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TIDES OF POVERTY: A MULTIDIMENSIONAL ASSESSMENT OF COASTAL FISHING COMMUNITIES

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Abstract

Coastal fishing communities in Kerala experience multidimensional poverty arising from socio-economic marginalization, resource depletion, climate vulnerabilities, and inadequate access to basic services. This study assesses multidimensional poverty among the fisherfolk Shanghumukham coastal region in Thiruvananthapuram district, Kerala, using the Alkire Foster methodology across three dimensions: health, education and living standards. The findings reveal a notable proportion of the population is multidimensional poor, with deprivations extending beyond income to include nutrition, child mortality, schooling, sanitation, housing and ownership of assets. The intensity of poverty indicates that poor households experience multiple simultaneous deprivations rather than isolated deficits. These results underscore that poverty in coastal fishing communities is a complex multidimensional phenomenon requiring integrated interventions. Targeted policy measures addressing alternate livelihood options are essential for building resilience and fostering sustainable development. Measures like integration of agriculture and allied activities such as small sale farming and backyard horticulture further helps in addressing livelihood diversification and food security.

Keywords- Sustainability, Multidimensional Poverty, Fishing Communities, Livelihood Diversification, Food Security, Employment Distribution.

Introduction

Coastal areas, home to millions of people worldwide, are often regarded as vital hubs for economic, social, and cultural activities. However, despite their strategic importance, these regions are increasingly facing the dual challenges of poverty and environmental vulnerability. In many coastal communities, poverty is compounded by limited access to resources, lack of infrastructure, and exposure to the impacts of climate change, such as rising sea levels, extreme weather events, and coastal erosion. Coastal communities worldwide face unique socio-economic challenges, including poverty, income inequality, and environmental vulnerabilities.

The fishing sector, a important economic sector in Kerala's coastal belt, has witnessed diminishing returns due to overfishing, resource depletion, and increased competition from industrial fishing practices. This has left traditional fisherfolk with reduced incomes and augmented poverty levels. Additionally, inadequate access to education and healthcare in coastal villages further perpetuates poverty among these communities, creating a cycle of vulnerability (Krishnan, 2021). Climate change has exacerbated the hardships of coastal populations. Rising sea levels, coastal erosion, and extreme weather events have damaged habitats and assets, forcing communities to adapt or relocate (Asir, 2021). These environmental pressures, combined with a lack of alternative livelihood opportunities, deepen their economic and social insecurities.

Efforts to combat poverty in Kerala's coastal areas include the promotion of alternative livelihood options such as aquaculture, tourism, and small-scale entrepreneurship. Risk management frameworks and vulnerability assessments have been emphasized as essential tools for building resilience and mitigating climate impacts (Asir, 2021; Krishnan, 2021). Overall, poverty in Kerala's coastal areas is a multidimensional issue requiring integrated solutions. Addressing economic vulnerabilities, enhancing education and healthcare access, fostering sustainable resource use, and building climate resilience are crucial steps for improving the well-being of coastal communities in the state.

Fishing has traditionally been the primary source of income for these coastal communities. However, overfishing, resource depletion, and competition from mechanized vessels are increasing competition for the traditional fisherfolk. Shanghumukham Beach, located in Thiruvananthapuram, Kerala, is a scenic coastal destination known for its vast stretches of white sand and stunning sunset views. Situated near the Thiruvananthapuram International Airport and a short drive from the city centre, the beach is a popular spot for both locals and tourists. However, in recent years, erosion and waste accumulation have posed challenges to its upkeep. Despite the implementation of Exclusive Economic Zones, Coastal Regulation Zones (CRZ), Coastal Zone Management plans and other programmes for building adaptive capacity, the sector's pace of growth is relatively slow. The social infrastructural facilities like education, health facilities, financial aids, etc have boosted the coastal development.

Access to basic services such as education, healthcare, and housing remains a significant issue for these communities. Many fisher families live in poorly constructed homes with inadequate sanitation, increasing their vulnerability to diseases and health crises. Limited access to quality education restricts upward social mobility for younger generations. Women, who often engage in fish processing and selling, face additional barriers, including low earnings, limited access to credit, and insufficient empowerment initiatives (Harsha, 2019; Palash, 2024).

Efforts to alleviate poverty in Thiruvananthapuram's coastal areas have included government schemes and NGO-led interventions aimed at infrastructure development, skill enhancement, and the promotion of alternative livelihoods such as aquaculture and small-scale entrepreneurship. While these initiatives have had some success, their impact has been limited by inconsistent implementation, inadequate funding, and lack of community participation (Krishnan, 2021; Prasetyo et al., 2023).

Objective: To assess the multidimensional poverty of coastal fishing community in Shanghumukham, Thiruvananthapuram.

Materials and Methods

Methodology

Study Area

The proposed study is focused on fishing community of Shanghumukham coastal region in Shanghumukham ward (No. 89) in Thiruvananthapuram district. The coordinates of the area are 8.48112950°N 76.91237030°E. The Shanghumukham ward has a total of 6714 individuals (3149 males and 3565 females) (Census,2011). The region is part of the south-western coastal zone of the Indian subcontinent.

The proposed study largely depends on primary data, obtained through a sample survey of the fisherfolk community. Common sources of secondary data for social science include census reports, information collected by government department organizational records and data from other institutions. Open ended questions were included in the interview schedule.

Tools and Techniques

The Multidimensional Poverty Index (MPI) is a very useful methodology that facilitates in incorporating alternative indicators, cutoffs and weights that are suitable in regional, national, or subnational contexts. Regional or national MPIs are analysed by adapting the method upon which the global MPI is based to better address local realities, needs and the data available (for instance, the Alkire-Foster method). Their goal is to assess multidimensional poverty levels in particular regions in the components most relevant and feasible locally.

Adjusted headcount ratio (M_0) also known as the MPI relates to both the incidence of poverty (the percentage of the population who are poor) and also the intensity of poverty (the percentage of deprivations suffered by each person or household on average). $M_0 = H \times A$, ie., multiplying the incidence (H) by the intensity (A).

Table 1: Distribution of indicators of MPI

	Dimensions	Indicators
Three Dimensions of MPI	Health	Nutrition
		Child mortality
	Education	Schooling in years
		School attendance
	Living standard	Cooking fuel
		Sanitation
		Clean Water
		Electricity and power
		Housing details
		Assets owned

Source: OPHI, 2024

Ten indicators make up the MPI, that include two for health, two for education, and six for living standards (OPHI,2024)(Table 1). Within the education dimension, the MPI uses two indicators that complement each other: one looks at completed years of schooling for household members, and the other looks at whether children are attending school. For health aspects, the first indicator looks at the nutrition of household members. Malnutrition can have a long-term impact on a child's cognitive and physical development. The data on child mortality is used in the second indicator, as m malnutrition plays a role in the death of children. Further, six indices of living standards are considered by the MPI. Clean drinking water, improved sanitation, and the use of clean cooking fuel are three standard Millennium Development Goals indicators relating to health and living conditions that are particularly important to women (OPHI,2024).

Results

Coastal regions are among the most dynamic and resource-rich areas of the world, providing vital ecosystems, economic opportunities, and cultural significance. However, these regions are also home to some of the most vulnerable populations, where poverty, environmental challenges, and socio-economic disparities intersect. Assessing poverty in coastal areas is critical to understanding the underlying factors that influence livelihoods, resource distribution, and resilience against environmental shocks such as climate change, coastal erosion, and natural disasters. This data analysis focuses on evaluating poverty levels in Shanghumukham, identifying the patterns, and understanding

key drivers that contribute to economic inequality in these regions. The data has been collected from 30 coastal households in Shanghumukham. Data was collected with the help of a scheduled questionnaire.

Multidimensional Poverty Index for the Coastal Fisherfolk in Shanghumukham region

Multidimensional poverty index consists of two key factors. The first being, the proportion or incidence of people who experience multiple deprivations and the second being, the intensity of their deprivation i.e. the average proportion of weighted deprivations they experience. In simple terms, the first term can be said as the multidimensional headcount ratio indicated as (H):

H=q/n

Here q is the number of people who are multidimensionally poor and n is the total population.

The second term is called the intensity of poverty indicated as (A). It is the average deprivation score of the multidimensionally poor people and can be expressed as:

$$A = \frac{\sum_{i=1}^{n} c_i(k)}{q}$$

Where, c_i (k) is the censored deprivation score of individual i and q is the number of people who are multidimensionally poor.

The MPI is the product of both factors i.e. MPI = H*A Multidimensional headcount Ratio (H): $\frac{q}{n} = \frac{31}{153}$

= 0.209

Intensity of Poverty (A): $\frac{11.841}{31}$ =0.381

MPI: 0.209 X 0.381 = 0.0796.

Table 2: Multidimensional Poverty Analysis

Category	Value
Household size	35
Total individuals	153
Education	
No one has completed five years of schooling	1
At least one school age child not enrolled in school	0
Health	
At least one member is malnourished	9
One or more children have died	0
Living standards	
Poor electricity connection	33
Access to clean drinking water	33
Access to adequate sanitation facilities	33
House has dirt floor	4
Household uses unclean cooking fuel (dung, firewood or charcoal)	1
Household has no car and owns at most one bicycle, motorcycle, refrigerator, telephone or television	13
Is the household poor? (c ≥ 1/3 = 0.333)	7
Censored score Ci(k)	7
q (Number of people multidimensionally poor)	31

Multidimensional headcount ratio (H) = q/n	0.209
Intensity of poverty (A)	0.381
MPI = H x A	0.0796

Source: primary data

Multidimensional poverty refers to deprivation experienced across multiple aspects of life, including health, education, living standards, and access to basic services. It goes beyond income-based poverty by considering various social and economic factors that impact overall well-being. Here, despite not being severely affected by absolute poverty, still the coastal fishing community needs help in improving their socio-economic conditions, and in accessing basic facilities. Here, the intensity of poverty (average deprivation score of the multidimensionally poor people) represents the percent of households with poverty score greater than 0.333, which equals to 38.1 per cent (Table 2).

Based on multidimensional poverty, headcount ratio (0.20), is the ratio between the number of people who are multidimensionally poor and the total population. Now, based on intensity and headcount ratio, MPI was calculated which showed 0.0796, showing the level of multidimensionally poverty among the fisherfolk community.

It must be noted that since many of the basic facilities like electricity, sanitization, primary education or health dispensary are available at Shanghumukham, many of the respondents cannot be considered as qualifying the criteria for being multidimensionally poor. So, a proper review of the already available amenities must be considered for better implementation of the facilities.

Here, 7.9 percent of the residents in total three settlements are MPI poor. According to the MPI, this suggests they are poor. They lack at least a) all the signs of a single dimension or b) a mixture of dimensions, such as living in a family with a starving person, no clean water, a dirt floor, and inadequate sanitation. Therefore, the poor in this area are disadvantaged in 38.1% of the weighted indicators on average. The MPI indicates the proportion of the population that is multidimensionally poor, adjusted for the severity of deprivation. The MPI can also be interpreted as the proportion of weighted deprivations experienced by the poor in a society as a percentage of the total potential deprivations experienced by the society.

If everyone in a society was deficient in all the indicators studied, the MPI would be 100 per cent. Since, they are deprived in 38.1 per cent of the weighted indicators on average, that society is deprived in just 7.9 per cent of the total potential deprivation.

The already existing malnourishment, poor electricity connection, access to drinking water and sanitation facilities adds to the poor situation of the respondents. A lot of these conditions cannot be included in the standard MPI index, which has led to such a lower MPI score of just 0.079.

Employment Details

The studied employment details include occupational distribution of the respondents, whether the income thus obtained is sufficient, annual income, observed change in income and the total distribution of working members.

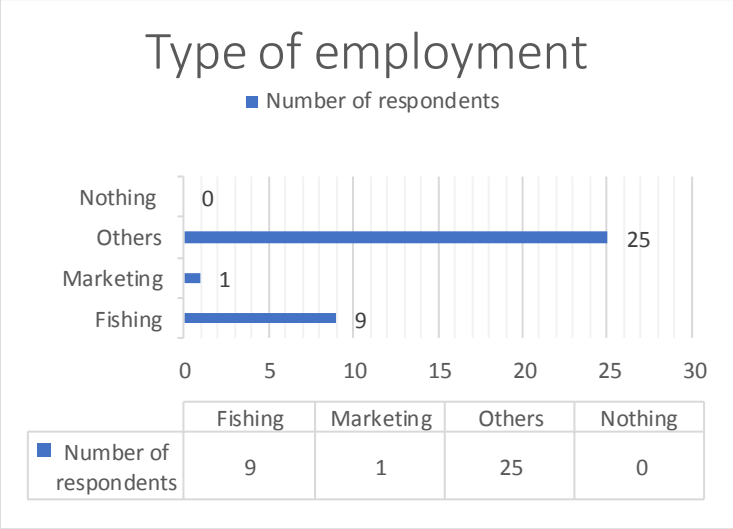
Table 3: Employment Wise Distribution of Respondents

Category	No.	Percentage
1. Fishing	9	25.71
2. Marketing	1	2.80
3. Others	25	71.42
4. Nothing	0	0.00
Total	35	100.00

Source: Primary data

The above table (Table 3) shows that all the households had individuals who were employed. Among the different categories like fishing, marketing and other activities, majority of the households depended on other activities (71.42 per cent), followed by fishing activities (25.71 per cent).

Fig 1: Employment Distribution of Respondents



Sources: Primary data

The (Fig 1) shows that least number of households were engaged in marketing activities (2.80 per cent). They either sold the fish directly to the consumers at the local Shanghumukham market or sold to other venders in the market. Some of them engaged in processing activities, like making dried fish, and sold the final products to other fish vendors or exporters or sold locally to the consumers.

Conclusion and Recommendations

The study focused on deriving a comprehensive picture of the socio-economic situations of the fishing community in coastal region of Shanghumukham, in Thiruvananthapuram, Kerala, through multidimensional poverty and livelihood assessments, in the backdrop of issues like climate change, resource depletion, high competition, urbanization, and son on. The present study separately analysed the health, education and standard of living, through various indicators, to arrive at multidimensional poverty index value of 0.0796. The observations show that even though the respondent households do not suffer from severe poverty, still there is a huge scope for development and adaptive capacity buildings in different aspects.

Resource depletion makes it a high concern, both ecologically as the mass fishing and resultant depletion of aquatic life creates imbalances in the system. Also, from their perspective, higher competition exists. This relates to the nature of fishing resources as a common property resource and susceptible to the problems of tragedy of commons. Based on the observations, disguised unemployment in the case of women is another problem. The women empowerment initiatives have very less effect in enhancing their conditions, apart from providing microfinance services.

Measures like integration of agriculture or small scale farming (like backyard horticulture) are helpful to achieve income diversification and food security among the coastal communities. These practices enable them to supplement fishing incomes, thereby reducing dependency on a single vulnerable livelihood source. It also provides nutritional outcomes, directly addressing health deprivations captured in MPI. These measures act as a buffer against income shocks from resource depletion and climate variability, while fostering sustainable livelihoods.

The respondents observed climate change related issues like high tides, coastal flooding and coastal erosion, which had caused excessive property damages in the region. Relief funds can be provided to support the fisher folk families who face damages from natural hazards like high tides, coastal flooding, etc. The processing units, like dried fish making units were present. They sell the products at the local market in Shanghumukham, and Pettah. Some of them sell the products to large traders or exporters, for better income. It was observed that education, health and electricity facilities were available. However, during events of storms, electricity connection can be affected. Therefore, they need better infrastructural facilities.

It was observed that all the children of school going age were enrolled in nearby schools. There were a primary and a higher secondary school located near the region. Most of the students have opted for vocational courses, after completion of which, they can apply for better jobs. School students were provided with Information and Communication Technology based training classes, which helps them to build better exposure and skills.

For basic amenities like drinking water, they depended on more on pipelines. The respondent households had proper sanitation facilities and better hygiene practices. Regarding health care facilities, a public health centre was present, with a doctor and other medical staffs. Ambulance and basic pharmacy facilities were available there. Most of the respondents depend on the health centre for their basic needs.

Awareness can be given to the fisherfolk regarding the importance of availing loans and banking services from formal sources, rather than the informal ones like private money lenders. This will ensure credit facilities with manageable interest rates. Transportation facilities can be provided to help local traders to connect markets and sell their products in different markets. This will improve their accessibility to different markets and also raise their income earning opportunities.

Collaborative efforts involving government agencies, non-governmental organizations, and local stakeholders are essential to address their socio-economic vulnerabilities and ensure long-term resilience. Multidisciplinary strategies such as community-based assessment (CBA), ecotourism, sustainable fishing practices, awareness on banking practices, skill based training for career opportunities, eco-tourism, and affordable fishing equipment provision can offer solutions. Active participation from all stakeholders is essential to ensure sustainable and integrated social and economic development within the fisheries sector.

Abbreviations: CRZ- Coastal Regulation Zone, MPI- Multidimensional Poverty Index

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