A study on the out of pocket expenditure among households with diabetic and hypertensive patients in Chidambaram, Tamil Nadu

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Abstract

Background: High oope is associated with increasing ncds [1-4]. 3.5 to 6.2% of the population in India is pushed into poverty due to high oope [7, 11, 12], only 19% of the Indian population is covered by central or state-government sponsored insurance [25]. with this background the study objective was to estimate the out of pocket expenditure among households with diabetics and hypertensive patients.

Methods and Methodology: This cross-sectional study was conducted among 100 households with diabetic and hypertensive patients in Chidambaram. Direct costs include cost of consultation, medications, and laboratory investigations. Indirect costs include hospital stay, miscellaneous costs and expenses for meals and travelling, sickness absenteeism by the patient and the family.

Results: Each household on an average spent Rs.8295 was spent annually as out of their pocket for direct medical expenditure. The average indirect expenditure incurred was Rs.5534 annually. The mean total medical expenditure incurred was Rs.13830 annually.

Conclusion: This study demonstrates the preference towards government run health care centres has helped the households not to incur catastrophic health expenditure.

Keywords: Diabetes, hypertension, OOPE, out of pocket expenditure, direct medical costs, indirect medical costs, catastrophic health expenditure, medical expenditure

Introduction

High out of pocket expenditure is associated with increasing non-communicable diseases (NCDs), increase in the number of the elderly population, increasing costs of health care, low coverage of health insurance, advancements in medical technology and decreased public spending on health care [1-4]. More than 100 million people are pushed into poverty every year due to health expenditure [5-9].

SDG 3 stresses on ‘financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all’ to achieve Universal Health Coverage by 2030.10 Around 97 million people were impoverished due to expenditure on health care in 2010.5 Globally, an estimated 588 million (9.7%) people had incurred catastrophic health expenditure in 2000 and it has increased to 808 million (11.7%) in 2010 [9]. Every year, 3.5 to 6.2% of the population in India is pushed into poverty due to high OOPE [7, 11, 12]. The impoverishment increases with hospitalization of cases [13, 14]. Similarly, about 23.4% households incurred catastrophic health spending during 2011–12.15

About 71.1% of the health expenses in 2004 and 67.74% in 2014 was met by the individual households’ themselves in India [16] Public health spending in India is about 1% of gross domestic product (GDP), lower than many low income countries [11, 17-19]. India’s health system is characterized by both public and private health care providers. Public health facilities are provided by the central government, the state governments, and local bodies [20]. [21] Public health centres provide low cost care, are generally overcrowded, and largely used by the poor. Despite this low cost of health care, the poor households incur high catastrophic health expenditure and have a higher burden of diseases [21-24].

Only 19% of the Indian population is covered by central or state-government sponsored insurance, leaving the majority of the expenditure for diseases to the individuals in the form of out-of-pocket expenditure. In addition, the economic productivity of the society may decline enough to significantly impact national economic productivity as young Indians with
diabetes and hypertension, age and experience the medical complications of their diseases [25].
With this background the objective was to estimate the out of pocket expenditure among households with diabetics and hypertensive patients.

Materials and Methods
This descriptive cross-sectional study was conducted among 100 households with diabetic and hypertensive patients residing in Chidambaram for a period of 6 months (June 18-Jan 19) in the field practice area under urban health centre, Department of Community Medicine, RMMCH. The 100 households were selected by convenient sampling and only the households with either diabetics and/or hypertensives were included in this study. The details of this study were explained to the study population in their local language, and after getting their informed consent, the data for this study was collected by house to house survey using a semi structured interview schedule. The interview schedule included details such as demographic and socio-economic data, type of morbidity, modality of treatment and expenses met towards direct and indirect costs. After data collection, data was entered in Microsoft Excel and analysed using SPSS version 23. Descriptive analysis was done as the statistical test.

The following definitions were used to measure the OOP health expenditure of the families:
1. Out of pocket expenditure: It was defined as the health spending by households on medical goods and services and maintenance of good health.
2. Catastrophic health expenditure: It was defined as the household’s annual health expenditure when exceeds 10 per cent of the total annual household income.
3. Direct health expenditure: It includes all annual medical expenditure towards treatment which includes doctor’s fee, purchase of medicine, diagnostic charges and hospital charges.
4. Indirect health expenditure: It includes the other annual expenses incurred by a household which includes transportation charge, lodging charges and loss of wages for both the patients and the family members.
5. Monthly per capita consumer expenditure (MPCE) was calculated as the household's consumption expenditure in a month divided by the size of the household.

Results
Out of these 100 households surveyed, 345 participants were identified and among them 119 were having the disease. Of them 50 had diabetes mellitus, 25 had hypertension and 44 had both diabetes and hypertension (Fig: 1) 42.5% of males and 26.3% of the females were having the disease. Majority (40.8%) of the diseased belonged to the age group of 31-60 years. The diseased member of the households had the disease for an average of 1.8 years.

Table 1: Socio demographic description of the study population

| Variables                        | Frequency (N=100) | Percentage |
|----------------------------------|------------------|------------|
| Age (N=345)                      |                  |            |
| <5                               | 8                | 2.3        |
| 6-10                             | 27               | 7.8        |
| 11-19                            | 38               | 11         |
| 20-29                            | 31               | 9          |
| 30-60                            | 172              | 49.9       |
| >61                              | 69               | 20         |
| Sex (N=345)                      |                  |            |
| Male                             | 174              | 50.4       |
| Female                           | 171              | 49.6       |
| Family Size (N=100)              |                  |            |
| 1                                | 5                | 5          |
| 2                                | 25               | 25         |
| 3                                | 17               | 17         |
| 4                                | 30               | 30         |
| 5                                | 19               | 19         |
| 6                                | 4                | 4          |
| Education of Head of Household (N=100) |                  |            |
| Illiterate                       | 4                | 4          |
| Primary School                   | 32               | 32         |
| Middle School                    | 12               | 12         |
| High School                      | 29               | 29         |
| Intermediate/Diploma             | 10               | 10         |
| Graduate                         | 12               | 12         |
| Profession/Honors                | 1                | 1          |
| Occupation of The Head (N=100)   |                  |            |
| Unemployed                       | 6                | 6          |
| Elementary Occupation            | 32               | 32         |
| Machine Operator                 | 7                | 7          |
| Craft/Trade Worker               | 17               | 17         |
| Skilled Agr/Fishery Worker       | 4                | 4          |
| Skilled Workers & Sales Worker   | 19               | 19         |
| Clerks                           | 12               | 12         |
| Professionals                    | 3                | 3          |

Table 2: Per capita income and mean per capita expenditure per month of the households under study

| Variables (Inr) | Frequency (N=100) | Min (Inr) | Max (Inr) | Mean (Inr) | Sd (Inr) |
|-----------------|-------------------|-----------|-----------|------------|----------|
| Per Capita Income |                  |           |           |            |          |
| <4000           | 69                | 400       | 21933     | 4096       | 3693     |
| 4001-6000       | 15                |           |           |            |          |
| >6001           | 16                |           |           |            |          |
| Mean Per Capita Expenditure |              |           |           |            |          |
| <1700           | 50                | 500       | 5570      | 2146       | 1246     |
| 1701-2750       | 24                |           |           |            |          |
| >2751           | 26                |           |           |            |          |
Table 3: Out of pocket expenditure (oope) per year among the study households

| Variable (INR) | Frequency (N=100) | Minimum (INR) | Maximum (INR) | Mean (INR) | Sd (INR) |
|----------------|-------------------|---------------|---------------|------------|----------|
| Total Direct Oope |                  |               |               |            |          |
| <2400          | 50                | 0             | 225199        | 8295       | 24125    |
| 2401-7000      | 24                |               |               |            |          |
| >7001          | 26                |               |               |            |          |
| Indirect Oope  |                  |               |               |            |          |
| <100           | 59                | 0             | 67200         | 461        | 1080     |
| 101-400        | 25                |               |               |            |          |
| >401           | 16                |               |               |            |          |
| Total Oope     |                  |               |               |            |          |
| <5000          | 51                | 0             | 225199        | 13830      | 27267    |
| 5001-10000     | 20                |               |               |            |          |
| >10001         | 29                |               |               |            |          |

Table 4: Description of mean oope and mean catastrophic expenditure annually based on type of disease in the study households

| Households With Type Of Disease | Oope (INR) (N=100) | Catastrophic Expenditure (INR) (N=29) |
|-------------------------------|--------------------|-------------------------------------|
|                               | Min   | Max    | Mean | SD    | Min | Max  | Mean | SD   |
| Diabetes Mellitus             | 0     | 64700  | 13631| 16435| 2044| 57500| 14027| 17615|
| Hypertension                  | 0     | 49800  | 7995 | 13056| 200 | 40800| 20348| 22594|
| Both                          | 0     | 225200| 18195| 41612| 1080| 195200| 37597| 56711|

Out of 345 participants, 164 belonged to the age group of 31-60 years and there was equal distribution of males and females. 32% of the head of the households had a primary school education and were employed in an elementary occupation. 30% of the households had a family size of 4 members (table: 1). Out of 100 households, 75 were own houses, 45 households had an income in the range of Rs.3908-11707 and 57 households belonged to the upper lower socio economic class based on modified Kuppuswamy scale. 69% of the households had a per capita income less than Rs.4000. 79% of the households paid a rent of less than Rs.500. 88% of the households had less than Rs.500 as their debt. The mean per capita expenditure (MPCE) of the households was Rs.2146 (table: 2). 65% of the diabetics and hypertensives were diagnosed for the first time in a government run hospital. 75% continued their treatment in a government health facility. Only 34% of the population under study switched to a different health care provider during their course of treatment; of these 19% switched from a private facility to a government run centre. 26% of the household paid more than Rs.50 as a doctor’s fee per month. 33% of the population paid more than Rs.200 per month for their medicines, while 99% did not exceed Rs.500 for their surgical expense. The households spent an average of Rs.304 for their hospitalisation per month. The average diagnostic test per month costs Rs.41 for every household. Every household annually spent on an average of Rs.8295 as out of pocket expenditure for their direct medical costs. The mean expenditure per month towards the travel and food of the patient and attendee were Rs.95 and Rs.39 respectively. On an average the patient lost 1 day of work due to their illness and Rs.269 due their absence at work. The mean total indirect expenditure incurred by the household was Rs.5534 annually. The mean total medical expenditure incurred by the study population was Rs.13830 (table: 3). The mean OOPE was high among households with both diabetics and hypertension, spending on an average Rs.18195 annually (table: 4).

29% of the households under study spent more than 10% of their household income towards medical expenditure (fig no: 2) and households having both diabetics and hypertensives had on an average a catastrophic expenditure of Rs.37597 (table no: 4). 64% of the households were insured under one form of insurance out of which 54% were insured under free government health insurance schemes like CMCHIS and PMJAY.

Discussion
164 participants belonged to the age group of 31-60 years and there was equal distribution of males and females. 32% of the head of the households had a primary school education and were employed in an elementary occupation.
30% of the households had a family size of 4 members. 75 had own houses. 45 of the households had an income in the range of Rs.3908-11707. 57 of the households belong to the upper lower socio economic class based on modified Kuppuswamy scale. A study conducted by Karthiyayini Logathan et al in Maharashtra showed similar findings [26].

69% of the households had a per capita income less than Rs.4000. 79% of the households paid a rent of less than Rs.500. 88% of the household had less than Rs.500 as their debt. The mean per capita expenditure (MPCE) of the household was Rs.2146. This is comparable to studies done by Vikas Bajpai et al and Anshul Kastor et al. [27, 28]. Majority (40.8%) of the diseased belonged to the age group of 31-60 years. The study participants had the disease for an average of 1.8 years. 14.5% of the population had only diabetes mellitus while 7.2% had only hypertension. 12.8% of the population had both diabetes mellitus and hypertension. These findings were comparable to a study conducted by Biplab Kumar Datta et al. [29].

In this study 65% of the participants were diagnosed first in a government run hospital. 75% continued their treatment in the government health facility. Only 34% of the population under study switched to a different health care provider during their course of treatment; of these 19% switched from a private facility to a government run centre. However in a study conducted by Indrani Gupta et al 79% were first diagnosed in a private institution and 58% switched from public to private hospital [30].

In this study 54% of the households were insured under government sponsored health insurance schemes like CMCHIS and PMJAY. The individuals covered under health insurance schemes is higher in this study when compared to a study conducted by Jayakrishnan T et al. [31].

In the current study the mean total medical expenditure incurred by the study population was estimated to be Rs.13830 annually. 29% of the household in the current study incurred by the study population was estimated to be Rs.2146. This is comparable to a study conducted by Vikas Bajpai et al and Anshul Kastor et al. [27, 28].

limitation of the study
The study asks questions based on the income of households, the reliability of the responses related to the income variable is questionable because many participants were reluctant to reveal their real income. The estimate of the medical expenses of the participants was calculated approximately and it was not cross checked with their medical bills. Due to the non responsiveness of the population to the questionnaire, a convenient sampling was done to gather the study participants and hence results cannot be generalised.

Conclusion
Most of the study participants preferred government health centres for their treatment which helped them not to incur catastrophic health expenditure and 29% of the households experienced catastrophic health expenditure. The OOPE was less in this study population when compared to other studies. The process of bringing the whole population (from the current 54%) under the health insurance schemes may reduce OOPE further in this population. This will bring the population a step closer towards universal health coverage.

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