

## Government Sponsored Health Insurance Coverage and Out-of-Pocket Spending among Elderly in Kerala: a Cross-Sectional Study

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### Abstract

We aimed to find the population coverage, health service utilization and out-of-pocket spending among the elderly who are insured under Comprehensive Health Insurance Scheme (CHIS), Kerala through a longitudinal study of 600 non-rich households for nine months. The study found that only 57.7% the elderly were insured under CHIS which is lower than the population average of 80%. Single elderly from a socially backward caste, living alone in *kutcha* or *semi-pucca* houses were excluded from CHIS. Even though insured elderly had more episodes of hospitalization, only 38.4% of the elderly could make use of CHIS smart card for payment during hospitalization and 43.6% of the episodes were covered by CHIS. The mean indirect out-of-pocket expenses among insured elderly who had used smart cards for hospitalization (INR 7679.25) was higher than that for the un-insured (INR 4455.26),  $p = 0.027$ . The mean monthly drug expenditure (INR 1105.09) was also significantly higher among the insured as compared to the un-insured elderly (INR 650.03),  $p = .004$ . More than 80% of the hospitalized households had to use distress finance mechanisms to meet health-related expenses. We found that population coverage among elderly did not translate into service coverage and thus financial risk protection was not achieved even in a state like Kerala which is considered to be well-performing in terms of health insurance coverage. This study points out that elderly being a vulnerable group with special needs require a more comprehensive service package including chronic disease care, and a higher level of financial coverage.

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## Introduction

The proportion of elderly in the population has been increasing in societies around the world, including in many low and middle income countries as a result of demographic transition. The size and the growth rate of the elderly population vary across regions, countries and within countries.<sup>1,2</sup> We can notice an advanced demographic transition in India in the recent years which has caused serious social and economic consequences.<sup>3</sup> According to Census 2011 the proportion of elderly (60+) population in India is 8%<sup>4</sup> with the third largest number of elderly in the world.<sup>5,6</sup> Even though the proportion is low, the absolute number of elderly pose a serious concern in terms of health-care costs, higher pension costs, and a decreasing proportion of workforce and increased dependency.

The state of Kerala in India is in the most advanced stage of demographic and epidemiological transition.<sup>3,4,7,8,9</sup> Kerala has below replacement level fertility and its mortality rate is the lowest in the country. Kerala also has the largest proportion of elderly population in India with 12.6% with the highest dependency ratio.<sup>4</sup> At present Kerala has a 33.6 million elderly people which is growing at a rate of 2.3 per cent, faster than any other age group.<sup>4,9</sup> The prevalence of chronic diseases such as cardiovascular diseases, cancer, diabetes and chronic lung diseases is also highest in this state.<sup>8</sup> Elderly also experience a greater burden of ailments (which the National Sample Survey Organization (NSSO) defines as illness, sickness, injury, and poisoning) compared to other age groups across genders and residential locations.<sup>10,11</sup> The present situation of elderly in Kerala is reflected in double burden of disease and high morbidity rates to poverty level.<sup>7,12</sup>

There are other important characteristics of the elderly which should be noted. About 75% of elderly live in villages and nearly half are of poor socioeconomic status (SES) in India.<sup>13</sup> Half of the Indian elderly are

dependent upon their family.<sup>14</sup> Around 70% elderly women are widowed and 2.4% of the elderly living alone<sup>14,15</sup> This creates a very complicated situation for health care access for the elderly because more than 75% of the health care spending is still borne by the households and out of which almost quarter is sourced from either borrowings or selling of assets by rural households in India.<sup>16,17</sup> 3.5% to 6.2% of the India's population is pushed below the poverty line every year due to out-of-pocket (OOP) expenditure.<sup>18-20</sup> So the elderly who are dependent on their families, who are also burdened by highest morbidity rates are faced by severe financial barrier to access health care along with the social and geographical barriers.<sup>13,16,17</sup>

According to NSSO Kerala state has the best access to health care and the highest proportion of private as well as public utilization of health facilities.<sup>21</sup> Kerala also has one of the best performing Rashtriya Swasthya BimaYojana (RSBY) (now called *Rashtriya Swasthya Suraksha Yojana*, RSBY) insurance program in India called Comprehensive Health Insurance Scheme (CHIS) based on its population coverage and service coverage. RSBY is a country wide insurance scheme introduced with the aim of providing universal health coverage (UHC) to Below Poverty Line (BPL) populations in 2008. Beneficiaries under RSBY are entitled hospitalization coverage up to Rs. 30,000/- for selected disease conditions that require hospitalization.<sup>22-25</sup>

CHIS in Kerala has gone one step forward in terms of UHC and provided the insurance to Above Poverty Line (APL) households as well if they pay full premium, which is comparable to that of private health insurance schemes in Kerala. Currently CHIS covers more than 3 million households and is supposed to provide full financial risk protection to them.<sup>22,24,25</sup> This article tries to look at how Kerala doing in terms of universal access to health care for the elderly by a) finding coverage by CHIS among the elderly b)

assessing the service coverage and c) financial risk protection provided.

### **Methodology**

This paper uses data from a larger longitudinal study conducted in two states, Kerala and Tamil Nadu with 1200 non-rich households which were followed up for a study period of nine months with the aim of studying UHC provided by government sponsored health insurance schemes like CHIS. In this paper we have included only data of elderly (age $\geq$ 60 years) from Kollam district of Kerala.

Separate sample size calculations were done for three dependent variables for this study namely; population coverage, service coverage and financial risk protection (FRP) using epi-info statcalc version-3.5. The sample size was 600 non-rich households in Kerala after adding a non-response rate of 5%. Households were selected by three-stage (2 municipalities, 6 wards and 600 non-rich households) random sampling. The non-rich households (household expenditure below two times the Poverty line set by Rangarajan Committee, i.e., 2707.36 rupees per capita per month and with standard of living score  $\leq$ 21) were identified through an initial standard of living screening survey using the inclusion and exclusion criteria. Data was collected on demographic and socio-economic characteristics of the household and its members, and current health problems. Data on service coverage and financial risk protection by CHIS were also collected using a pre-tested interview schedule after obtaining written informed consent from the participants. Ethical clearance for the study was obtained from the Institutional Ethical Committee of *Sree Chitra Tirunal Institute for Medical Science and Technology, Thiruvananthapuram*. All data analyses were performed using Statistical Package for Social Sciences for Windows version 17.0 (SPSS Inc, Chicago, IL, USA).

### **Results**

A total of 305 elderly were included in the study out of which 155 (50.8%) were males and 150 (49.2%) were females. The mean $\pm$  SD age among the elderly was 68.5 $\pm$ 9.0 (range 60-101). Elderly were mostly living with children or their extended families (84.5%), were currently married (63%), had primary education and above (74.6%), had no job or living on pension (72.1%) and were living with chronic disease (72.5%).

176 elderly (57.7%) were currently enrolled under CHIS and 129 (42.3%) were not covered under the scheme. Out of the 129 who were not covered, 40 (31%) were from households never-insured under the scheme, 40 (31%) did not renew the scheme for the year 2015-16 and 49 (38%) were uninsured elderly from the insured households.

Elderly who were married (65.1%), living in pucca (61.3%) or pucca/semi-pucca mixed houses (63.3%), who were living with spouses (81.6%), in Below Poverty Line (BPL) list (64.8%) and were working (74.1%) had statistically a better chance of getting insured compared to their counterparts. Even though not statistically significant males (60.1%) and young-old (60.4%) elderly had more proportion of insured and on the other hand elderly from scheduled caste group had less number of insured (45.2%) as compared to other groups. Table 1 shows the basic characteristics of the insured and uninsured elderly population.

### **Service coverage under CHIS**

As CHIS only covered hospitalization, for service coverage we have only included data related hospitalization. Among elderly 54.4% (166) had been ever hospitalized in the last 1 year and 9 month period. Those who have chronic diseases (63.3%) had a statistically high chance of getting hospitalized. Being insured (65.4%) and being from a non-scheduled caste category had a statistically high association with

Table 1. Sample Characteristics

Variables	Insured n (%)	Un-insured n (%)	P value
<b>Age Group</b>			
60-69 (young-old)	116 (60.4)	76 (39.6)	.129
>=70 (old-old)	60 (53.1)	53 (46.9)	
<b>Sex</b>			
Male	95 (61.3)	60 (38.7)	.120
Female	81(54.0)	69 (46.0)	
<b>Marital status</b>			
Un-married	2 (25.0)	6 (75.0)	.001*
Married	125 (65.1)	67 (34.9)	
Widow/separated	49 (46.7)	56 (53.3)	
<b>Type of house</b>			
Pucca	111 (61.3)	70 (38.7)	.050
Mixed	19 (63.3)	11 (36.7)	
Semi-pucca	26 (59.1)	18 (40.9)	
Kutchra	20 (40)	30 (60)	
<b>Household (composition)</b>			
Living alone	3 (33.3)	6 (66.7)	.047*
Living with spouse	31 (81.6)	7 (18.4)	
Living with unmarried son/daughter	20 (58.8)	14 (41.2)	
Living with married son/daughter	41 (59.4)	28 (40.6)	
Living with extended families	81 (52.3)	74 (47.7)	
<b>Household (composition)</b>			
Living alone/with spouse	34 (72.3)	13 (27.7)	<.001
Unmarried/widowed elderly living with others	40 (41.2)	57 (58.8)	
Elderly parents living with son/daughter	102 (63.4)	59 (36.6)	
<b>Category Below Poverty Line</b>			
Below Poverty Line (BPL)	118 (64.8)	64 (35.2)	.004
Recently added to BPL	10 (66.7)	5 (33.3)	
Above Poverty Line (APL)	43 (46.7)	49 (53.3)	
Recently added to APL	5 (31.2)	11 (68.8)	
<b>Category SES**</b>			
1Extremely poor	35 (50.0)	35 (50.0)	.263
2 Poor	26 (66.7)	13 (33.3)	
3Marginal	53 (55.2)	43 (44.8)	
4Vulnerable	62 (62.0)	38 (38.0)	
<b>Religion</b>			
Hindu	131 (55.3)	106 (44.7)	.258
Muslim	42 (65.6)	22 (34.4)	
Christian	3 (75.0)	1 (25.0)	
<b>Caste</b>			
SC***	28 (45.2)	34(54.8)	.081
OBC	111 (61.0)	71 (39.0)	
Others	37(60.7)	24(39.3)	

Variables	Insured n (%)	Un-insured n (%)	P value
<b>Education</b>			
Illiterate	45 (60.0)	30 (40.0)	.598
<=4 years of schooling	55 (52.9)	49 (47.1)	
5-9 years of schooling	57 (62.0)	35 (38.0)	
>=10years of schooling	19 (55.9)	15 (44.1)	
<b>Occupation</b>			
Working	63 (74.1)	22 (25.9)	<.001
Un-employed /on pension	113 (51.4)	107 (48.6)	
<b>Chronic Disease</b>			
Yes	129 (58.4)	92 (41.6)	.399
No	47 (55.9)	37 (44.1)	
<b>Daily medication</b>			
Yes	109 (58.6)	77 (41.4)	.692
No	67 (56.3)	52 (43.7)	
<b>Substance abuse</b>			
Alcohol	2 (50.0)	2 (50.0)	.193
Tobacco	30 (69.8)	13 (30.2)	
Both	16 (45.7)	19 (54.3)	
None	128 (57.4)	95 (42.6)	
<b>Knowledge regarding CHIS</b>			
Poor knowledge	69 (54.8)	57 (45.2)	.477
Slightly aware	56 (62.9)	33 (37.1)	
Fully aware	51 (56.7)	39 (43.3)	

\* For the purpose of analysis we have regrouped un-married and widow/separated into one single group and living alone and living with spouse into another group

\*\*The non-rich households were again categorized into four SES categories namely: Category1/ extremely poor (<= 0.75 poverty line, PL) and SOL score <=12 : Category2/poor (0.75- 1PL) and SOL score 13-15: Category3/Marginal (1-1.25 PL) and SOL score 16-17 and Category4/vulnerable households (>2PL) and SOL score>=18.<sup>25</sup>

\*\*\* One ST family was also included in SC group

hospitalization. Education had a protective effect on hospitalization, those who were educated for more than 10 years were much less likely to be hospitalized compared to other groups (32.4%)Table 2 and 3.

Out of the 166 elderly who had hospitalizations 112 were insured under CHIS with a total of 165 episodes of hospitalizations. The reasons for hospitalization among insured and un-insured elderly were significantly different. Even though insurance came out as a significant variable for the likelihood of hospitalization, only 59(52.7%) insured elderly had any episode covered under CHIS. Out of total 165 episodes

of hospitalization among insured only 43.6% (72) episodes were covered under CHIS. None of the elderly with more than two episodes of hospitalization were fully covered under CHIS (could make use of CHIS smart card for all episodes of hospitalizations). Out of the 112 insured only 43 (38.4%) had been fully covered (all episodes) under CHIS and majority had none of the episodes covered by CHIS (47.3%)Table 4 .

While looking at further details about hospitalization we can see that the un-covered hospitalizations among the insured elderly were severe as the mean days of hospitalizations were significantly

**Table 2.** Details of hospitalization among elderly

Variables	Hospitalized n (%)	Not hospitalized n (%)	P value
<b>Age Group</b>			
60-69 (young-old)	102 (53.1)	90 (46.9)	.317
>=70 (old-old)	64 (56.6)	49 (43.4)	
<b>Sex</b>			
Male	84 (54.2)	71 (45.8)	.513
Female	82 (54.7)	68 (45.3)	
<b>Marital status</b>			
Un-married/widowed/separated	59 (51.3)	56 (48.7)	.232
Married	107 (56.3)	84 (43.8)	
<b>Household (composition)</b>			
Living alone	5 (55.6)	4 (44.4)	.782
Living with spouse	23 (60.5)	15(39.5)	
Living with unmarried son/daughter	21 (61.8)	13 (38.2)	
Living with married son/daughter	36 (52.2)	33 (47.8)	
Living with extended families	81(52.3)	74 (47.7)	
<b>Category Below Poverty Line</b>			
Below Poverty Line (BPL)	96 (52.7)	86 (47.3)	.180
Recently added to BPL	5 (33.3)	10 (66.7)	
Above Poverty Line (APL)	54 (58.7)	38 (41.3)	
Recently added to APL	11 (68.8)	5 (31.2)	
<b>Category SES*</b>			
Extremely poor	33 (47.1)	37 (52.9)	.499
Poor	21 (53.8)	18 (46.2)	
Marginal	53 (55.2)	43 (44.8)	
Vulnerable	59 (59.0)	41 (41.0)	
<b>Caste</b>			
SC	29 (46.8)	33 (53.2)	.036
OBC	110 (60.4)	72 (39.6)	
Others	27 (44.3)	34 (55.7)	
<b>Education</b>			
Illiterate	48 (64.0)	27 (36.0)	.001
<=4 years of schooling	48 (46.2)	56 (53.8)	
5-9 years of schooling	59 (64.1)	33 (35.9)	
>=10years of schooling	11 (32.4)	23 (67.6)	
<b>Occupation</b>			
Working	45 (52.9)	40 (47.1)	.422
Un-employed /on pension	121 (55.0)	99 (45.0)	
<b>Chronic Disease</b>			
Yes	140 (63.3)	81 (36.7)	<.001
No	26 (31.0)	58 (69.0)	
<b>Substance abuse</b>			
Alcohol	4 (100.0)	0	.158
Tobacco	21 (48.8)	22 (51.2)	
Both	16 (45.7)	19 (54.3)	
None	125 (56.1)	98 (43.9)	
<b>CHIS</b>			
Yes	112 (65.4)	64 (34.6)	.001
No	54 (41.9)	75 (58.1)	

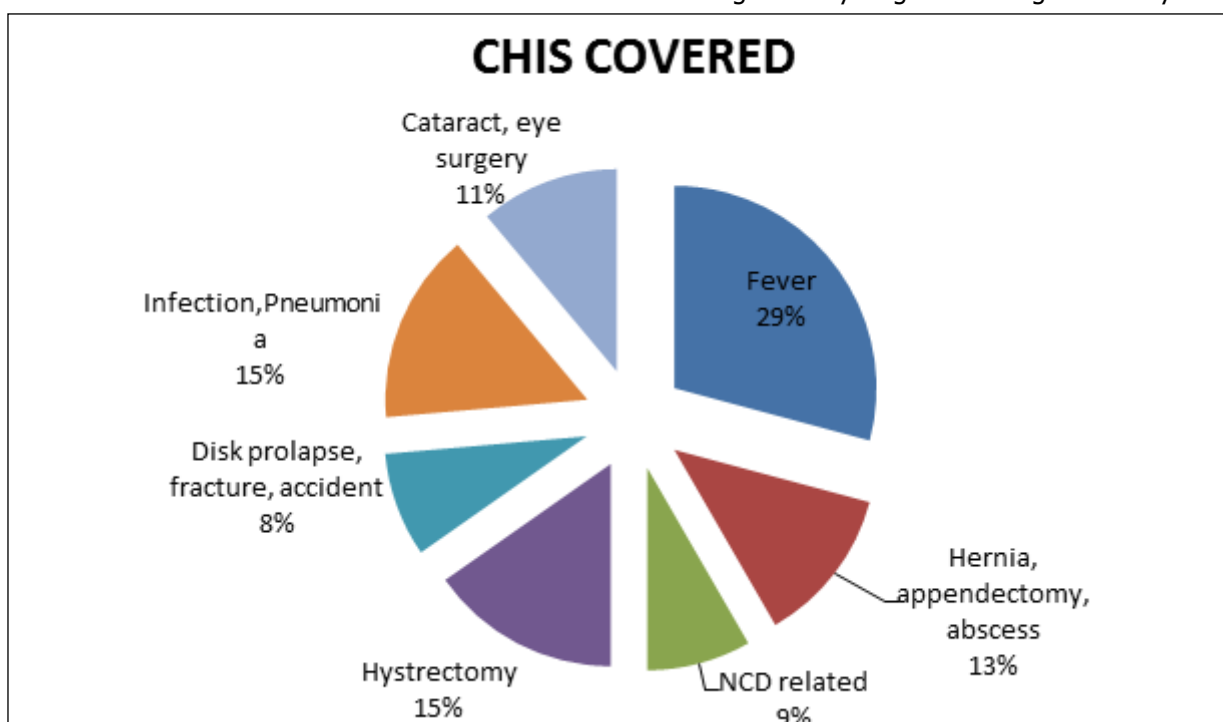
**Table 3.** Details of hospitalization among insured and uninsured elderly

Variables	Insured n (%)	Un-insured n (%)	P value
<b>Hospitalization</b>			
Yes	112 (65.4)	54 (41.9)	.001
One episode	72 (40.9)	34 (26.4)	
Two episodes	27 (15.3)	18 (14)	
Three episodes	13 (7.4)	2 (1.6)	
No	64 (34.6)	75 (58.1)	
<b>Total no. of episodes of hospitalizations</b>	165 (68.5)	76 (31.5)	
Covered by CHIS	72 (43.6)	0	
Not covered under CHIS	93 (56.3)	76(100)	
<b>Reason for hospitalization</b>			
Fever	42 (25.5)	25 (32.8)	.022
Hernia, appendectomy, abscess	16 (9.6)	1 (1.3)	
NCD related	42 (25.5)	22 (28.9)	
Hysterectomy	30 (18.1)	13 (17.1)	
Disk prolapse, fracture, accident	15 (9.0)	8 (10.5)	
Infection, pneumonia	11 (6.6)	5 (6.5)	
Cataract, eye surgery	9 (5.4)	2 (2.6)	

higher compared to the CHIS covered hospitalizations and major hospitalizations related to non-communicable diseases were not covered under CHIS. Hospitalizations covered under CHIS were of less severity like cases of fever, hernia, abscess related admissions or hysterectomies.

**Financial risk protection (out-of-pocket expenses associated with hospitalization)**

The mean indirect OOP expenses for hospitalization among insured were significantly higher compared to that of uninsured. Within the insured group it was significantly higher among the fully covered



**Figure 1** Hospitalizations covered under CHIS

**Table 4.** Details of CHIS covered episodes of hospitalization

Variables	Frequency	Episodes of hospitalization	
<b>No of elderly with hospitalization</b>	112	165	
<b>No. of elderly with single episode of hospitalization</b>	72	72	
Covered under CHIS	33 (45.9)	33 (45.9)	
Not covered under CHIS	39 (54.1)	39 (54.1)	
<b>No. of elderly with two episodes of hospitalization</b>	27	54	
Both episodes covered under CHIS	10 (37.0)	20(37.0)	
One episode covered under CHIS	7 (26.0)	7(13)	
None covered under CHIS	10 (37.0)	27(50.0)	
<b>No of elderly with three episodes of hospitalization</b>	13	39	
All three episodes covered under CHIS	0	0	
Two episodes covered under CHIS	3(23.1)	6 (15.4)	
One episode covered under CHIS	6(46.1)	6 (15.4)	
None covered under CHIS	4 (30.8)	27 (69.2)	
<b>Episode wise coverage</b>			
Any episode covered under CHIS	59(52.7)	72 (43.6)	
Fully covered (All episodes covered under CHIS)	43 (38.4)	53 (32.1)	
Partially covered (Some episodes covered under CHIS)	16 (14.3)	19 (11.5)	
None covered	53 (47.3)	93 (56.3)	
<b>Mean days of hospitalization (95%CI)</b>			
Fully covered	8.08 (6.72-9.45)	.068 ( p value)	
Partially covered	5.21(3.64-6.78)		
None covered	10.89 (7.90-13.00)		
<b>Reasons for hospitalization</b>	Fully covered	Partially covered	Not covered
Fever	15(28.3)	6(31.5)	15 (16.1)
Hernia, appendectomy, abscess	7 (13.2)	2 (10.5)	17 (18.3)
NCD related	5 (9.4)	1 (5.3)	17 (18.3)
Hysterectomy	9 (17)	2 (10.5)	21(22.3)
Disk prolapse, fracture, accident	6 (11.3)	0	12 (12.9)
Infection, pneumonia	6(11.3)	5 (26.3)	11 (11.8)
Cataract, eye surgery	5 (9.4)	3 (15.8)	0



group. Even though not statistically significant the direct out of pocket expenses among un-insured and not covered among the insured were high compared to other groups. About 81% of the hospitalized households used one or more distress financing mechanisms such as un-secured loans, gold loans, sale of assets, assistance / gift, mortgage of assets and mortgage of land to meet the expenses associated with hospitalization Table 5.

**Monthly cost of drugs for chronic diseases**

**CHIS coverage among elderly compared to other age groups**

A total of 419 (69.8%) currently insured and 181 uninsured households, with 1791 and 760 members respectively were there in the main study. Compared to younger adults, the elderly had less proportion insured, but they had the highest proportion of hospitalizations. We find that use of CHIS was more for elderly compared to other age groups in the insured households Table 6 .

**Table 5.** Out –of-pocket expenses among insure and un-insured

	Insured			Un-insured	P value
	Fully covered	Partially covered	Not covered		
Mean Direct OOP Expenses (95% CI)	6235.85 (3615.29-8856.41)	5578.9 (1678.75-9479.13)	14600 (7166.53-22091.31)	10600 (6765.85-14401.26)	.190
Mean indirect OOP Expenses (95%CI)	7679.25 (5093-10264.56)	7378.95 (3484.97-18242.87)	2205.7 (1275-3136.39)	4455.26 (1591.26-7625.23)	.027
Total Out-of-pocket expenses (95%CI)	13915.27 (9572.98-18257.20)	12958.65 (1128.377-27044.16)	16835 (8716.6-24952.62)	15039(9803.29-20274.33)	.922

**Table 6.** CHIS coverage among elderly compared to other age groups

Variables	Under 5	Adolescents (6-18 years)	Adults (18 -60 years)	Elderly (>60 years)	P value
<b>Insured under CHIS</b>					
Yes	37 (14.9)	229 (53.1)	972 (62.1)	176 (57.7)	<.001
No	212 (85.1)	202 (46.9)	594 (37.9)	129 (42.3)	
<b>Hospitalized</b>					
Yes	64 (25.7)	151 (35.0)	544 (34.7)	166 (54.4)	<.001
No	185 (74.3)	280 (65.0)	1022 (65.3)	139 (45.6)	
<b>CHIS covered hospitalization</b>					
Insured	16	93	412	112	
Any episode covered	1 (1.6)	34 (22.5)	176 (42.7)	59(52.6)	<.001
Fully covered	1 (1.6)	10 (6.6)	89 (21.6)	43 (38.4)	
Partially covered	0	24 (15.9)	87 (21.1)	16 (14.3)	
Not covered	14 (21.9)	59 (39)	236 (57.3)	53 (41.4)	
Un-insured	49 (76.6)	58 (38.4)	132 (23.3)	54 (32.5)	

Out of 305 elderly populations 186 were taking medications for chronic diseases daily. Out of this 166 (89.2%) were taking allopathic medicines, 9 (4.9%) were taking Ayurveda and 11 (5.9%) were taking homeopathy medicines. The mean monthly cost of drug among the insured 1105.09 (1193.711) and uninsured 650.03(914.416) were significantly different, p=.004.

**Discussion**

This is one of the few studies from Kerala looking at the population coverage, service coverage and OOP expenses among elderly who are insured under the social protection scheme CHIS. We found that even in the state of Kerala with the highest literacy rate, the

coverage of CHIS among elderly was only 57.7%, which is lower than the average for the target population i.e., 80%.<sup>24</sup> We found that among currently single elderly from Scheduled Caste who lived alone in kutcha or semi-pucca (poor quality) houses with no employment or pension were more likely to be excluded from CHIS. Thus, the most socially and economically vulnerable elderly were not covered. The existing literature on government sponsored social health insurance schemes for poor also states that the neediest in the target population are excluded in most of the cases.<sup>15,16,17</sup> As CHIS is a voluntary scheme and the presence of the person is required in the enrolment center for enrolling in the scheme, the bed ridden and very sick elderly are excluded by the scheme. Those elderly living alone may also lack information about the enrolment dates. The other reason for such a low coverage among elderly is because only 5 members can be enrolled under the scheme from a household, so the head of the household decides who should be enrolled. This also makes the non-working dependent elderly excluded from CHIS.

Next we tried to look at whether the population coverage translated into service coverage i.e., whether hospitalization among insured were covered by CHIS. Elderly being a vulnerable group with highest morbidity among all age groups also had the highest prevalence of hospitalization. Insured elderly had a higher proportion of hospitalizations compared to those who were un-insured. This result is consistent with the results of studies on GSHIS in Vietnam, Mexico, Colombia, Taiwan and India.<sup>11,15-20,21</sup> This finding may be due to the fact that more than half of the elderly were insured and most of the insured had chronic diseases. But when we look more into the hospitalizations among elderly we can see that even though CHIS increased hospitalization in the insured only 38.4% of the hospitalization among elderly could make use of CHIS smart card during the study period. So even those who were under the umbrella of social protection scheme, which was meant to cover only

hospitalizations were not fully covered by the scheme. In other words this scheme did not cover almost two third of the hospitalizations among insured which it supposed to cover and by default did not cover the out-patient visits which constitutes more than 70% of the total health care utilization among elderly in India.<sup>28, 29</sup> This also reflects the number and quality of the hospitals empanelled under CHIS.

Lastly we tried to find out whether the elderly who were insured under CHIS incurred out-of-pocket spending, given that CHIS was introduced with the ultimate aim of reducing OOP. Since CHIS did not cover 56.3% episodes of hospitalizations among 61.6% of the insured elderly, the insured did incur both direct and indirect OOP expenses. We also found that instead of reducing the out-of-pocket spending during hospitalization, those who were insured had higher indirect OOP compared to un-insured. Interestingly within the insured group, those who were fully covered under CHIS for all episodes had higher OOP compared to those who were partially and not covered. This finding was contrary to many findings from Vietnam and a systematic review by Ernst Spann et al from Asia and Africa. These studies found that insurance reduced OOP expenses.<sup>18-23</sup> But studies from India have found that either no impact or an increase in OOP expenditures.<sup>30</sup> This finding can be attributed to the non-translation of population coverage into service coverage which provides a false assurance of coverage among insured and the lack of coverage for chronic disease related care package in CHIS. The other reason for this is the fact that less than half of the hospitalizations among the insured households were not covered by CHIS. They were either un-insured from the insured households or they could not use the smart card. The main reasons for not making use of the CHIS smart card were refusal from the empanelled hospital to accept the card, lack of knowledge regarding the list of empanelled hospitals/benefit package, referral from an empanelled hospital to

an un-empanelled hospital, smart card reading machine not working in the hospital and diagnosed case not covered under CHIS/costs more than 30,000 INR.

The financial burden borne by the households with elderly are immense. The mean OOP per episode of hospitalization is INR 14,569 and the mean drug expenditure per month is INR 1105.09 among insured, which is almost eight times the mean per capita expenditure (MPCE) of an urban household in Kollam (INR 1763.88) and 13 times the MPCE of the lowest quintile in Kerala (INR 1103).<sup>31</sup> The mean drug expenditure per month among insured is INR 1105.09 which is almost equivalent to that of the total expenditure of the lowest quintile in Kerala.<sup>31</sup> So the households are financing their health care for the elderly by distress finance mechanisms and this is not a onetime event as elderly are prone to hospitalizations, and care for chronic diseases is lifelong. This finding calls an immediate attention of the policy makers to develop a service package specially designed for elderly, otherwise more and more households will be pushed below poverty due to the huge OOP spending.

## Conclusions

There is an ongoing debate on UHC in terms of ethical, political and economic viability. In case of elderly it is again complicated due to the high morbidity and low economic productivity.<sup>24,25,29</sup> Many low and middle income countries are shifting to UHC based health care systems in recent years.<sup>23,29</sup> This study provides an insight into the extent to which UHC is achieved through CHIS in elderly in Kerala. We found that the coverage among elderly did not translate into financial risk protection even in the best performing state like Kerala. This study points out that elderly being a vulnerable group with special needs need a more comprehensive service package with chronic disease care.

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