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Health and Livelihood Challenges of Fisherfolk in Kerala

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ABSTRACT

This study examines the extent and determinants of health shocks among fisherfolk households in Kerala, a community highly vulnerable to health and livelihood risks. Using primary data from 390 households across Malappuram, Alappuzha, and Thiruvananthapuram districts, a multidimensional Health Shock Index (HSI) was constructed incorporating seven indicators of health incidence, severity, hospitalization, accessibility, expenditure, and post-illness work ability. The results reveal that health shocks are widespread but vary significantly across regions, gender, and education levels. Trivandrum recorded the highest incidence of severe health shocks, while households with higher education and female heads experienced lower vulnerability. The study highlights the pressing need for targeted health and social protection measures to reduce disparities and strengthen the resilience of fisherfolk communities in Kerala.

Keywords: Health shocks; Economic vulnerability; Fisherfolk households; Kerala; Livelihood security

1. Introduction

Health is an indispensable component of human well-being and an essential determinant of economic development and social progress. The health status of individuals and households directly influences their productivity, income, and overall quality of life. However, in developing economies such as India, health remains highly vulnerable to uncertainty and inequality. Unexpected illnesses, injuries, or medical emergencies—often termed *health shocks*—can disrupt normal livelihood patterns and push families into financial distress. A health shock can be defined as a sudden and unpredictable deterioration in health that has significant economic consequences for the household. Its impact is transmitted through two major channels: increased medical expenses and loss of income due to reduced labor supply. For low-income and informal

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sector workers, where employment is largely unprotected and savings are limited, even a single episode of serious illness can have long-term adverse effects on welfare.

In the Indian context, out-of-pocket (OOP) expenditure continues to dominate health financing, accounting for nearly half of total health spending. Despite the implementation of public health programs and insurance schemes, access to affordable healthcare remains unequal across regions and occupational groups. Among the most vulnerable populations are the fisherfolk communities, who form a significant segment of the coastal population in states such as Kerala. Fishing is a high-risk, labor-intensive occupation that exposes workers to occupational hazards, environmental uncertainties, and income instability. Consequently, health insecurity is deeply intertwined with the livelihood conditions of these communities.

The relationship between health shocks and economic vulnerability has been extensively discussed in development and health economics literature. Gertler and Gruber (2002) demonstrated that health shocks could substantially reduce household income and consumption in developing countries due to the absence of adequate social safety nets. Similarly, Dercon and Krishnan (2000) found that poor households often resort to asset sales and borrowing to finance medical costs, which further deepens poverty. Studies by Wagstaff (2007), Flores et al. (2008), and Krishna (2010) have emphasized the role of health shocks as a key driver of transient poverty and economic instability. Within India, several empirical studies have examined the financial implications of illness and medical expenditure. Garg and Karan (2009) showed that catastrophic health spending is a major cause of impoverishment, while van Doorslaer et al. (2006) highlighted the uneven distribution of health-related financial risks across socio-economic strata. More recent works have focused on the coping mechanisms adopted by households to deal with health shocks, such as informal borrowing, sale of productive assets, and reduction in non-health consumption. In Kerala, where public health infrastructure and literacy levels are relatively high compared to other Indian states, the overall health outcomes are commendable. Yet, this aggregate progress conceals substantial disparities among marginalized communities. Coastal and fisherfolk populations continue to suffer from limited healthcare access, occupational hazards, and high disease burden (Kurien, 2001; Salagrama, 2012). Studies focusing on Kerala's fisherfolk (e.g., Zacharia et al., 2013; Muthunayagam, 2018) have documented the prevalence of occupational diseases, nutritional deficiencies, and psychological stress among fishing households. However, these studies have generally remained descriptive, highlighting the presence of health problems without systematically quantifying their multidimensional impact on household welfare.

Although the adverse effects of illness on household welfare have been widely acknowledged, relatively few studies have attempted to measure *health shocks* as a multidimensional construct that encompasses both health outcomes and their economic consequences. The majority of

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existing research either focuses on the financial burden of healthcare or on specific diseases, leaving out the complex interplay between health events, access to healthcare, and livelihood disruption. Moreover, studies that specifically address health shocks among occupationally distinct and geographically marginalized communities—such as fisherfolk—remain limited in the Indian context. In Kerala, despite significant policy initiatives aimed at improving healthcare access and coastal livelihood security, there is insufficient empirical evidence on how fisherfolk households experience, cope with, and recover from health shocks. Most available data are aggregated at the district or state level, masking the variations in vulnerability across regions and socio-demographic groups. Furthermore, existing research seldom integrates indicators such as hospitalization, medical expenditure, distance to health facilities, and post-illness work ability into a single composite measure. The lack of such a comprehensive assessment constrains our understanding of how health shocks affect livelihood sustainability and long-term welfare among these communities.

This paper contributes to the growing literature on health and livelihood vulnerability by constructing a *Health Shock Index (HSI)* that captures the multidimensional nature of health shocks among fisherfolk households in Kerala. The index combines information on several aspects of health and healthcare access—such as incidence of illness, number of members affected, hospitalization, type of medical institutions visited, distance to health facility, medical expenditure, and ability to resume work after illness. By synthesizing these diverse indicators, the HSI provides a holistic measure of household-level health shock intensity. Unlike previous studies that rely solely on medical expenditure or disease prevalence, this research adopts a broader approach that links health shocks to socio-economic determinants and regional characteristics. It draws on primary data collected from three districts—Malappuram, Alappuzha, and Thiruvananthapuram—to capture inter-district variations in vulnerability. The study also examines how factors such as gender of household head, education, occupation, and income influence the extent of health shocks. By employing quantitative analysis and standardized measurement techniques, the research provides empirical insights that are both region-specific and policy-relevant. The findings of this study hold substantial significance for policymakers, researchers, and social development practitioners. First, the study sheds light on the often-overlooked health vulnerabilities of Kerala's fisherfolk, a community that plays a crucial role in the state's economy but remains marginalized in terms of health and social welfare. Second, by adopting a multidimensional framework, the research transcends conventional measures of health inequality and captures the full spectrum of household-level shocks—ranging from disease incidence to financial and functional consequences. Third, understanding the spatial and socio-economic distribution of health shocks can guide targeted policy interventions. For instance, identifying regions or demographic groups with high health shock intensity can help allocate healthcare resources more efficiently. The results can also inform the design of

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specialized health insurance schemes, coastal health missions, and livelihood protection programs that address both preventive and curative dimensions of health security. Finally, the study contributes methodologically by demonstrating how composite indices can be used to analyze health vulnerability at the micro level, thereby complementing existing macro-level health indicators.

2. Methodology

The present study is based on primary data collected through a structured household survey among the fisherfolk community in three coastal districts of Kerala—Malappuram, Alappuzha, and Thiruvananthapuram. A total of 390 fisherfolk households were selected using a multistage sampling technique to ensure regional representation. In each district, fishing villages were identified based on the concentration of marine activities, and households were chosen through systematic random sampling. Data were collected using a pre-tested interview schedule that covered demographic, socio-economic, and health-related aspects of each household.

To quantify the extent of health-related vulnerability, a Health Shock Index (HSI) was constructed incorporating seven key dimensions—health incidence, severity, hospitalization, service utilization, accessibility, medical expenditure, and functional impact. Each variable was standardized using z-scores, and the overall index was computed as the simple average of these standardized values. The index was further normalized to a 0–100 scale using min–max transformation, where higher scores indicate more severe health shocks. Based on percentile distribution, the HSI was classified into three categories—Low, Moderate, and High Health Shock—to facilitate comparative analysis.

Data analysis was carried out using descriptive and inferential statistical methods. Cross-tabulations and chi-square tests were employed to examine the distribution of health shocks across socio-demographic groups such as district, gender, education, and occupation. Regression analysis was further used to identify the major socio-economic determinants of the Health Shock Index. All analyses were performed using Stata 17, ensuring robustness and reliability of estimates.

3. Results and Discussion

Construction of the Health Shock Index (HSI)

One of the key objectives of this study is to assess the magnitude and distribution of health shocks among fisherfolk households in Kerala. Health shocks are defined as unexpected health-related events—such as illness, hospitalization, and medical expenses—that impose adverse effects on household well-being by reducing productivity and increasing financial vulnerability.

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To capture this multidimensional phenomenon, a composite Health Shock Index (HSI) was constructed using seven key indicators: (1) incidence of illness, (2) number of members affected, (3) hospitalization requirements, (4) type or number of hospitals visited, (5) distance to the nearest health facility, (6) total medical expenditure, and (7) ability to work after illness. The last variable was reverse-coded to ensure that higher index values consistently represent greater health shocks.

Since these variables were measured on different scales, they were standardized using z-scores for comparability. The HSI for each household was computed as the simple average of standardized values and rescaled to a 0–100 range using min–max normalization. Finally, the continuous index was categorized into Low, Moderate, and High Health Shock groups based on tercile cut-offs, facilitating comparative analysis across households. This composite approach provides a comprehensive and quantifiable measure of health-related vulnerability within the fisherfolk community.

Distribution of Health Shock Index (HSI) Among Households

Table 1 presents the overall distribution of households across the three HSI quantiles. Approximately 34.36% of households experienced low health shocks, 33.08% moderate shocks, and 32.56% high shocks. The nearly even distribution suggests that health shocks are a widespread challenge within the fisherfolk community, although a slightly larger proportion of households appear to experience relatively lower levels of health shock. This uniformity highlights the pervasive nature of health-related vulnerabilities in the sector, warranting targeted policy responses to mitigate their socioeconomic consequences.

Table 1. Distribution of Health Shock Index (HSI) by Quantiles

HSI Quantile	Description	Percent (Frequency)	Cumulative Percent
1	Low Health Shock	34.36% (134)	34.36%
2	Moderate Health Shock	33.08% (129)	67.44%
3	High Health Shock	32.56% (127)	100%
Total	—	100% (390)	100%

Source: Primary Data

Regional Variation in Health Shocks

The distribution of health shocks shows significant variation across districts (Table 2). In Malappuram, 60.77% of households experienced low health shocks, whereas Trivandrum exhibited a contrasting pattern, with 52.31% of households in the high health shock category. Alappuzha displayed a more balanced distribution, with 46.15% of households reporting

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moderate shocks. The chi-square test ($\chi^2 = 114.03$, $p = 0.000$) confirms that these differences are statistically significant. The findings reflect substantial regional disparities in the incidence and severity of health shocks, which may stem from differential access to healthcare, occupational risks, and socioeconomic conditions across coastal regions.

Table 2. Distribution of Health Shock Index (HSI) Groups Across Districts

District	Low	Moderate	High	Total
Malappuram	60.77% (79)	10.77% (14)	28.46% (37)	100% (130)
Alappuzha	36.92% (48)	46.15% (60)	16.92% (22)	100% (130)
Trivandrum	5.38% (7)	42.31% (55)	52.31% (68)	100% (130)
Total	**34.36% (134)**	**33.08% (129)**	**32.56% (127)**	**100% (390)**
Chi-square test: $\chi^2(4) = 114.03$, $p = 0.000$. Source: Primary Data.				

Source: Primary Data

Gender-wise Differences in Health Shock Experiences

Gender-based analysis reveals notable disparities in the distribution of health shocks (Table 3). Among male-headed households, 36.27% experienced high health shocks, compared to only 21.05% among female-headed households. Conversely, 45.26% of female-headed households experienced low health shocks. The chi-square test ($\chi^2 = 9.471$, $p = 0.009$) indicates that the difference is statistically significant. These results suggest that female-headed households may be relatively more resilient to severe health shocks, potentially due to better healthcare-seeking behavior or alternative coping strategies. However, the gendered dimension of access to health and financial resources warrants further qualitative exploration.

Table 3. Distribution of Health Shock Index (HSI) Groups by Gender

Gender	Low	Moderate	High	Total
Male-headed (0)	30.85% (91)	32.88% (97)	36.27% (107)	100% (295)
Female-headed (1)	45.26% (43)	33.68% (32)	21.05% (20)	100% (95)
Total	**34.36% (134)**	**33.08% (129)**	**32.56% (127)**	**100% (390)**
Chi-square test: $\chi^2(2) = 9.471$, $p = 0.009$. Source: Primary Data.				

Source: Primary Data

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Education and Health Shock Intensity

Education appears to play a significant role in determining health shock severity (Table 4). Among households where the head had secondary or higher secondary education, 37.44% experienced high health shocks, whereas households with graduate-level education or above reported the highest proportion of low health shocks (48.15%). The relationship between education level and HSI is statistically significant ($\chi^2 = 13.891$, $p = 0.008$). These findings reinforce the notion that higher educational attainment mitigates vulnerability to health shocks, likely through enhanced awareness, preventive practices, and access to better health services.

Table 4. Distribution of Health Shock Index (HSI) Groups by Education

Education	**Low**	**Moderate**	**High**	**Total**
Primary or below	38.68% (41)	30.19% (32)	31.13% (33)	100% (106)
Secondary / Higher Secondary	26.60% (54)	35.96% (73)	37.44% (76)	100% (203)
Graduate and above	48.15% (39)	29.63% (24)	22.22% (18)	100% (81)
Total	**34.36% (134)**	**33.08% (129)**	**32.56% (127)**	**100% (390)**
Chi-square test: $\chi^2(4) = 13.891$, $p = 0.008$. Source: Primary Data.				

Source: Primary Data

Occupational Differences in Health Shocks

The distribution of HSI categories by occupation is presented in Table 5. Fisherfolk households show a relatively higher incidence of high health shocks (34.44%) compared to households engaged in other occupations (26.14%). Conversely, low health shocks are more prevalent among non-fishing households (44.32%). Although the observed pattern suggests occupational vulnerability among fishing households—possibly due to the hazardous nature of marine work and irregular income—the association is not statistically significant at the 5% level ($\chi^2 = 5.151$, $p = 0.076$).

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Table 5. Distribution of Health Shock Index (HSI) Groups by Main Occupation

Main Occupation	Low	Moderate	High	Total
Other Occupations (0)	44.32% (39)	29.55% (26)	26.14% (23)	100% (88)
Fishing (1)	31.46% (95)	34.11% (103)	34.44% (104)	100% (302)
Total	**34.36% (134)**	**33.08% (129)**	**32.56% (127)**	**100% (390)**
Chi-square test: $\chi^2(2) = 5.151$, $p = 0.076$. Source: Primary Data.				

Source: Primary Data

The findings collectively indicate that health shocks are a widespread and significant issue among fisherfolk households in Kerala, with considerable regional, gender, and educational disparities. The higher prevalence of severe health shocks in Trivandrum and among male-headed and less-educated households underscores the intersection of socioeconomic and demographic vulnerabilities. While occupational exposure contributes to risk, education and gender dynamics appear to mediate resilience.

4. Conclusion

This study set out to examine the extent and determinants of health shocks among fisherfolk households in Kerala, focusing on their distribution across socioeconomic, occupational, and regional dimensions. Using a multidimensional Health Shock Index (HSI) constructed from seven key indicators—ranging from illness incidence to economic burden—the analysis provided a comprehensive picture of health-related vulnerability within the fishing community. The results revealed that health shocks are widespread and fairly evenly distributed across the sample, indicating that health vulnerability is a pervasive challenge rather than an isolated phenomenon among fisherfolk households.

Significant differences were observed across districts, with Trivandrum recording a higher concentration of households experiencing severe health shocks, while Malappuram displayed relatively lower vulnerability. Gender and educational disparities were also pronounced: male-headed households and those with lower educational attainment were more likely to experience severe health shocks. These findings underscore the complex interplay of demographic, socioeconomic, and spatial factors shaping health outcomes in coastal communities. Although occupational differences were not statistically significant, the higher incidence of shocks among fishing households points to occupational risks inherent in the sector.

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The results carry important implications for policy and practice. Strengthening public health infrastructure in coastal regions, improving healthcare accessibility, and promoting preventive health awareness are critical steps toward mitigating health shocks. Furthermore, targeted interventions such as health insurance expansion, income diversification, and social safety nets can play a vital role in reducing the economic strain of illness. The study contributes to the broader discourse on vulnerability and resilience by offering an empirical framework—the Health Shock Index—that can be adapted for analyzing similar populations in other regions. Overall, the findings highlight the urgent need for an integrated policy approach that combines health, education, and livelihood support to safeguard the well-being of fisherfolk households in Kerala.

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