A study to assess the economic burden faced by rural households due to Out-of-pocket expenditure on healthcare in Uttar Kannada and Udupi districts of Karnataka

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ABSTRACT

Background and Purpose: Various studies reveal that in India more than 80 percent of health care financing is mainly in the form of out-of-pocket (OOP). As a felt need, this study was conducted with the objectives to assess the economic burden faced by rural households due to out-of-pocket payments. Material and Methods: A community-based cross-sectional study was conducted for a period of 2 years among 550 households in the rural areas of Uttar Kannada and Udupi districts. Households were selected using the multistage sampling technique and interviewed using a pre-designed and pre-tested proforma. Descriptive statistics were applied, and the data were analyzed using proportions and percentages. A Chi-square test was used to find the association between different attributes. Statistical significance was set at a 0.05% level of significance (P < 0.05). Findings: It was observed that 5 (1.99%) households spent Rs 50000 to 1 lakh, and 26 (10.36%) spent more than 1 lakh among insured households compared to 30 (17.96%) and 14 (8.38%) households, respectively among non-insured households. This difference was found to be statistically significant with P value <0.0001. Avoidance of hospital admission and medications were found to be more among noninsured households compared to insured households, which was statistically significant with P value <0.001. Almost half of those who did not have health insurance borrowed money, took a loan on property and NGOs, and sold valuables compared to those who had health insurance, and this difference was statistically significant with P value <0.001. Conclusion: During the study, it was seen that households that did not have health insurance had higher expenditure on health services, avoided hospitalization and medication, and sold valuables as a source of out-of-pocket expenditure when compared to those who had health insurance, and the difference was found to be statistically significant.

Keywords: Health care financing, health insurance, out-of-pocket, udupi districts, uttar Kannada

Introduction

An understanding of health is the basis of all health care.[1] In many countries, health is a fundamental human right.[2] The commitment of all countries, under the banner of the WHO, is to wipe out the inequalities in the distribution of health resources and services and attain sustainable development goals (SDGs).[3]

Various studies reveal that in India more than 80 percent of health care financing is mainly in the form of out-of-pocket (OOP)[3] often posing an enormous burden on underprivileged households. The costs are frequently high enough so that households are unable to recuperate them from existing resources.[3]
In the year 2012, India ranked third in the World Health Organization’s latest list of “countries with highest OOP expenditure on health” in the south-east Asia region. Hospitalization has forced people to borrow heavily or sell assets to cover expenses in 40% of them and has pushed almost 25% of them to below the poverty line (BPL) because of its expenses.

Government health insurance schemes cover only 20% of the insurable population, and there exists a large difference in health insurance coverage between states within India. It ranges from 2% in Madhya Pradesh to 87% in Andhra Pradesh (then undivided). In 2010, Karnataka has insurance coverage of 17%, which is less than the countries average. However, these health insurance are mostly inadequate and insufficient.

Health insurance has been recommended as an effective means of health financing to achieve “Universal Health Coverage (UHC)” for all countries irrespective of the financial status of the country. As the need of the hour and felt need, this study was conducted in Uttar Kannada and Udupi districts with the objectives to know the awareness, pattern of coverage, and to assess economic burden faced by rural households due to out-of-pocket payments and thus to create awareness about health insurance schemes in the study population.

### Material and Methods

This study was conducted in the two coastal districts, Uttar Kannada and Udupi, of Karnataka, India.

#### Study type

A community-based cross-sectional study was conducted for a period of 2 years.

#### Study population

The study population consisted of households in the rural areas of two districts of Karnataka – Uttara Kannada and Udupi. Adults who are present in their residence during the house visit and those who give informed consent were included in the study.

#### Sample size

Formula for calculating sample size for single proportion is as follows: $n = Z^2 \cdot (1 - \alpha/2) \cdot P \cdot (1-P)/d^2$. After substituting, $P = 14\%$ is the prevalence of health insurance utilisation in rural population in India, $d = 3$, $Z (1 - \alpha/2) = 1.96$. The sample size was calculated and approximated to 550 households.

#### Sampling technique

The multistage sampling technique used. (Flowchart)

Uttar Kannada has 11 talukas and Udupi has 3 talukas. Of the total 14 talukas, 30% were that is 3 talukas from Mundgod, 4 from Haliyal, 3 from Ankola, and 5 from Kundapur were selected. Total households in Uttar Kannada were 226803 and in Udupi were 174548 which sums up to 4,01,351 households. As the sample size calculated was 550 households, 310 from Uttara Kannada District and 240 from Udupi District were selected for the study.

#### Data collection tools

The pre-designed and pre-tested proforma was used to collect information on socio-demographic profile of the study population.
participants and also about their knowledge, attitude, and practice towards health insurance.

Ethical clearance from the Institute: Ethical clearance was obtained from the Institutional ethical committee.

Total households included from Uttar Kannada and Udupi districts are:

Uttar Kannada (total 2,26,803 household) Udupi (total 1,74,548 households)

Selection of villages and households from each district [Figure 1].

Statistical analysis

Descriptive statistics were applied, and the data were analyzed using proportions and percentages. A Chi-square test was used to find the association between different attributes. Statistical significance was set at a 0.05% level of significance ($P < 0.05$).

Data entry was done using Microsoft Excel, and analysis was carried out with the help of Statistical Package for Social Sciences – 20.0.1 (SPSS Statistics – 20.0.1).

Working definitions

1. **Health insurance**: As defined by the international labor organization, “the reduction or elimination of the uncertain risk of loss for the individual or household by combining a larger number of similarly exposed individuals or households who are included in a common fund that makes good the loss caused to any one member.”

2. **Out of pocket expenditure**: “Direct payments made by individuals to health care providers at the time of service use and excludes any prepayment for health services.”

Results

The study showed that on interviewing 550 households, 291 (52.9%) belonged to nuclear families and 259 (47.1%) belonged to joint families. More nuclear families were seen in Uttar Kannada (56.77%) compared to Udupi district where joint families were more (52.08%).

When asked about the availability of health cards, 384 (69.82%) had BPL cards [Table 1].

Out of the 550 households, 348 (63.27%) of the households were aware of health insurance and subscribed for it, whereas 115 (20.91%) did not subscribe even though they were aware of health insurances, and 87 (15.82%) were not aware of health insurance. Awareness about health insurance was more among households in Udupi district (86.25%) compared to Uttar Kannada district (62.58%). More households in the Udupi district subscribed for health insurance (67.92%) compared to 59.68% in the Uttar Kannada district [Table 1].

When asked reasons for not subscribing for health insurance, 87 (43.07%) told that they were not aware of health insurance, and 85 (42.08%) of them felt that the process was complicated. The other reasons were that they could afford the cost of treatment 30 (14.85%), provision of only partial coverage by the health insurances 49 (24.26%), and that it was not cashless 51 (25.24%) [Table 2].

| Table 1: Socio-demographic variable of the households in the two study districts |
|---------------------------------|-----------------|-----------------|-----------------|
| Type of family                  | Uttar Kannada, ($n=310$) | (%)             | Udupi, ($n=240$) | (%)             | Total (%)|
| Nuclear                         | 176 (56.77)      | 115 (47.92)     | 291 (52.9)       |
| Joint                           | 134 (43.23)      | 125 (52.08)     | 259 (47.1)       |
| Card type                       |                  |                 |                 |
| No card                         | 5 (1.61)         | 8 (3.34)        | 13 (2.36)        |
| APL card                        | 70 (22.58)       | 83 (34.58)      | 153 (27.82)      |
| BPL card                        | 235 (75.81)      | 149 (62.08)     | 384 (69.82)      |
| Awareness and subscription for health insurance |                  |                 |                 |
| Aware and subscribed            | 185 (59.68)      | 163 (67.92)     | 348 (63.27)      |
| Aware and not subscribed        | 71 (2.90)        | 44 (18.33)      | 115 (20.91)      |
| Not aware and not subscribed    | 54 (17.42)       | 33 (13.75)      | 87 (15.82)       |

| Table 2: Distribution of households based on reasons for not availing health insurance |
|---------------------------------|-----------------|-----------------|-----------------|
| Reasons for not availing ($n=202$)* | Uttar kannada, ($n=125$) (%) | Udupi, ($n=77$) (%) | Total, ($n=202$) (%) |
| Not aware                        | 54 (43.2)       | 33 (42.86)      | 87 (43.07)      |
| Process is complicated           | 51 (40.8)       | 25 (32.47)      | 85 (42.08)      |
| Not interested as I can afford The cost of treatment | 17 (5.6)       | 13 (16.88)      | 30 (14.85)      |
| Most of the Health Insurance provides partial coverage | 30 (24)         | 19 (24.67)      | 49 (24.26)      |
| It is not cashless               | 36 (28.8)       | 15 (19.48)      | 51 (25.24)      |

*Multiple answers were given
Out of the 348 households who had health insurance, 218 (62.64%) households paid a premium of less than Rs 500, 5 (1.44%) households paid a premium of Rs 500–1000 and were eligible for a coverage of Rs 25000–50000. The remaining 125 (35.92%) households were eligible for a coverage of Rs >1 lakh out of which 86 (24.71%) households paid a premium of Rs <500, 21 (6.03%) households were paying a premium of Rs 500–1000, and 18 (5.17%) households were paying a premium of more than Rs 2000 [Table 3].

Out of the 64 (71.9%) households who were eligible for complete coverage, the cashless method was provided to 58 (65.17%) households, and 6 (6.74%) households were reimbursed [Table 4].

Among the insured households who required hospital admission, 66 (74.16%) households spent on medicine, 22 (24.72%) on an investigation, 88 (98.87%) on travel, 37 (41.57%) on a special diet, and 2 (2.25%) on unauthorized fee [Table 5].

It was observed that 5 (1.99%) households spent Rs 50000 to 1 lakh, and 26 (10.36%) spent more than 1 lakh among insured households compared to 30 (17.96%) and 14 (8.38%) households, respectively, among noninsured households. This difference was found to be statistically significant with $P$ value <0.0001. Avoidance of hospital admission and medications were found to be more among non‑insured households compared to insured households which was statistically significant with $P$ value <0.001 [Table 6].

Almost half of those who did not have health insurance borrowed money, took a loan on property and NGOs,

### Table 3: Comparison of coverage and premium paid by the households having health insurance

| Households having health insurance (n=348) | Insurance Premium (in Rupees) | Insurance coverage (in Rupees) |
|------------------------------------------|-----------------------------|-------------------------------|
| 218                                      | <500                        | 25000–50000                   |
| 5                                        | 500–1000                    |                               |
| 125                                       | 500-1000                     |                               |
| 86                                        | <500                        | >1 Lac                        |
| 21                                        | 500–1000                    |                               |
| 18                                        | >2000                       |                               |

### Table 4: Distribution of households based on mode of coverage of hospital bills by health insurance

| Coverage of hospital bills by health insurance | Uttar kannada, n (%) | Udupi, n (%) | Total, n (%) |
|-----------------------------------------------|----------------------|--------------|--------------|
| Complete coverage                             |                      |              |              |
| Cashless method                               | 30 (71.4)            | 28 (59.6)    | 58 (65.2)    |
| Reimbursement                                 | 2 (4.8)              | 4 (8.5)      | 6 (6.8)      |
| Partial coverage                              |                      |              |              |
| >75%                                          | 5 (11.9)             | 9 (19.2)     | 14 (15.7)    |
| 51-75%                                        | 3 (7.1)              | 5 (10.6)     | 8 (9)        |
| 26-50%                                        | 2 (4.8)              | 1 (2.1)      | 3 (3.4)      |
| Total                                         | 42                   | 47           | 89           |

### Table 5: Nature of expenditure among health insurance utilizers

| Expenditure heads among health insurance users (n=89)* | Uttar kannada (42), n (%) | Udupi (47), n (%) | Total, n (%) |
|-------------------------------------------------------|---------------------------|-------------------|--------------|
| Medicine                                              | 31 (73.81)                | 35 (74.47)        | 66 (74.16)   |
| Investigations                                        | 9 (21.43)                 | 13 (27.66)        | 22 (24.72)   |
| Travel                                                | 42 (100)                  | 46 (97.87)        | 88 (98.87)   |
| Special diet                                          | 15 (35.71)                | 22 (46.81)        | 37 (41.57)   |
| Unauthorized fee                                      | 0                         | 2 (4.2)           | 2 (2.25)     |

### Table 6: Comparison of out of pocket expenditure among households with and without health insurance

| Facets of out of pocket expenditure | Characteristics | Health Insurance present (n=251) | No health insurance (n=167) | $P$  |
|-------------------------------------|-----------------|----------------------------------|-----------------------------|------|
|                                     |                 | Frequency | %      | Frequency | %      |      |
| Yearly expenditure on availing health services (in Rupee) | <10000         | 112       | 44.62  | 24        | 14.37  | <0.001 |
|                                     | 10,001-25,000   | 80        | 31.78  | 80        | 47.91  |      |
|                                     | 25,001-50,000   | 28        | 11.15  | 19        | 11.38  |      |
|                                     | 50,001-1,00,000 | 5         | 1.99   | 30        | 17.96  |      |
|                                     | 1,00,000        | 26        | 10.36  | 14        | 8.38   |      |
| Hospital admission avoided          | No              | 216       | 86.05  | 131       | 78.44  | 0.042  |
|                                     | Yes             | 35        | 13.94  | 36        | 21.56  |      |
| Number of times medication avoided  | 0               | 299       | 85.92  | 151       | 74.75  | 0.0072 |
|                                     | 1-3             | 19        | 5.46   | 22        | 10.89  |      |
|                                     | 4-6             | 25        | 7.18   | 21        | 10.4   |      |
|                                     | >6              | 5         | 1.44   | 8         | 3.96   |      |
| Source of out of pocket expenditure* | Self-financed   | 178       | 51.15  | 41        | 20.29  | <0.001 |
|                                     | Borrowed from Friends/Relatives | 77      | 30.68  | 94        | 56.29  |      |
|                                     | Loan on property | 48       | 19.12  | 70        | 41.19  |      |
|                                     | Selling valuables | 53      | 21.11  | 70        | 41.91  |      |
|                                     | Loan from NGO    | 61       | 24.30  | 39        | 23.35  |      |
and sold valuables compared to those who had health insurance, and this difference was statistically significant with $P$ value <0.001 [Table 6].

**Discussion**

In our study, the economic burden in those with and without health insurance among those who faced hospitalization episodes were compared. It was seen that the number of times any of members of the household were admitted to the hospital, hospitalization avoided, medication avoided, borrowing money or taking a loan, and selling of their property as a source of out-of-pocket expenditure was more among those who did not have health insurance than those who had health insurance. This difference was statistically significant with a $P$-value of <0.05.

Similar findings were seen in a study done by Rama Joglekar[10] in the Indira Gandhi Institute of Development Research, Mumbai in 2008. This study was conducted to know if insurance could reduce catastrophic out-of-pocket health expenditure. The information from the world health survey 2003 was used to create two distinct specifications. The first specification was with a dummy where the economic head of the household had health insurance, and the other was with a dummy where health insurance was present with at least one member of the household. It was seen that in both these specifications, a lower probability of catastrophic health expenditure was seen in households with medical insurance as compared to those without insurance.

The National Sample Survey Office 71st round[13] (NSSO) after their survey of different households found that 14.1% in rural and 18% urban populations were covered with insurance but only 1.2% in rural and 6.2% in urban received partial reimbursement from insurance agencies of incurred health care costs after hospitalization. The study was conducted on a large scale, and the time frame of conducting this study was different compared to our study which might explain the difference in the results obtained.

**Limitations**

1. It was a large-scale study with less manpower and funding.
2. The data collected could have been more accurate. Expenditure on health could have been separately given for OP treatment and IP treatment. This could have given a better idea about out-of-pocket expenditure.

**Health insurance - a means to reduce OOP expenditure!**

This study highlights the OOP burden on households and identifies inefficiencies in existing health insurance schemes in terms of their coverage and financial protection. The Government has introduced new health insurances (Ayushman Bharat), and studies can be done to see if this health insurance scheme has reduced the out-of-pocket expenditure among households.

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**Declaration of patient consent**

Written informed consent was obtained from study participants which was acknowledged by the Institute ethical committee.

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**Conflicts of interest**

There are no conflicts of interest.

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