Maity (2023) and Arefin (2015).

The results revealed that about 70.80% of the family of gillnet operators were joint type and 29.20% were nuclear type in the study area. Similar observations were found by Bhendarkar *et al* (2017) in his study the profile of the socio-economic condition of fishermen in selected villages in Kabirdham district, Chhattisgarh state, India observed that 64% of fishermen had joint families and 36% of fishermen had nuclear families. Barua *et al* (2022) studied socio-economic condition of the indigenous fishermen in and around an artificial lake for Bangladesh and observed that 21% of tribal fishermen had nuclear families and 79% had joint families.

It was observed that 61.54% of the gillnet operators had 10-20 years of experience in fishing, followed by 23.01% of gillnet operators were having >20 years of experience and 15.04% of gillnet operators having < 10 years of experience. Similarly, Patilkhede *et al* (2017) studied socio-economic profile of fishermen in coastal Konkan region of Maharashtra and observed that 38.85% of fishermen had 11 to 20 years of experience, 38.33% had more than 20 years of experience, 21.67% had 6 to 10 years of experience and 1.25% had less than 5 years 50 of experience.

The proportion of gillnet operators who had their own house were 98%, while those who had rented houses were 2%. The results of the present study are similar to the results obtained by Khode (2018). In the present study, a greater proportion of the respondents were residing in their own pucca houses, which indicates their better earning from the occupation over the period.

Further, percentage of gillnet operators had two rooms (46.90%). About 42.48% of gillnet operators had three rooms and 8.85% had four rooms. Very few gillnet operators had five (0.88%) and six (0.88%) rooms. Similar observations were found by Waskar (2008) and Khode (2018).

Membership in societies

Majority of the gillnet operators (87.61%) had membership in the fishermen's cooperative society in the present study. Some were having membership in gram panchayat and bhajani mandal. The percentage recorded for Gram panchayat and Bhajani mandal was 5.31%. Gillnet operators having membership in religious committees were 6.19%. similar results found by Toraskar *et al* (2020) studied socio-economic status of rampan operators of Sindhudurg district of Maharashtra and observed that 56.63% of rampan operators were affiliated with the fishermen co-operative society, while 0.82% were associated with the Gram-panchayat and 0.27% were affiliated with the Gram vikas mandal.

In the present study, most of the gillnet operators were indebted and the percentage for this was 81.42% similar results observed by Waskar (2008) and Toraskar *et al* (2020). Reza *et al* (2015) studied socioeconomic and livelihood status of fishermen around the Atrai and Kankra Rivers of Chirirbandar Upazila under Dinajpur District, Bangladesh and have reported that a substantial proportion of the fishers, precisely 64%, have acquired loans from various non-governmental organizations, whereas 36% of them have relied on their credit.

Economic Status

The economic analysis of gillnet operators was presented in the Table 2. The capital cost includes the vessel cost, cost of engine, net, rope, indicator buoys, floats, sinkers, crates and anchors. It was found that percentage investment on vessel was 71.75% while the cost of net was 10.33%, cost of engine was 9.72%, 2.32% sinkers,

Table 2 Economic analysis of gillnet operators.

Sr. No.	Particular	Amount	Percentage
A	**Capital cost**		
1	Vessel	2,03,540	71.75
2	Cost of engine	27,566	9.72
3	Net	29,292	10.33
4	Rope	3,204	1.13
5	Indicator buoys	1,080	0.38
6	Floats	3,876	1.37
7	Sinkers	6,540	2.31
8	Crates	3,655	1.29
9	Anchors	4,920	1.73
	Total capital cost	2,83,673	100.00
B	**Variable cost**		
1	Basket	1,073	1.95
2	Paint	1,345	1.61
3	Maintenance of gillnet	611	0.73
4	Maintenance of engine	3,584	4.28
5	License fee	3,690	4.41
6	Custom pass	500	0.60
7	Fuel	3,372	4.03
8	Ice	12,142	14.51
9	Oil	2,345	2.80
10	Crew salary	55,044	65.76
	Total variable cost	83,706	100.00
C	**Total project cost (A+B)**	3,98,706	
D	**Fixed cost**		
1	Depreciation on capital cost@ 10%	28,367	
2	Interest on capital cost@ 12%	34,041	
3	Interest on variable cost@ 12%	10,045	
	Total fixed cost	68,229	
E	Total cost(B+D)	1,51,936	
F	Revenue	4,64,028	
G	Profit or loss(F -E)	3,12,092	

1.73% anchors, 1.13% rope, 1.37% floats, 1.29% crates 0.38% indicator buoys. Total variable costs included the cost for basket (1.95%), paint (1.61%), maintenance of gillnet (0.73%), maintenance of engine (4.28%), license fee (4.41%), custom pass (0.60%), fuel (4.03%), ice (14.51%), oil (2.80%), crew salary (65.75%). The total fixed cost included the depreciation on capital cost @ 10%, interest on capital cost @ 12%, and interest on variable cost @ 12%. The total fixed cost was found to be ₹65,105. The total cost was found to be ₹1,51,936. The revenue calculated was ₹4,64,028. The profit gained was ₹3,12,096. Analysis of cost and return showed that the operation of gillnet operators was profitable for gillnet operators along the Ratnagiri coast. Similar results were reported by Wasave *et al* (2018) and Gautam *et al* (2020) while studying the socio-economics of fish retailers of Ratnagiri area of Maharashtra and fish farmers of Uttar Pradesh, respectively and stated that they were earning around 1,50,000/- as profit per annum. Guguloth *et al* (2018) reported that over 85% of the respondents reported that they save annually from their income, while the remaining 15% indicated that they do not engage in any annual savings. Dar *et al* (2017) studied the Economics of OBM Gill Netters along the Jaleshwar Coast, Veraval, Gujarat, India and revealed that the capital cost of a single OBM gillnetter was ₹3,33,379 and the

Table 3. Constraints faced by gillnet operators.

Sr. No	Constraint	Weighted average	Rank
1	Lack of capital	1.49	1
2	Price fluctuation	1.43	2
3	Poor ice supply	1.42	3
4	Spoilage during storage	1.31	4
5	High transportation cost	1.19	5
6	Unhygienic market place	1.13	6
7	Lack of government assistance	0.94	7

variable cost was ₹ 1,07,568. Fixed cost inclusive of depreciation was Rs. 59,848. revenue of OBM gillnetter was ₹1,52,778.43 respectively. The annual loss found to be ₹ -14,638. But the researcher also stated that this was incurred considering the initial investment in terms of capital cost at the end of first year, however second year onwards the OBM gillnetters were profitable.

CONSTRAINTS

Major constraints faced by gillnet operators were lack of capital (weighted average score 1.49), price fluctuation (weighted average score 1.43), poor ice supply (weighted average score 1.42), spoilage during storage (weighted average score 1.31), high transportation cost (weighted average score 1.19), unhygienic market place (weighted average score 1.13), lack of government assistance (weighted average score 0.94). Similarly, Reza *et al* (2015) observed that the main problems faced by the fishermen were depletion of fish stock and catch, lack of financial ability, inadequate credit facilities and financial support, lack of training facilities, vandalism i.e. theft of boats, and nets, low fish price etc.

CONCLUSION

The study on the socio-economic status of gillnet operators from Ratnagiri block of Maharashtra showed that as most of the gillnet operators were educated up to secondary level education there is a need for targeted training programs to give knowledge about modern fishing techniques and sustainable practices. This training program should also include financial literacy as a major constraint observed was a lack of capital. This training program will help them to manage their credit and finance. The gillnet operators should diversify their income sources this will help them during the low catch and market fluctuations. The ice supply infrastructure should be improved to avoid spoilage during storage and cold storage facilities should be enhanced to maintain the freshness of fish. There is need to plan certain schemes to uplift the socio-economic status of gillnet operators by minimizing the constraints faced by them.

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