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Health Care Expenditure and Coping Mechanism Among Tribal Communities in Kerala

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ABSTRACT

The state of Kerala has achieved health indicators measured in terms of mortality and fertility indicators, comparable with advanced economies of the world and has been received international attention for her high levels of human development. This paper explores the out-of-pocket payments for health care mong the tribal communities of Kerala who are the most deprived among the marginalised communities in the state. With regard to the out-of-pocket health expenditure, 71.31 per cent of sample households have experienced it during the reference period. The median monthly out-of-pocket health expenditure of tribal household was ₹ 350. There were statistically significant differences in the out-of-pocket health expenditure between and among different tribal communities. It was found that the tribal households employed different strategies to cope with shock of health care payments. Usage of the past savings was the most important coping mechanism for financing the expenses of out-patient care. At the same time, borrowing was one of the major sources of financing of in-patients when hospitalised. The bivariate analysis of the likelihood of indebtedness on account of health care expenditure showed that tribal households living outside the tribal colonies and those with the presence of members suffering from acute ailments had a greater probability for indebtedness. Tribal households belonging to the forward tribal communities had lesser likelihood of resorting to borrowing as the coping strategy.

KEYWORDS: Out-of-pocket health expenditure, tribal communities, coping mechanism, out-patient care, hospitalisation.

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INTRODUCTION

Good health is unanimously recognized to be of intrinsic value and constitutes an integral part of economic development. In fact, health and economic prosperity go hand in hand. One can see abundance of evidences which connects wide arrays of health indicators that are positively associated with many dimensions of economic prosperity (Ruger et al. 2001; WHO, 2001; Thomas and Frankenberg, 2002). Kerala, a small state in India, with her unique development experience, has impressive health indicators compared to the other states of the country and has received international attention for her high levels of human development. It has been pointed out that the much-acclaimed Kerala model of health has failed to encompass the marginalised and outlier communities in the state (Kurien, 1995; Government of Kerala, 2006; Verghese, 2009; Kerala State Planning Board, 2009). The health expenditures in the state are growing rapidly led by mostly unregulated private sector and where health insurance coverage is still limited. The medical costs of treating serious illness are beyond the means of most of the households among the marginalised communities in the state. Cost of treatment has emerged as one of the major reasons of indebtedness of households belonging to the lower socioeconomic strata.

Households often use a variety of ways or strategies to finance unforeseen health expenditure that cannot be met by their regular income (Saurborn et al., 1996; Damme et al., 2004; Leive and Xu, 2008; Flores et al., 2008; Wilkies et al.,2008; Daivadhanam et al., 2012, Kasahun et al., 2020; Srestha et al., 2021). But the strategies or 'coping mechanisms', adopted by households to cope with the cost of illness, can trigger a vicious circle of impoverishment and more indebtedness (Dercon, 2002). Very often, the poor have to borrow funds at a higher interest rate to meet both medical expenditure and other consumption needs, which drives them into indebtedness. Future welfare is put at risk by incurring debt, selling productive assets or by sacrificing investment in future productivity, for example curtailing children's education (Whitehead et al., 2001). Thus, while examining the extent of financial protection of the households from health care payments, the coping mechanism provides vital information on how the households respond to health shocks and how the payments may affect their future welfare (Leive and Xu., 2008).

Though Kerala has admirable accomplishments in its health care sector, it is argued that there are significant outlier population like marginalised communities who have left out of its health success story. Given the peculiar situation of Kerala, where people live longer, presumably with costly chronic diseases along with relatively small financial resources, this paper tries to explore the health care expenditure and related coping mechanism adopted by marginalised communities in the state by focussing on tribal communities.

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METHODOLOGY

No comprehensive attempts have been made so far to understand the burden of health care payments among the tribal communities in Kerala. In the context where an equitable health financing system that protects households from financial hardship is either unavailable or deficient in the state, even relatively modest expenditures on health can be financially disastrous for the tribal communities. Further, treating the tribal communities as one homogeneous group will undermine the inherent differences between different tribal communities. Therefore, an inter-tribal and intra-tribal analysis are needed.

Thus, data was collected through a sample survey among selected scheduled tribe households from three tribal concentrated districts of Kerala, namely Wayanad, Idukki and Palakkad. Wayanad (31.24%), Idukki (11.51%) and Palakkad (10.10%) accounts for over fifty percent of total tribal population in the state. The Census (2011) identified 36 tribal communities in Kerala in which 12 constitutes around 90 percent of their population. The study was conducted among eight such non-primitive tribal communities. The selected tribal communities were Paniyan, Adiyan, Kuruman, Kurichiyan, Uraly Kuruman, Mala Arayan, Muthuvan and Irular. by employing the principle of 'maximum percentage of tribal community as a percentage of the total population of the district', Wayanad was chosen for studying five communities (Paniyan, Adiyan, Kuruman, Kurichiyan and Uraly Kuruman), Idukki was chosen for two communities (Mala Arayan and Muthuvan) and Palakkad was chosen for the study of one tribal community (Irular).

A multi-stage stratified random sampling with the aid of structured interview schedule was undertaken for gathering information from the selected households. The sample size was estimated in such a way as to ensure at least one percent representation of the total household of the eight tribal communities under study. Thus, the sample size of the study is calculated as 596 tribal households. Along with the measures of descriptive statistics, non-parametric test of Chi square was used. Further, the study employed the binary logistic regression model to trace out the probability of indebtedness on account of health care expenditure.

RESULTS AND DISCUSSION

Out-of-pocket Health Expenditure

The out-of-pocket expenditure (OOP) incurred by the households is a good reflection of the extent of the utilisation of health care and their effective access to it. At the same time, the threat that out-of-pocket payments pose to the households' living standards and welfare is acknowledged as a foremost consideration in the financing of health care. Large out-of-pocket payments can push the households into permanent poverty particularly in the case of vulnerable

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communities like scheduled tribes. Analysis of the prevalence of out-of-pocket health care payments among the tribal households reveals that significantly higher proportion of scheduled tribe households has incurred the out-of- pocket health expenditure during the reference period of one month leading up to the survey (Chi square 108.248; P<0.01). The proportion is highest among the Uraly Kuruman community and they have recorded highest prevalence of morbidity as well. The prevalence is comparatively small among the backward tribal communities like Muthuvan and Adiyan (Table 1).

Table 1: Extent of Out-of-pocket Health Expenditure among Tribal Households

	Presence of OOP		Absence of OOP	
Sub caste	**Number**	**Percentage**	**Number**	**Percentage**
Paniyan	147	74.62	50	25.38
Adiyan	15	57.69	11	42.31
Kuruman	43	79.63	11	20.37
Kurichiyan	57	73.08	21	26.92
Uraly Kuruman	22	88.00	3	12.00
Mala Arayan	64	71.11	26	28.89
Muthuvan	36	56.25	28	43.75
Irular	41	66.13	21	33.87
Scheduled Tribe (combined)	425	71.31**	171	28.69**

** Significant at 1 per cent level of significance

Source: Primary data

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The descriptive statistics of out-of-pocket health expenditure illustrates that the median health expenditure, including all the components, of tribal household is ₹ 350 (Table 2). The highest mean and median out-of-pocket health expenditure is incurred by the Mala Arayan tribal community. Out-of-pocket health expenditure is high among the forward communities like Mala Arayan, Kurichiyan and Kuruman. The out-of-pocket health expenditure is lowest among the Muthuvan tribal community and they spend only one eighth of the amount that Mala Arayan community spends for health care.

Table 2: Descriptive Statistics of Out-of-pocket Health Expenditure

Sub caste	Mean (in Rupees)	Median (in Rupees)	Standard Deviation	Skewness	95 per cent Confidence Interval for Mean	
					Lower Bound	Upper Bound
Paniyan	584.57	400	686.09	1.61	488.08	681.06
Adiyan	318.85	175	380.69	1.24	165.08	472.61
Kuruman	839.44	500	942.39	1.18	582.22	1096.67
Kurichiyan	863.53	325	1181.93	1.54	597.04	1130.01
Uraly Kuruman	588.00	450	517.26	1.09	374.49	801.51
Mala Arayan	1089.67	800	1232.06	1.34	831.62	1347.72
Muthuvan	357.50	100	497.19	1.57	233.31	481.69
Irular	502.66	300	651.71	1.61	337.16	668.17
Scheduled Tribe (combined)	676.09	350	885.73	1.94	604.84	747.34

Source: Primary data

There are obvious differences between the tribal communities with respect to the mean out-of-pocket expenditure and the confidence interval for the mean is also large. The variations across tribal communities are apparent from the box plot of out-of-pocket health expenditure.

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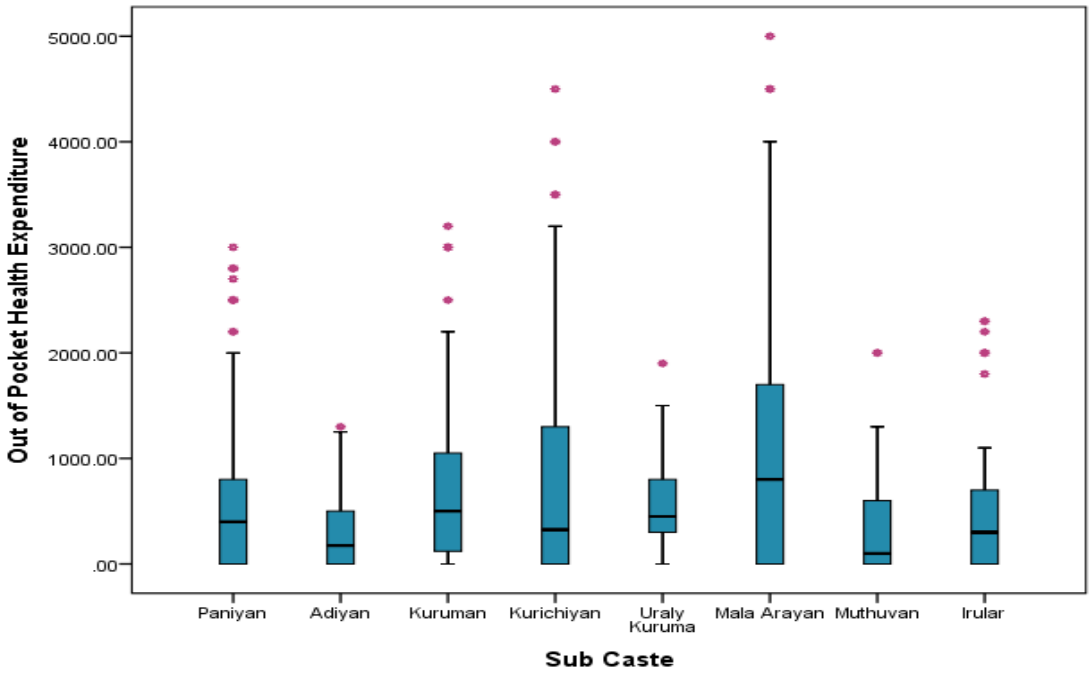
Figure 1: Box Plot of Out-of-pocket Health expenditure



As obvious from the figure, the median out-of-pocket health expenditure, indicated with the thick line in the rectangle, is highest among the Mala Arayan community and is lowest among the Muthuvan community. Since the top whisker of the box plot indicates the highest out-of-pocket health expenditure excluding the outliers, the points marked above it shows the presence of outlier households that are spending significantly higher amount on health care compared to other households within the community.

Coping Mechanism

After estimating the extent of out-of-pocket health care payments among the tribal households, this section examines how the households cope with these payments. To trace out the extent of financial protection from health care payment on households, it is imperative to examine the coping mechanism to examine how the household responds to unexpected event of health care payments and how the payments affect the future wellbeing of the household. The coping mechanism implies the strategies adopted by the households to finance out-of-pocket health expenditure that could not be managed with their regular income. It includes strategies such as use of past savings, borrowing, sales of assets and consumables, donations from friends and relatives etc.

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From the analysis, it was found that the tribal households employed different varieties of strategies to cope with the health shocks. Table 3 brings out the strategies employed by households to finance expenditure on out-patient visits.

Table 3: Coping Mechanism to Finance Out-patient Treatment Expenses

	Past Savings	Donations from Friends/relatives	Borrowing	Sale of Assets	Sale of Consumables	Total
Paniyan	103 (70.07)	6 (4.08)	38 (25.85)	0 (0.00)	0 (0.00)	147 (100.00)
Adiyan	8 (53.33)	1 (6.67)	4 (26.67)	2 (13.33	0 (0.00)	15 (100.00)
Kuruman	35 (81.40)	1 (2.33)	5 (11.63)	0 (0.00)	2 (4.65)	43 (100.00)
Kurichiyan	38 (66.67)	5 (8.77)	14 (24.56)	0 (0.00)	0 (0.00)	57 (100.00)
Uraly Kuruman	11 (50.00)	3 (13.64)	8 (36.36)	0 (0.00)	0 (0.00)	22 (100.00)
Mala Arayan	58 (90.63)	2 (3.13)	4 (6.25)	0 (0.00)	0 (0.00)	64 (100.00)
Muthuvan	32 (88.89)	1 (2.78)	3 (8.33)	0 (0.00)	0 (0.00)	36 (100.00)
Irular	37 (90.24)	2 (4.88)	2 (4.88)	0 (0.00)	0 (0.00)	41 (100.00)
Scheduled Tribe (combined)	322 (75.76**)	21 (4.94**)	78 (18.35**)	2 (0.47**)	2 (0.47**)	425 (100.00)

Note: Figures in the parenthesis are percentages.

** Significant at 1 per cent level of significance

Source: Primary data

There are significant differences with respect to the coping mechanism adopted by the households (Chi square 818.510; $P<0.01$). As in the case of other communities, the tribal households used a combination of different strategies to cope with the expenses incurred for the out-patient treatment. As the first choice, households used their accumulated savings to finance out-of-pocket health expenditure that could not be met by their regular income. Comparatively, richer communities like Mala Arayan and Kuruman were able to finance bulk of their out-patient expenses from their savings. The borrowings also were found to be a predominant coping

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strategy adopted by the tribal households. The share of borrowing is highest among the Uraly Kuruman community that have reported highest rate of morbidity prevalence. On the contrary, high proportion of the past savings among the Muthuvan community is partly explained by the low prevalence of ailments and the lowest average out-of-pocket health expenditure among the community.

An attempt was made to analyse the coping mechanism followed by the households who face the hospitalisation event. Generally, the in-patient hospitalisation is unexpected and unpredictable but involves substantial amount of money. For the vulnerable communities like scheduled tribes, it imposes huge financial burden. Thus, it is essential to explore how the households who faced the event of hospitalisation managed to finance the expenditure. Table 4 summarises different strategies employed by households to finance expenses incurred on hospitalisation.

Table 4: Coping Mechanism to Finance Hospitalisation Expenses

Sub Caste	Past Savings	Donations from Friends/relatives	Borrowing	Sale of Assets	Total
Paniyan	36 (45.00)	5 (6.25)	38 (47.50)	1 (1.25)	80 (100.00)
Adiyan	4 (30.77)	2 (15.38)	7 (53.85)	0 (0.00)	13 (100.00)
Kuruman	13 (43.33)	5 (16.67)	12 (40.00)	0 (0.00)	30 (100.00)
Kurichiyan	15 (42.86)	1 (2.86)	19 (54.29)	0 (0.00)	35 (100.00)
Uraly Kuruman	2 (25.00)	1 (12.50)	5 (62.50)	0 (0.00)	8 (100.00)
Mala Arayan	26 (63.41)	7 (17.07)	8 (19.51)	0 (0.00)	41 (100.00)
Muthuvan	5 (45.45)	0 (0.00)	6 (54.55)	0 (0.00)	11 (100.00)
Irular	13 (46.43)	7 (25.00)	7 (25.00)	1 (3.57)	28 (100.00)
Scheduled Tribe (combined)	114 (46.34**)	28 (11.38**)	102 (41.46**)	2 (0.81**)	246 (100.00)

Note: Figures in the parenthesis are percentages.

** Significant at 1 per cent level of significance

Source: Primary data

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There was a total of 269 hospitalisation events among tribal households and 246 households faced at least one hospitalisation event, excluding hospitalisation associated with pregnancy. Unlike the coping mechanism employed for the out-patient expenses, cost incurred towards hospitalisation has led to greater indebtedness among the households. The analysis manifests that borrowing is a significant source of financing of in-patient treatment of hospitalisation (Chi square 575.930, $P<0.01$). Borrowing is found to be one of the predominant strategies to cope with hospitalisation expenses and is not confined to any particular tribal community.

Coping Mechanism: Bivariate Analysis

Since reliance on borrowing is widespread among the communities and is the prominent coping strategy employed to finance both the out-patient and in-patient treatment expenses, the bivariate analysis is being attempted to predict factors associated with indebtedness. The logistic regression model is used with the binary dependent variable representing the coping strategy of borrowing. The dependent variable is equal to one if the households used borrowing as a coping strategy for out-patient and/or in-patient treatment expenses and zero if only past savings or donations or sale of asset were used. Only those households that have utilised out-patient health care facilities or in-patient health care facilities or both are considered for the analysis. The following independent variables are used in the model.

- Landholdings

Since landholdings are the most important asset for tribal households and in most cases is the only asset that can be mortgaged for availing loans. At the same time, the ownership of land can work in both the directions. Large land holdings can increase the creditworthiness and ability to borrow. On the other hand, it can also protect households from shock of health payments and may reduce the likelihood of borrowings. Landholding is measured in cents as a continuous variable.

- Number of Elderly Members in the Household

There is greater likelihood of incurring higher health expenditure if the household do have elderly members. Thus, a positive association with dependent variable is assumed. The number of elderly member (60 years and above) is measured as a continuous variable.

- Habitat of the Household

Habitat of the tribal household may influence the health expenditure and the resultant indebtedness. Households living outside the tribal colony will have more access to sources of

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loan and likelihood of indebtedness may be greater. Location is measured as the dichotomous variable is categorised as 1, if the household live outside the colonies and 0 otherwise.

- Presence of Acute Ailments

Acute ailments which are sudden and unexpected in nature increase the probability of health expenditure and can push households into indebtedness. Households with members suffering from acute ailments were coded as 1 and otherwise 0.

- Number of Private Out-patient Visit

Increased utilisation of private out-patient services will lead to spurt in health care expenses and the households availing more private health care facilities are likely to be indebted. The number of visits to the private providers is measured as a continuous variable.

- Sub Caste

Belonging to forward tribal communities can influence health expenditure and likelihood of indebtedness in two ways. Economically better-off communities are likely to incur higher health expenditure. Further, as they have greater credit worthiness and can easily avail loan as well. The model assumes positive relationship with the probability of indebtedness. Households belonging to forward tribal communities of Mala Arayan, Kurichiyan and Kuruman are categorised as 1 and 0 otherwise.

- Hospitalisation

The nonfatal health outcome of hospitalisation can be an important determinant of indebtedness. Hospitalisation expenses are significantly higher compared to out-patient expenses and are often unexpected in nature. Thus, vulnerable tribal households that face the hospitalisation event may be compelled to borrow due to their limited financial resources.

The results are summarised in the table 5.

Table 5: Probability for Indebtedness from Health Care Payments - Logistic Regression Model

Variables	Coefficient	Standard Error	Z-Statistic	P Value
Constant	-2.214148	0.416231	-5.319523	0.0000**
Landholdings	0.002836	0.001393	2.035251	0.0418*

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Number of Elderly Members	0.308478	0.160100	-1.926777	0.0540
Habitat	1.081103	0.363246	2.976231	0.0029**
Presence of Acute Ailments	1.007731	0.303662	3.318591	0.0009**
Number of Private Out-patient Visit	0.102030	0.083096	1.227849	0.2195
Sub Caste	-0.385901	0.259080	-1.489507	0.1364
Hospitalisation	0.961920	0.192538	4.995993	0.0000**

Number of observations	450
McFadden R-squared	0.116897
LR statistic	66.96573
Prob(LR statistic)	0.000000
Mean dependent var	0.333333
S.E. of regression	0.441798
Sum squared residual	86.26186
Log likelihood	-252.9485
Deviance	505.8970
Restr. log likelihood	-286.4314
Hosmer-Lemeshow Statistic	15.2789 ,Prob. Chi-Sq(8): 0.0539

** Significant at 1 per cent level of significance
* Significant at 5 per cent level of significance

The logistic regression model fitted is significant as the likelihood ratio statistic (LR Statistic) is 66.96573 and $P < 0.01$. Thus, the null hypothesis that all the coefficients are simultaneously zero, can be rejected. The model converged at the fourth iteration and the goodness of fit is satisfied with the Hosmer-Lemeshow test statistic of 15.2789 with the probability of 0.0539.

From the estimated coefficients of the model, the following inferences can be drawn. The coefficients of the landholding is significant and with a positive sign. It implies that with the increase in landholdings of the households, the probability of indebtedness increases. The households that are outside the tribal colonies have greater likelihood for indebtedness. As

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expected, the presence of members with acute ailments significantly increases the probability of indebtedness. Scheduled tribe households' belonging to forward communities has lesser likelihood of resorting borrowing as the coping strategy. One of the significant reasons for the indebtedness is hospitalisation, as the coefficient is highly significant and has the positive sign. Thus, it can be inferred that landholdings, acute ailments, caste characteristics and hospitalisation exert significant influence on the likelihood of utilising borrowing as the coping strategy.

CONCLUSION

The out-of-pocket health expenditure is widespread and absorbs large proportion of the household resources especially among the relatively poor tribal communities. The financial protection from health shocks is low and the catastrophic impact is severe among the vulnerable communities like Uraly Kuruman. It is these low-income communities who rely more on out-of-pocket expenditure for financing of health care. The patterns of coping strategies are found to be different from financing of health care for the out-patient visit and that of hospitalisation. Tribal households relied more on borrowing to finance hospitalisation expenses than the out-patient visit. The hospitalisation and presence of acute ailments in the household significantly increased the probability of indebtedness as a result of health expenditure. To conclude, it should be asserted that the large prevalence of out-of-pocket health expenditure is not necessarily related to only disease; but it also indicates the poor functioning of financing of health care mechanism in Kerala. Thus, it can be concluded that despite its creditable achievements in the macro health indicators, the state of Kerala has failed to provide financial protection from large health care payments to its marginalised communities like scheduled tribes.

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