

## Original Research Article

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# Health care utilization and out of pocket expenditure in a rural area of Kerala: a cross sectional study

Sajna Mathumkunnath Vijayan\*, Safa Pulyakkadi, Swathi Chalil

Department of Community Medicine, Government Medical College, Thrissur, Kerala, India

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**\*Correspondence:**

Dr Sajna Mathumkunnath Vijayan,  
E-mail: mvsajna@yahoo.com

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## ABSTRACT

**Background:** Out-of-pocket expenditure in health has substantial negative side effects. They may lead to impoverishment. The knowledge of pattern of health care utilization and out of pocket expenditure is imperative for policy making in health care. Objectives of this study were to study utilization pattern of health care services of the population in a rural area of Thrissur district and study of the self-reported chronic morbidity profile and out of pocket expenditure for chronic diseases among the population.

**Methods:** A community based cross sectional study was conducted in Tholur panchayath area of Thrissur district of Kerala. The calculated sample size was 552 households. House hold was considered as primary sampling units. All family members of the house hold were included in the study. Cluster sampling method was adopted. Data was collected using a pre tested semi-structured questionnaire.

**Results:** A total of 809 individuals from 583 households were found to have chronic diseases. Among them, 54.8% were utilizing private health facility for their treatment. Majority (86%) were following modern medicine system for treatment. Health insurance was availed by 26.6 % of the study participants. Most common reported morbidity was combination of hypertension, diabetes mellitus, and hypercholesterolemia. The total median out of pocket expenditure for chronic diseases was found to be 5000 Indian Rupees. It was found that 41.6% of the total income of study participants was spent for health care of chronic diseases which indicate catastrophic health expenditure.

**Conclusions:** The burden of chronic disease is high and the private hospitals are approached more by the study population for treatment rather than government hospitals. Health insurance coverage is low, and social assistance availed for treatment is marginal. These factors lead to high out of pocket expenditure amounting to catastrophic health expenditure.

**Keywords:** Chronic morbidity, Health care utilization, Out of pocket expenditure

## INTRODUCTION

Health care includes both medical care as well as preventive care. In India health care is delivered through different levels of health care centers. The National Health bill 2009 recognizes health as a fundamental human right and states that every citizen has a right to the highest attainable standard of health and well-being. A heartening point is that the bill guarantees that no person shall be denied care under any circumstances, including

the inability to pay the requisite fee or charges. According to the bill, prompt and necessary emergency medical treatment and critical care must be given by the concerned health care provider, including private providers.<sup>1</sup>

In India, public expenditure on health is incurred by three tiers of the Government: the Central Government, the State Governments and the local bodies. The Central Government spends directly on health and also provides

grants-in-aid to State Governments for incurring health expenditure. The State Governments, in addition to spending out of the grants-in-aid received from the Centre, incur health expenditure directly out of the resources available with them. Their health expenditure also includes transfers to rural and urban local bodies for health spending.

Additionally, the local bodies incur health expenditure from the resources available with them. The sum total of health expenditure by each of these three tiers of the government provides an estimate of public spending on health in India. Expenditure on health by the Government continues to be low in India. Health expenditure as a total percentage of GDP in India was last measured at 3.66 in 2016 according to the World Bank, while the government health expenditure as a proportion of GDP is just 1%.<sup>3</sup> Out-of-pocket health expenditure % of total expenditure on health in India was 62% as of 2017 as per World Health Organization National Health Account database.<sup>4</sup>

A recent analysis suggests that while low-income countries need to spend \$54 per capita for a basic package of health services, the average actual per capita health expenditure in these countries is only \$27. Low revenue collections, competing demands for revenues, and relatively low spending priority contribute to this insufficient spending.<sup>5</sup> The limited access to public health care facilities forces the people to avail private health facilities which increases the out of pocket expenditure. In this circumstance, information on household expenditure for health is essential for creating effective public health programmes and policies. As noted by the World Bank in 1997 high priority needs to be given to collecting information on public and private sources of revenues and expenditures for all geographic levels of the health system.<sup>6</sup> Health care finance in developing and low income countries is still predominantly based on out-of-pocket (OOP) payments, and the lack of prepayment mechanisms like insurance.

Out-of-pocket payments (will be referred as OOP hereafter) have substantial negative side effects. They may lead to impoverishment. The requirement of OOP payments is hard on the poor, whose illness will either remain untreated or force patients into deeper poverty. The poor may not seek medical care and as a result, remain trapped in the vicious circle of illness and poverty. In most low- and lower-middle-income countries, private expenditure accounts for 50 to 75 percent of total health expenditure. But in most middle- and high-income economies, private expenditure accounts for less than 50 percent of the total. Thus, the private share of overall spending is much higher in poorer countries than in rich ones.

Kerala is a state with good health indicators comparable to developed countries. Literacy rate is also very high in the state. Reported population studies on health care

utilization and out of pocket expenditure in Kerala is less. Hence it is necessary to do a community-based household level study to assess the health care utilization and the out of pocket expenditure among the population so that we can bring about an improvement in the health policies and programmes in this regard.

Objectives were to study the utilization pattern of health care services of the population in a rural area of Thrissur District, to study the self-reported chronic morbidity profile and District out of pocket expenditure for chronic diseases among the population.

## METHODS

This study was a community based cross sectional study conducted in the field practice area of rural health training centre (RHTC), of Department of Community Medicine, Government medical College, of Thrissur district of Kerala. The study was conducted for a period of one year (2018). Data was collected for a period of 4 months. The sample size was calculated using the formula  $n=4pq/d^2$ , and the calculated sample size was 276 with a power of 90% and significance level was fixed at 5%. Since the sampling was cluster sampling, design effect had to be considered. Hence the sample size was  $N=4pq/d^2 \times 2$  (for cluster sampling). The calculated sample size was 552 households. House hold was considered as the primary sampling units. All the family members of the household were included in this study.

Cluster sampling method was adopted in this study. One ward was considered as cluster. There were 13 wards in Tholur panchayat area. Among this, 8 wards were selected by simple random sampling method. After the selection of the wards, 70 households were selected from each cluster to attain the required sample size. One prominent street in the ward was selected and the first house will be selected as the first house hold. Then the consecutive households were selected for the study. If the street ended, the first house of the next street of the same ward was selected and so on. After selecting the household, the head of the family was interviewed for data collection.

Data was collected using a pre tested semi-structured questionnaire. The data collection was done by selected accredited social health activists (ASHAs) from the rural health training centre, Govt Medical College, Thrissur. Questionnaire was converted into regional language Malayalam. Hands on training on questionnaire were conducted by the investigator at RHTC prior to the data collection. 2 ASHAs were allotted for a ward, and the duration of data collection in each ward was for 2 weeks. Investigator went along with ASHA for first two days of data collection in order to select the first household and to familiarize the ASHA with the data collection. A review meeting was conducted after the period of data collection in RHTC for checking the data. A total of 8 such review

meeting was conducted in RHTC during the data collection process.

Data variables included house hold details, chronic morbidity pattern for the past one year, health care utilization like system of medicine, type of health care centers, frequency of seeking heath system, expenditure on health: by self, by Government, and the health insurances availed.

**Definition of out of pocket expenditure:** Out of pocket expenditure is any direct outlay by households, including gratuities and in-kind payments, to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups.

It is a part of private health expenditure. Out of pocket expenditure payment is the sum of all healthcare related expenditures made by individuals/households within 30 days preceding.<sup>7</sup>

Data collected was coded and entered in Microsoft excel and analyzed using SPSS version 18. Qualitative data was analyzed using proportions, and chi square. Quantitative data was analyzed using means and standard deviation. If there was high variability in the data, median was used.

The protocol was approved by the institutional research and ethics committee. Tholur Panchayat authorities were informed regarding the study. Informed consent was taken from the head of the family prior to the data collection. Data collected was not misused and confidentiality of the data was maintained.

## RESULTS

Head of the households of 583 houses were interviewed. There were 2749 study participants in 583 households amounting to the family size of 4.7 which is comparable to the family size of Kerala.<sup>8</sup> In this study, 1243 (45.2%) were males and 1506 (54.8%) were females. Majority of the study population in the selected households belonged to the productive age group of 15-60 years (61.6%), followed by 21.6% in the 0-15 years age group and 16.8% of elderly people. Monthly income of the households varies from Rupees 100 to 52,000 with an average of 3117 rupees.

### Details of the household

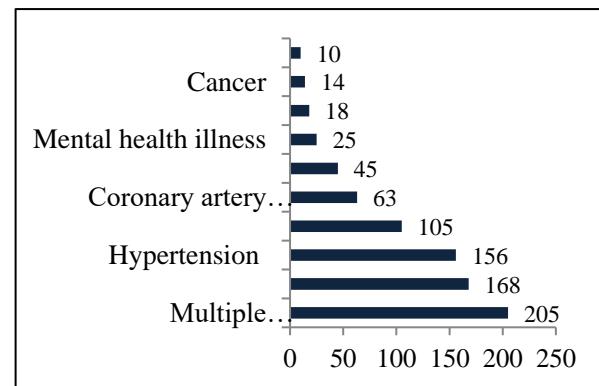
Among the households (n=583) visited ,406(69.6%) had males as the head of the household, while 177(30.4%) had females as the head of the household. In this study 58.1% belonged to Hindus followed by Christians and Muslims. Socio demographic profile is shown in the Table 1.

### Reported chronic morbidity

Among the 2749 study participants, 809 (29.4%) had at least one chronic morbidity. Reported morbidities were mainly hypertension, diabetes, respiratory illness, cancer, mental ill health, coronary and cerebrovascular accidents. Most commonly reported chronic morbidity was a combination of hypertension, diabetes mellitus, hypercholesterolemia. The distribution of types of morbidity is given in the Figure 1.

**Table 1: Sociodemographic details of the households of the study participants.**

Variable	Number (%)
<b>Gender</b>	
Male	406 (69.6)
Females	177 (30.4)
<b>Religion</b>	
Hindu	339 (58.1)
Christian	236 (40.5)
Muslim	8 (1.4)
<b>Economic status</b>	
APL	289 (49.6)
BPL	294 (50.4)
<b>Family type</b>	
Nuclear	430 (73.8)
Joint	153 (26.2)
<b>Type of house</b>	
Own	526 (90.2)
Ancestral	33 (5.7)
Rented	24 (4.1)



**Figure 1: Types of morbidity reported in the study population.**

### Health care utilization

Utilization pattern of the health care services was explored among the study participants who reported at least one chronic morbidity. Hence the total sample in the aspect of health care utilization is 809. Utilization was studied under - system of medicine, type of hospital, type of services, type of government hospitals and medical insurances availed.

Regarding system of medicine, majority adopted Modern medicine (86%). Least followed system of medicine was Homeopathy. 10% were following combination of different systems. While 366 (45.2%) participants utilized government hospitals, 443 (54.8%) utilized private hospitals for their treatment. Majority of the persons (74.9%) used only outpatient services for chronic diseases in this study while 24.4% used inpatient services.

Out of those utilizing government hospitals 78.7% were utilizing Community Health Centre services and the rest (21.3%) were using Medical college services.

Majority of the study population (73.3%) were not availing any medical insurance. Only 24% had availed Rashtrita Swasthya Bhima Yojana (RSBY) card. Social assistance was availed by 31 study participants, out of which 16 study participants availed it from Karunya Benevolent scheme of Kerala government and 15 from various non-governmental organizations (NGOs). The pattern of utilization in the study population is given in the Table 2.

#### ***Out of pocket expenditure***

The out of pocket expenditure of the study participants due to chronic morbidity in the last 30 days prior to the data collection was collected. Data on doctors' fees, hospital expenses, expenses for investigations, drugs and therapeutic appliances, total expenses and indirect expenses were collected.

Extreme values were found in the expenses in each category. Hence the results are expressed in median cost and range of the expenses occurred. Median cost of total direct expenses for health was Indian rupees 5000 whereas median indirect cost was Indian rupees 500. 265 (45.4%) persons met the expenses by their own and 112

(52.1%) by either their children or their relatives. 82 (14%) households had to borrow money from others. In this study, 22% (128 households) had debt due to health care expenditure.

**Table 2: Pattern of health care utilization among the study participants.**

Health care utilization for chronic disease	Number (%)
<b>System of medicine (n=809)</b>	
Modern medicine	700 (86)
Ayurveda	23 (3)
Homeopathy	5 (1)
Combination	81 (10)
<b>Type of services (n=809)</b>	
Outpatient services	606 (74.9)
Inpatient services	197 (24.4)
Both OP and IP	6 (0.7)
<b>Type of hospital (n=809)</b>	
Government	366 (45.2)
Private	443 (54.8)
<b>Type of government hospital (n=366)</b>	
Community health centre	288 (78.7)
Medical college	78 (21.3)
<b>Type medical insurance availed by the participants (n=809)</b>	
RSBY	200(24.7)
Private Health Insurance	12(1.4)
Government Health Insurance	4(0.5)
Nil	593(73.3)
<b>Social assistance for the disease (n=809)</b>	
Government aid (Karunya scheme)	16(1.97)
NGO Aid	15 (1.8)

OP - outpatient; IP - inpatient; RSBY - Rashtrita Swasthya Bhima Yojana; NGO - non-governmental organization.

**Table 3: Out of pocket expenditure of the study participants in the last 30 days.**

Expenses	Median (Rs)	Mode (Rs)	Mean±SD	Mean (in USD)
<b>Hospital fees</b>	5000	500	4329.24±46.404	57.97
<b>Investigations</b>	1000	1000	4329±11.187	57.97
<b>Drugs and therapeutic appliances</b>	3600	5000	9772.32±18302	130.85
<b>Doctor fees</b>	600	200	2620±13476	35.08
<b>Indirect expenses</b>	500	500	1897±5322	25.4
<b>Total expenses</b>	5000	500	26300±75173	352.16

Rs - Indian Rupees; USD - United States Dollars.

## **DISCUSSION**

The "Kerala Model Health System" is well known for its high performance in terms of better health care and health indices. However the state is facing a crisis due to the demographic transition and it is reflected in its patterns of morbidity and hospitalization.<sup>9</sup> This change in the morbidity pattern in Kerala from 1995 to 2014 was reported in a study done by Paul et al.<sup>10</sup> A higher

prevalence of noncommunicable diseases was found in the Kerala state and district wise analysis in the study showed the second highest prevalence in Thrissur District.<sup>10</sup> The present study adds to this finding as the prevalence of chronic morbidity among the study participants was found to be 29.4%. This is a higher prevalence when comparing with the prevalence of noncommunicable diseases of other states with National Family Health Survey 4 (NFHS) data.<sup>11</sup> Kerala is considered as the diabetic capital of India and the present

study justifies this statement revealing the high prevalence of diabetes mellitus among the study population i.e. 13.5% (6.1% of study participants having diabetes alone and 7.4% having diabetes along with other noncommunicable diseases).<sup>12</sup> This is comparable to the higher prevalence of diabetes mellitus in Kerala as reported by Upadhyay et al.<sup>13</sup> When looking at the pattern of the non-communicable disease, it can be seen that similar pattern was reported in studies by Krishnaswami et al and Arokiasamy et al except for chronic Kidney disease, the prevalence of which is found to be comparatively high in the present study (Figure 1).<sup>14,15</sup> The major causes of chronic morbidity was also found to be similar in a study conducted in Malaysia, which is a developing country and another study conducted in Netherlands, which is a developed country.<sup>16,17</sup>

Majority (86%) of the study population prefers modern medicine for treatment. This is similar to the study by Levesque et al where 83.6% utilize allopathic system in Kerala.<sup>18</sup> A notable proportion, 14% of the study population approaches alternate system of medicine for their treatment. This is higher than the proportion reported in other states.<sup>19</sup> It was observed that 54.8% depended on private health system for their treatment. Even as the nation is striving for reinforcing trust in public health care system, majority approaches the private sector for treatment which is similar to the data obtained in NFHS 4 survey.<sup>11,20</sup> This can also be seen from the study conducted by Levesque et al which reports 77% utilization of private system in Kerala.<sup>18</sup> According to another study by Azhar et al conducted at Aligarh, 30% availed services from the private sector.<sup>21</sup>

It is of concern that only 24% of the study population had any type of insurance coverage. This is comparable to the reports from NFHS 4 which states the insurance coverage is 28% in both rural and urban areas of the country.<sup>11</sup> In the present study the contribution of private insurance was only 1.4%. When we look at the use of private insurance as contribution to total health expenditures in other countries, the Philippines has 10.8% contribution, followed by the Republic of Korea (9.5%), Australia (7.8%), New Zealand (6.2%) and Indonesia (6.1%).<sup>22</sup> Even as new social assistance schemes are being introduced, only 3.7% of the study participants had received any kind of social assistance for treatment.

The out of pocket expenditure for chronic morbidity in the last 30 days showed high variability. Average total expense in the study was 26300 rupees (352.16 USD). Majority of the expenses was contributed by hospital fees, drugs and therapeutic appliances. According to the report by National health profile published in 2015, Kerala had the highest out of pocket expenditure.<sup>23</sup> High private system utilization might have caused the increased cost. Total annual income of the study participants varies from Rs 12,000-6,24,000 and the median cost was Rs 12,000. It might be assumed that approximately 41% (Rs 5000) of

the total income in the study population was spent for health care which is of catastrophic health expenditure.

This disheartening trend of rising catastrophic health expenditure in India over the years was also reported by WHO.<sup>24</sup> When comparing with the out of pocket expenditure of other countries, it is highly variable and it ranges from 13.63% in high income countries to 51.50% in low income countries, according to Word bank.<sup>25</sup> When exploring the effects of out of pocket expenditure in India, a study conducted by Michael Keane and Ramna Thakur found that 4.1% of the population in India, are in a state of “hidden poverty” due to medical expenses.<sup>26</sup>

## CONCLUSION

Private hospitals are utilised more than government hospitals for health care needs, which explains the high out of pocket expenditure reported in the study. The health insurance coverage is low, and social assistance for treatment is marginal. Most of the people are unable to afford the treatment for chronic diseases by their own and fall into debts. Mandatory risk pooling and community-based health insurance schemes could be the step in protecting the population from catastrophic out of pocket expenditure.

Health is the responsibility of the Government. The reasons for less utilization of the public health system should be further explored in detail especially using qualitative methods like focus group discussions and in-depth interviews, and changes should be made in policies to tackle the burden of catastrophic health expenditure.

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