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Socio-economic status of fishers in Dal Lake, Kashmir, India

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Abstract

The study investigates the socio-economic status of the fisher community of Dal Lake, which is the second largest lake in district Srinagar of Jammu and Kashmir. The data for the study was collected through a structured interview schedule from 180 respondents from 3 fishing villages located on the periphery of Dal Lake. The results revealed that 63.3% of the fishers belonged to middle age group (35-59), dominated by the male folk (88.9%) and 97.8% were married. The majority of the respondents had no formal literacy (78.9%) and most of them were living in nuclear families (56.7%) with less than 4 family members. The income status of the respondents revealed that 65.6% of them earned a low monthly income from fishing (< Rs. 15000) and the average monthly income per household was Rs. 13,393. The study found that 96.7% of the respondents had own boats and cast net was the dominant gear being used in Dal Lake. It may be surmised that the fishing community was living on the margins, getting very less attention from the government and other developmental organizations. State fisheries department, together with tourism and agriculture department, shall take measures to strengthen the livelihoods of fishers in Dal Lake following a consultative process.

Keywords:

Dal lake, Srinagar, fishers livelihood, fishing community, socio-economic profile

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Introduction

The fisheries sector plays an important role in the socio-economic development of the fishermen community (Islam *et al.*, 2013; Galib *et al.*, 2016; Hanif *et al.*, 2019,) and serves as the oldest economic activity of the human race (Kumbhar, 2017). According to the International Collective in Support of Fishworkers, the fisheries sector is an essential source of livelihood for millions of people worldwide (ICSF, 2010). Fisheries and aquaculture is one of the fastest-growing industry in the world (Tacon, 2020) and has been playing a significant role in economic development by contributing to the national income, employment opportunities, food and nutritional security, as well as livelihood generation (Kumar and Shivani, 2014). It is the primary and cheapest source of animal protein for billions of people worldwide and serves the livelihoods of more than 10% of the global population (FAO, 2020).

Fisheries sector contributes significantly to the Indian economy by providing livelihood to approximately 14.49 million people (Sabu and Shajumon, 2014). The fisheries sector plays a vital role in boosting the Indian economy by contributing to the national income, employment generation, and foreign exchange earnings (Bhargavi *et al.*, 2020). It is estimated that more than 12 million people are directly engaged in fishing activities and about 60 million are exclusively dependent on fisheries activities for livelihood in India (Rao *et al.*, 2016; Bhargavi *et al.*, 2020). Fishermen are one of the most vulnerable communities by any standard over the years, and most of them live from hand to mouth (Ali *et al.*, 2014).

The Union Territory of Jammu and Kashmir (J & K) is blessed with abundant water resources. Jammu and Kashmir, have about 1248 water bodies, consisting of rivers and canals, reservoirs, tanks and ponds, floodplains, and derelict water bodies (DAHDF, 2017). Fishing is a growing sector in the economy of Jammu and Kashmir, which has been registering consistent growth during the past decades (FAO, 2008) and plays a significant role in the livelihood security of fisher folk (Qureshi and Krishnan, 2015; Atufa et al., 2023). Kashmir fisheries form an important component of the national fisheries, with the Valley being the largest producer of cold-water fish in the country with a total fisher folk population of 93000 (Bhat, 2016).

Dal Lake is an urban lake and is the second largest lake in the state, playing an essential role in the economy through its tourist attraction and as a source of food and water (Mir et al., 2022; Qureshi et al., 2023). Sir Walter Lawrence described the lake as Lake Par-Excellence and is considered as the “liquid heart” of Srinagar. The lake is an essential source of livelihood for the people involved in fisheries, tourism and vegetable production and marketing. Nine fish species of commercial importance have been reported in Dal Lake, with *Cyprinus* and *Schizothorax* being the dominant genera (Ahmed et al., 2017). Besides a main source of fish, the lake also provides vegetables, Nadroo (*Nelumbo nucifera*), rhizomes, fodder, water, etc. Once potable, the water quality of the lake has deteriorated (Jeelani and Shah, 2006), reflecting the aggregative impact of many anthropogenic activities such as sewage influx from houseboats, agricultural runoff, encroachment and population pressure (Qadri and Yousuf, 2007; Khan et al., 2012; Salem and Jeelani, 2017) which is a matter of grave concern for the fishers living around the vicinity of the lake. The fisher folk of Kashmir valley is the marginalized section of the society, which are prone to various shocks and seasonality trend because of their poor socio-economic conditions (Mir et al., 2022), more sensitivity, and less adaptive capacity (Mir et al., 2023). The population of the indigenous *Schizothorax* fish species of the lake has declined considerably due to high pollution, siltation in water bodies and the introduction of common carp species (Qureshi et al., 2016; Shakir, 2019; Mir et al., 2022). Besides this, the fishers are entirely dependent on the lake fisheries for their livelihood, and there is an absence of any alternative livelihood option. The present study was conducted to understand the socio-economic status and livelihood of the fishers living in the periphery of the lake and understand their problems and difficulties so that practically possible solutions can be provided.

Methodology

The present study was conducted in Dal Lake, which is located in Srinagar-the capital city of Jammu and Kashmir. Dal Lake, is one of the largest lakes in Jammu and Kashmir, which has received much attention

worldwide and is regarded as one of the most beautiful tourist spots in the world (Qureshi et al., 2023; Mir et al., 2022). It is a sub-Himalayan urban lake and the second-largest lake in Jammu and Kashmir. The lake is located in the heart of Srinagar (34°07'N Latitude and 74°52'E Longitude) at an average altitude of 1583 m with a catchment area of 316 km² (122 sq. miles) and a maximum depth of 6 m (Qadri et al., 2007). The lake plays an essential role in the sustaining a large population spread around the lake (Census of India 2001). Dal Lake plays a key role in supporting the human population through its floating vegetable gardens, houseboats, Nadroo (lotus stem), fishes and fodder (Shakir, 2019).

There are ten fishing villages on the periphery of the lake, with 880 total registered fishers. Among them, Tailbal, Fisherman Colony (FMC) Habak and Dobighat villages were purposively taken having 125, 110 and 118 registered fishers, respectively, because of more number of fishers and a high degree of involvement in fisheries activities (DoF, 2023). A total of 180 fishers were selected using the snowball sampling technique, with 60 fishers from each village. The data was gathered from fishers using a structured interview schedule and discussions with key informants were also held. Frequency, percentage analysis and Kruskal-Wallis t-test were used to describe and compare various parameters among the fishing villages.

Kruskal-Wallis test statistics:

$$H = \left\{ \frac{12}{n(n+1)} \sum_{j=1}^c \frac{T_j^2}{n_j} \right\} - 3(n+1)$$

Where:

n = sum of sample sizes for all samples

c = number of samples

T_j = sum of ranks in the j^{th} sample

n_j = size of the j^{th} sample

To find out the most significant problem which influences the fishers, Garrett ranking technique was used. As per this method, respondents were asked to assign the rank for all factors and the outcomes of such ranking have been converted into score value with the help of the following formula:

$$\text{Rank} = \frac{(R_{ij} - 0.5)}{N_j} 100$$

Where R_{ij} = Rank given for the i^{th} variable by j^{th} respondents

N_j = Number of variables ranked by j^{th} respondents

Results and discussion

Social profile of Dal Lake fishers

Table 1. Social profile of fishers

Variable - Categories	Number of respondents (n=180)	Percentage
Gender		
Male	160	88.9
Female	20	11.1
Age		
Youth (<35)	48	26.7
Middle (35-59)	114	63.3
Old (>59)	18	10
Education		
Illiterate	142	78.9
Primary	8	4.4
Secondary	22	12.2
Higher secondary	6	3.3
Graduation & above	2	1.1
Marital status		
Married	176	97.8
Unmarried	4	2.2
Family type		
Joint	78	43.3
Nuclear	102	56.7
Family size		
Less than 5	102	56.7
Greater than 5	78	43.3

Gender

Among the fishers, 88.9% were male and 11.1% were female (Table 1). This was an unintended consequence as during the household survey, males being the head of the household and were mainly involved in fish catching activities while women were rarely involved in fishing, but their main role was in marketing the fish.

Age

The age profile of fishers depicts that they belong to different age groups. Among them, 63.3% belonged to the middle age group, i.e., 35-59 years (Table 1). About 10% of the fishers were found working in the old age group (>59 years), whereas the rest belonged to the young age group (<35 years). The mean age of the respondents is 44.64 years. Tailbal village had more middle-aged fishers whereas Fisherman Colony Habak

had younger fishers involved in fishing. In their studies, Islam *et al.*, (2013), Habib and Jan (2021) and Khemraj *et al.*, 2022 obtained similar results where majority of the respondents were from the middle age group. Bhargavi *et al.*, (2020) also reported that 61.6% of the respondents belonged to the age group of 31-56 years.

Education

The educational status reveals that the majority (78.9%) of fishers had never attended formal schooling and were illiterate, whereas only 12.2% of the respondents had secondary education (Table 1). The mean years of schooling of fishers was 2.4. In their respective studies, Islam *et al.*, (2013) and Habib and Jan (2021) reported a similar result, where they reported that most of the fishermen were illiterate. Saxena *et al.*, (2014) also revealed that 80% of respondents were illiterate. Khemraj *et al.*, (2022) in their study found that 69% of the fishers never attended school and also could neither read nor write.

Marital status

In the case of marital status, 97.8% of the respondents were married and the remaining 2.2% were unmarried (Table 1). It could be noted that the vast majority of the respondents in the study area were married. A similar study was done by Akhter *et al.*, (2017), who found that 77% of the respondents were married, while Habib and Jan (2021) found that 56.66% of the respondents were married.

Family type and size

The family details of the respondents revealed that 43.3% of the households lived in a nuclear family and 56.7% were living in a joint family (Table 1). However, 56.7% of households were having family size of more than 5 members. Habib and Jan (2021) reported that 48.66% of the respondents lived in nuclear families, the remaining 51.33% lived in joint families, and 66% lived in large families comprising 6 to 7 members. Baki *et al.*, 2015 and Khemraj *et al.*, 2022 in their study found that the majority of the respondents (46%) lived in a family of 5 to 7 members.

Sub-caste and community

Out of the total respondents from the lake, only 7.8% respondents were from Schedule Caste as they belonged to Shiekh caste, while the rest were from the Dar caste (general). Of the total fishers, 92.2% come under the general category (Dar); however, only 7.8% of respondents from Dal Lake were from Schedule Caste (SC).

Table 2. Kruskal-Wallis test of significance for age and education among fishing villages

Variables	Fishing villages		
Age	Tailbal	Dobighat	FMC Habak
	$\bar{X}$ =45.97	$\bar{X}$ =45.46	$\bar{X}$ =42.71
Education	Not Significant		
	$\bar{X}$ =36.73	$\bar{X}$ =47.37	$\bar{X}$ =52.40
	p=<0.05		

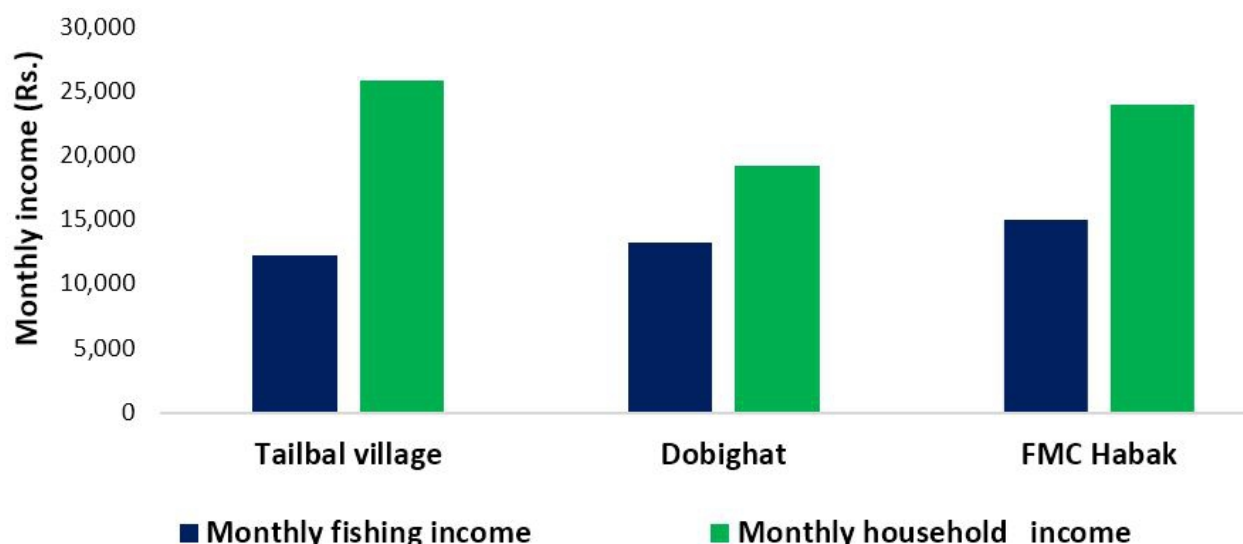


Fig 1. Average monthly fishing and household income of fishing villages

The results of the Kruskal-Wallis test in table 2 reveals that there is no significant difference in terms of age among the different fishing villages. However, there was a significant difference in the education of respondents, with the maximum score for FMC Habak followed by Dobighat and less in Tailbal village.

Economic profile

All the respondents were full-time fishers, besides fishing they mend their own nets and repair their boats. Most of the fishers were not involved in any secondary activities; however, only 21.1% of respondents were involved in some additional activities ranging from casual labour, mechanic, cook, driver and salesman.

Monthly income of fishers

Monthly income of Dal Lake fishers is depicted in figure 1. The study depicted that 65.6% of the fishers have low fishing income (< Rs. 15,000), and more than 25% of fishers have medium fishing income (Rs. 15,000–30,000). The monthly income of the Dal Lake fishers from fishing activities ranges from Rs. 6000–32,000; however, the average monthly income was Rs. 13,393 per household. The average monthly income from fishing and other activities ranges from Rs. 7000–36,000, with an average income of Rs. 18,877 monthly. Shiekh and Goswami (2013) and Habib and Jan (2021) in their studies reported a majority of the fishers have monthly income of less than Rs. 10,000

Figure 1 shows that in all fishing villages, the overall income was more than the fishing income, possibly because of their involvement in other activities besides fishing. Among the fishing villages, FMC Habak had a higher monthly income than other fishing villages, primarily because of the joint family system and involvement of the various family members in fishing activities.

Social participation

Preliminary enquiries with Department of Cooperative, J&K has revealed that there is a Solomon

Fish and Aquatic Plant Product Producers and Consumers Co-operative Limited in Srinagar with 18 members. The cooperative society is not working properly and is in a state of dormancy, these results are in agreement with the finding of Gautam *et al.*, (2018). Besides this, the fishers have established small fishermen unions at the village level and most of the fishers were members of these unions with a majority of the respondents participating in the union activities monthly. As these unions are being established at the village level, the leader of the union is selected from the same village community by the union members. Out of the total respondents, more than 70% of respondents in all the villages were members of such unions. Even after the establishment of the union in the community, most of the fishers occasionally participated in the union and majority (74.4%) were not satisfied with the functioning and services of the union activities (Table 3).

Table 3 also depicts that 85.6% of the respondents had contact with the Department of Fisheries (DoF) for availing different schemes and for regular renewal of licenses. Only 23.3% of fishers have contacted the local officers of the municipality in Dal Lake, however; more than 50% of the fishers have contact with the bank staff, even though the major credit sources of fishers were relatives and friends. The reasons for not approaching the bank for any credit were high-interest rates, absence of collateral and cumbersome procedure for taking loan.

Fishing experience

Table 3 depicts that 36.7% of fishers had fishing experience of 10–20 years and 36.7% had experience of 20–30 years. However, 24.4% of the fishers had more than 30 years of fishing experience and the average fishing experience of fishers been 25 years.

Craft and gear ownership

Most fishers had their own craft, locally called as shikara. It is a wooden boat made from the wood of the

Table 3. Social participation, fishing experience and ownership of fishing crafts and gears

Variable	Categories	Number of respondents (n=180)	Percentage
Membership	Fishermen Union	136	75.6
	No membership	44	24.4
Degree of participation	Fortnightly	12	8.9
	Monthly	82	60.3
	Occasionally	34	25
	Yearly	4	2.9
	No participation	4	2.9
Benefits from fishermen union	Social benefits	50	27.8
	Economic benefits	12	6.7
	No benefits	118	65.6
Satisfaction level from union activities	Satisfied	46	25.6
	Not satisfied	134	74.4
Extension system contact of fishers	DoF staff	154	85.6
	Local officer	42	23.3
	Bank staff	104	57.8
Experience in fishing	<10 years	4	2.2
	10-20 years	66	36.7
	20-30 years	66	36.7
	> 30 years	44	24.4
Craft (Shikara) ownership	Yes	174	96.7
	No	6	3
Gear ownership	Cast net	76	42.2
	Longline	8	4.4
	Cast net + Gillnet	32	17.8
	Cast net + Longline	36	20
	Cast net + Gillnet + Longline	26	14.4

Deodar tree. On average, the shelf life of a shikara is 15-25 years, depending upon the type of wood and maintenance. Almost all the fishers operate cast nets for fishing. It is a throwing type of gear with a weight of about 8-12 kg. However, fishers use various gear combinations to catch maximum fish from the lake, including cast net, long line and gill net (Table 3). Ragavan et al., (2016) in their study reported that the majority of the fishers have their own boat while the rest are shared with others.

Credit and debt among fishers

Figure 2 depicts that 53.3% of fishers have debt, and the major source of the finance is friends and relatives. Due to the lengthy procedure of procuring loans from banks, lack of collateral, high-interest rate and rigid repayment procedure, most fishers preferred to take financial assistance from friends and relatives or traders. The average credit amount taken by the respondents was Rs. 32,000 and most fishers have taken the credit to meet family expenses like food, clothes, housing etc. However, 12.5% of the fishers

have taken the loan for procuring different inputs for fishing, like boat material, twine, fishing tubs etc. the rest of the respondents have taken loans for their personal use. Qayoom et al., (2019) also reported that most fishers had taken credit for either meeting their livelihood expenses, marriage of their kin, building a house or purchasing gear or craft for fishing.

Role of fisherwomen in various activities in Dal Lake

Figure 3 shows the various roles performed by the fisherwomen in different activities and reveals that in the case of money management in Dal Lake, almost half of the women were involved in the initiation, and the rest half were involved in the decision of spending money in various activities; however, there was no role of women in implementation. Most women in the household were responsible for their children's education, and 45% of women were involved in its implementation, meaning they had to initiate, decide and implement various steps for their children's education. Similarly, in the case of marriage, social actions and fishing, women played a major role in

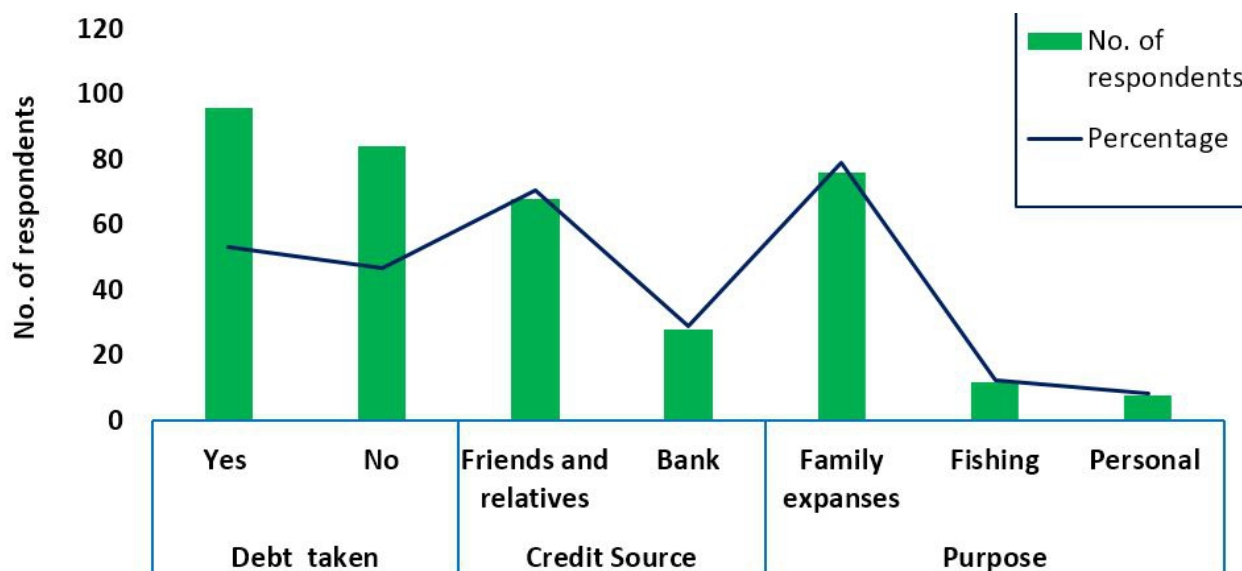


Fig. 2: Details of debt, source and its purpose

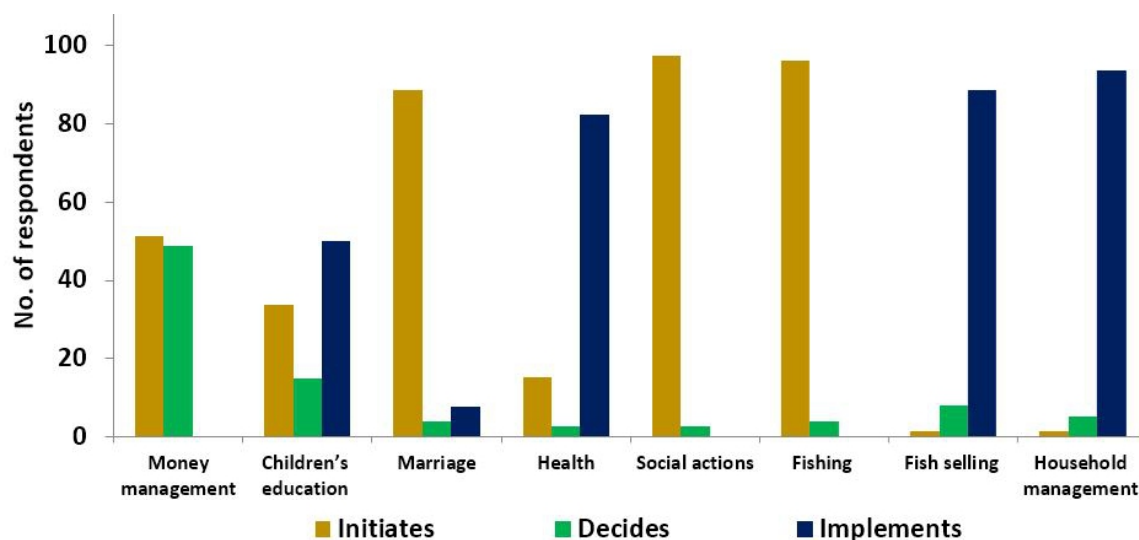


Fig 3. Women's role in various activities in Dal Lake

initiating of these activities. However, in the case of health, fish selling and household management, women played a significant role in implementing these activities (Naila, 2020).

Problems faced by fishers

The various problems faced by the fishers in their day-to-day life were listed and were ranked on the basis of their perception using Garret ranking method. The results are shown in the Table 4 and it can be revealed

that the major problem faced by the fishers is low income from fishing activities depicted by highest Garret score of 65.11, followed by financial problem with a Garret score of 55.94. Problems regarding gear and craft material were given third rank as the fishers were not getting any assistance from government in procuring the material for boats and nets. Conservation measure got least score depicting that it is not a major problem from fishers' perspective as most of them were trying to get the maximum catch from the lake waters.

Table 4. Problems faced by the fishers

S. No.	Problems faced by the fishers	Garret score	Garret Rank
1	Low income through fishing	65.11	I
3	Financial problem (access to credit, no collateral, rigid credit procedures)	55.94	II
2	Problems regarding gear and craft material	51.89	III
4	Poaching and other social problems	48.06	IV
5	Conservation measures (closed season, mesh size)	28.5	V

Conclusion

Dal Lake is a famous tourist destination and an essential source of fish and livelihood for the people. The socio-economic condition of the fisher community in the lake was deplorable and miserable. Fishing is the prime source of livelihood for them, and most of the fishers are not involved in activities other than fishing. One of the major problems that fishermen encountered was a lack of other means of livelihood. The main concern of the fishers was low fishing income, which was followed by difficulties in financial facilities. The conditions are getting more severe in winter when the fishers cannot go out for fishing because of sub-zero temperatures. The government's very meagre support led to poor socio-economic development in the area as they are not given due consideration while formulating any government programme or policy. The monthly income of fishers was comparatively lower than the national per capita income. On comparing the income of fishers with the income of rural households as per the Suresh Tendulkar report of India 2009, the fisher community of Dal Lake has less income. Proper government support and providing alternate livelihood to the fishers will help to improve their socio-economic conditions.

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Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Ahmed, I., Ahmad, Z. and Ahmad, I., 2017. Current status of fish fauna of river Jhelum and Dal Lake of Kashmir Valley. *Bulletin of Pure & Applied Sciences-Zoology*, 36(2), pp.85-92.
- Akther, S., Saha, S., Hossain, A. and Nazrul, M., 2017. Livelihood Strategies of Riverine Fishing Communities of the River Padma near Rajshahi City Corporation. *International Journal of Fisheries and Aquatic Studies*, 5(2), pp.195-199.
- Ali, H., Azad, M.A.K., Anisuzzaman, M., Chowdhury, M.M.R., Hoque, M. and Sharful, M.I., 2009. Livelihood status of the fish farmers in some selected areas of Tarakanda upazila of Mymensingh district. *J. Agrofor. Environ.*, 3(2), pp.85-89.
- Altaf, M., 2019. Socio economic status of fishermen community, south Punjab, Pakistan. *Punjab University Journal of Zoology*, 34(2), pp.115-118.
- Atufa, R., Ananthan, P.S., Balkhi, M.U.H. and Gul, S., 2023. Interdisciplinary assessment of fisheries sustainability in Wular Lake, India. *Fisheries Management and Ecology*, 30(3), pp.284-299.

- Baki, M.A., Islam, M.R., Hossain, M.M. and Bhuiyan, N.A., 2015. Livelihood status and assessment of fishing community in adjacent area of Turag-Buriganga River, Dhaka, Bangladesh. *International Journal of Pure and Applied Zoology*, 3(4), pp.347-353.
- Bhargavi, K., Chirwatkar, B.B., Das, A., Behera, S. and Bhakta, D., 2020. Socio-economic status of fisherwomen community in coastal Vizianagaram district of Andhra Pradesh, India. *Journal of Fisheries*, 8(1), pp.741-745.
- Bhat A.A., (2016). Fisheries in Kashmir: shrinking breeding grounds declining production. Greater Kashmir. 23 December. Available at greaterkashmir.com
- Bunkar, K., Ananthan, P.S., Qureshi, N.W., Sharma, L.L., and Sundaramoorthy, C., 2022. Human development of small-scale fishers: Evidence from Rana Pratap Sagar reservoir region, India. *Journal of Indian Fisheries Association*, 48: pp.61-69.
- DADHF (2017) Department of Animal Husbandry, Dairying and Fisheries. <https://www.dahd.nic.in> 2019.
- DoF (2023) Department of Fisheries, Jammu and Kashmir, India. <http://jkfisheries.in>.
- FAO (2008) The state of world fisheries and aquaculture. Food and Agricultural Organization of the United Nations, Rome, Italy.
- FAO (2020) The state of world fisheries and aquaculture. Sustainability in action. Food and Agriculture Organization of the United Nations, Rome, Italy. 244 pp.
- Galib, S.M., Hoque, M.N., Akter, S., Chaki, N. and Mohsin, A.B.M., 2016. Livelihood, climate change and fisheries: a case study of three fishing communities of North Western Bangladesh. *International Research Journal of Social Sciences*, 5(8), pp.18-25.
- Gautam, P., Ananthan, P.S., Ramasubramanian, V., Sharma, A. and Jha, B.C., 2018. Assessment of fisheries and management in Rihand reservoir, Uttar Pradesh. *Current Agriculture Research Journal*, 6(3) pp. 378-389
- Habib, N. and Jan, S., 2021. Socio-economic status of fishermen community of Wular Lake in district Bandipora of Jammu and Kashmir. *Journal of Fisheries*, 9(3), pp.93205-93205.
- Husain, N., Balkhi, M.H., Bhat, T.H. and Dar, S.A., 2016. Socio-economic status of fishermen in district Srinagar of Jammu and Kashmir. *Social Sciences*, 5(01), p.2016.
- ICSF (2010) Women fish vendors in India - an information Socio-economics of Wular Lake fishing community J Fish; Habib and Jan BdFISH Publication | journal.bdfish.org Page 6 of 6 Volume 9 | Issue 3 | Article 93205 booklet (draft for comments). International Collectives in Support of Fish Workers, Chennai.
- Islam, M.R., Hoque, M.N., Galib, S.M. and Rahman, M.A., 2013. Livelihood of the fishermen in Monirampur Upazila of Jessore district, Bangladesh. *Journal of Fisheries*, 1(1), pp.37-41.
- Jeelani, G.H. and Shah, A.Q., 2006. Geochemical characteristics of water and sediment from the Dal Lake, Kashmir Himalaya: constraints on weathering and anthropogenic activity. *Environmental Geology*, 50(1), pp.12-23.

- Khan, J.A., Gavali, R.S. and Shouche, Y.S., 2012. Exploring present status of hydrochemistry and sediment chemistry of Dal Lake, Kashmir and effect of anthropogenic disturbances on it. *Indian J Innov Dev*, 7, pp.554-571.
- Kumar, S.T. and Shivani, P., 2014. Marine fisheries; its current status, sustainable management and socio-economic status of the marine fishers of Odisha, through Indian Marine Policy: A case study. *Research Journal of Animal, Veterinary and Fishery Sciences*, 2(7), pp.10-19.
- Kumbhar, A.C., 2017. Socio-economic status of fisherman around ekruk water reservoir of North Solapur Tahsil dist. Solapur (ms). *Global Journal of Research Analysis*, 6(6), pp.222-223.
- Mir, S.A., Ojha, S.N., Ananthan, P.S., Qureshi, N.W., Argade, S.D., Gul, S. and Thangavel, V., 2022. Assessment of fisheries and management-insights from Dal Lake, Kashmir. *Indian Journal of Extension Education*, 58(4), pp.60-65.
- Mir, S.A., Ojha, S.N., Ananthan, P.S., Qureshi, N.W., Argade, S.D., Gul, S. and Thangavel, V., 2023. Livelihood Assessment of Fishers in Dal Lake, Kashmir. *Indian Journal of Extension Education*, 59(3), pp.48-53.
- Naila (2020). Gender Analysis of Fisheries Sector in Kashmir, MFSc, Thesis, ICAR-Central Institute of Fisheries Education, Mumbai, 130 p.
- Qadri, H. and Yousuf, A.R., 2007. Dal Lake ecosystem: conservation strategies and problems. In *Proceedings of TAAL2007: The 12th World Lake Conference* (pp. 1453-1457).
- Qayoom, I., Akhtar, M., Dar, S.A., Khan, S., Hussain, N. and Bhat, B.A., 2019. A study of socio-economic status of fisher communities in district Baramulla of Jammu & Kashmir. *Journal of Pharmacognosy and Phytochemistry*, 8(3), pp.583-586.
- Qureshi, N.W. and Krishnan, M., 2015. Lake fisheries in Kashmir: A case more undone than done. *Economic and Political Weekly*, pp.66-69.
- Qureshi, N.W., Krishnan, M. and Sundaramoorthy, C., 2016. 'Fish for all' versus 'fish of choice'—growth, instability and stakeholders' responses for enhancing fish production in major lakes of Kashmir. *Current Science*, pp.1495-1504.
- Ragavan, N., Sivashanthini, K. and Sutharshiny, S., 2016. Socio-economic status of fishers in Allaipiddy village, Jaffna.
- Rao, G.S., Sathianandan, T.V., Kuriakose, S., Mini, K.G., Najmudeen, T.M., Jayasankar, J. and Mathew, W.T., 2016. Demographic and socio-economic changes in the coastal fishing community of India. *Indian Journal of Fisheries*, 63(4), pp.1-9.
- Sabu, M. and Shaijumon, C.S., 2014. Socio-economic impact of information and communication technology: A case study of Kerala marine fisheries sector. *International Journal of Information Dissemination and Technology*, 4(2), pp.124-129.
- Saxena, A., Singh, R.N. and Ayatulla, C., 2014. The socio-economic status of fishermen of district Rampur, Uttar Pradesh. *Trends in fisheries research*, 3(3), pp.01-04.
- Shakir (2019). Fishers Livelihood and Governance in Dal and Manasbal Lakes of Kashmir, MFSc, Thesis, ICAR-Central Institute of Fisheries Education, Mumbai, 150 p.
- Sheikh, S. and Goswami, M.M., 2013. Socio-economic condition of fishers of Chandakhola wetland, Dhubri, Assam, India. *Bulletin of Environment, Pharmacology and Life Sciences*, 3(1), pp.257-261.
- Tacon, A.G., 2020. Trends in global aquaculture and aquafeed production: 2000–2017. *Reviews in Fisheries Science & Aquaculture*, 28(1), pp.43-56.