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Original Research Article

Out-of-pocket expenditure on healthcare amongst households of an urban village in Delhi

Suraj P. Singh*, Anita Khokhar

Department of Community Medicine, VMMC and Safdarjung Hospital, New Delhi, India

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***Correspondence:**
Dr. Suraj Prakash Singh,
E-mail: drsurajprakashsingh@gmail.com

ABSTRACT

Background: Poor urban households residing in an unplanned overcrowded settlement, are at a higher risk of morbidities and healthcare expenditure which can be impoverishing. Effective assessment of healthcare expenditure of households living in an urban village is needed to mitigate and protect the vulnerable households from catastrophic health expenditure. The objective of the study was to find out the mean out-of-pocket expenditure on healthcare, and catastrophic health expenditure amongst households of an urban village of Delhi.
Methods: This 18-month duration cross-sectional study was carried out in an urban village of Delhi, Aliganj amongst households residing for the last one year. A sample size of 188 was statistically calculated, and households were selected using systematic random sampling. A pre-designed, pre-tested, semi-structured and interviewer administered questionnaire was used in Hindi to elicit and record information. Data was recorded and coded in MS Excel, and analysis was done using licensed SPSS v.26. Tables was generated, and cross-tables were used to assess statistical association with Chi-square or Fischer Exact tests, as required. Multivariate logistic regression was applied to the variables found having a statistically significant association on cross-tables ($p<0.05$).
Results: The mean out-of-pocket expenditure borne by a household was INR 20,125.5 (SD± 50,772.3), with a median expenditure of INR 1800. Eighty percent of OOPE was incurred as direct expenditure and 56% was spent in private health facilities.
Conclusions: The households of an urban village of Aliganj, Delhi, have high out-of-pocket expenditure (60.6%), and catastrophic health expenditure (22.9%).

Keywords: Out-of-pocket expenditure, OOPE, Urban village, Catastrophic expenditure, Urban poor

INTRODUCTION

In 2015 the nations of the world at United Nations general assembly adopted sustainable development goals, having the target 3.8 instated to achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality, and affordable essential medicines and vaccines for all. The SDG target 3.8 which other than promulgating the coverage of essential health services, also emphasises decreasing the proportion of population with significant household expenditure on health as a share of total household expenditure or income (SDG Target 3.8.2). Because of healthcare expenses 100 million people globally are pushed into extreme poverty every year.[1] National Health Accounts Estimates in India reported that out-of-pocket expenditure (OOPE) accounted for 63.2% of Current Health Expenditure for the year 2016-17, which is one of the highest in the world.[2]

Catastrophic health expenditure (CHE) is one way of assessing the extent to which health systems can lead to financial hardships, often estimated as the proportion of the population bearing large household expenditures on health as a share of household total consumption or income. As reported in a study assessing various National statistical office (NSO) surveys, 55 million people in India were propelled into poverty because of out-of-pocket health expenditure during the 1994-2014 period. Out of this, nearly 38 million incurred CHE, when defined as 10% of total household expenditure.[2] CHE has been observed across India affecting prosperous as well as backward states; poor as well as rich households, in varying degree.[3,4] Further, household health expenditure tends to be maximum in households having elderly people, followed by households with children. Similarly, households having members who are casual laborers or were residing rural areas have been reported to be more vulnerable to catastrophic expenditure.[3] The vision of UHC cannot be achieved unless we are aware of health financing and its various aspects at the household level. Multiple studies in the past have tried to assess the OOPE and its determinants at community level. Most of these studies have analyzed the National Health Survey data from National Sample Survey. Only a few have carried out community-based studies in an urban vulnerable population, where a large number of the new arrivals can only afford to live in informal settlements. A focus on healthcare pattern and expenditure among the urban poor is crucial to move towards Universal Health Coverage. Till date there is a paucity of research studies in such a setting among households of an urban village of Delhi. Against this background the current study was planned among the households of an urban village: a special setting characterized by unplanned and haphazard settlements, overcrowding, poor sanitation with the objective to find out their mean out-of-pocket expenditure on healthcare, and Catastrophic health expenditure amongst households of an urban village of Delhi.

METHODS

Current cross-sectional study was conducted over an 18-month period to determine the mean out-of-pocket expenditures and catastrophic expenditures for inpatient care amongst households of an urban village in Delhi.

Study design, settings, location and duration

The cross-sectional study was carried out in a setting of an urban village in Aliganj, Delhi. An urban village is an unauthorized and/or unplanned settlement, where many homes have been constructed in an unplanned, haphazard manner resulting in overcrowding, and where residential and commercial properties exist together without clear demarcation.[5] Aliganj has an Urban health training health centre (UHTC) under the Department of Community Medicine, VMMC & SJH, catering to a population of approximately six thousand inhabitants mainly comprising of migrants from other states and villages. Study was conducted for a duration of 18 months.

Inclusion criteria

Households residing for >1 year in the area were included.

Sample size and sampling technique

The sample size was estimated using the formula mentioned below based a study done in urban households of Dakshina Kannada by Tiwari et al.[6]

$$n = Z2SD2/L2$$

Where Z was taken to be 1.96, SD as 4722.35, and l as 15% of SD. With a non-response rate of 10% sample size came out to be around 187. A total of 188 households were included in the study.Systematic Random Sampling technique was used. A sampling frame having 1,668 households was adapted for systematic random sampling from preexisting socio-demographic data of Aliganj. The first house was chosen using a random number between 1 and 9, and from there on every subsequent house was selected by adding a sampling interval 9. When a household selected by the above process was found locked or not having the head of household at least 3 consecutive visits were made to contact. Then the next household was selected by using simple random sampling.

Definitions used for study purpose

Household: A household was defined as a group of persons normally living together and taking food from a common kitchen. In a house inhabited by multiple families, a household was identified by the number of kitchens or Chulah.[7] Head of household: The one who made all the major decisions of the household. Out-of-pocket expenditure: Out-of-pocket payments are those made by people at the time of getting any type of service (preventive, curative, rehabilitative, palliative, or long-term care) provided by any type of provider. They include cost-sharing (the part not covered by a third party like an insurer) and informal payments (for example, under-the-table payments), but they exclude insurance premiums. Out-of-pocket payments could be financed out of a household's income, including remittances, savings, or borrowing. They exclude any reimbursement by a third party, such as the government, a health insurance fund, or a private insurance company.[1] Inpatient care: Any ailment which required an overnight stay in a health care facility for treatment was assessed as an inpatient care episode.[8] For study pre-hospitalization and post-hospitalization care and expenditure were assessed with inpatient care. A period of 1 year was considered for calculating inpatient expenditure.[7] Outpatient care: Any morbidity which did not require overnight stay for treatment, including self-medication, home treatment, and over-the-counter purchase were assessed as an outpatient care episode. Direct expenditure: It included treatment charges directly

paid while seeking treatment such as doctors' fee, cost of medicines and investigations, bed charges, cost of healthcare packages, attendant charges, and the expenditure incurred on physiotherapy, personal medical appliances, blood, oxygen, etc.[7] Indirect expenditure: It included all non-medical expenditures incurred while seeking treatment. It included expenditure incurred for transport of the patient whether accompanied by other household members or not, cost of food, lodging, and other charges such as telephone charges made from PCO, expenditure on soap, towel, toothpaste, etc. for the patient and escort(s).[7] Catastrophic health expenditure: Out-of-pocket health expenditure exceeding 10% of total household expenditure was considered as a catastrophic expenditure.[1]

Study tool

A pre-designed, semi-structured, questionnaire was prepared in English and then translated to Hindi. The questionnaire was pre-tested on 10 percent of the sample size in a population of a similar area, Pilanji, Delhi, before the study. Participants were interviewed to elicit relevant information regarding socio-demographic profile, OOPE on inpatient care and its associated factors, and catastrophic expenditure incurred. The above information was collected from the head of household for all the members of that household. Whenever possible hospital bills, BPL card, etc. were checked to verify the information provided. Socio-economic status was calculated as per the revised Kuppuswamy Scale, 2019.

Statistical methods

Data entry was done in Microsoft Excel spreadsheets using variable coding. Data were verified by double entry and proofreading. Data cleaning and analysis were done using licensed SPSS software (version 21). All the variables were analysed using descriptive statistics to calculate frequency, mean, range, etc. Bivariate analysis was done for determining an association between the presence of OOPE, Catastrophic health expenditure, and other associated factors. Statistical tests of significance for the difference between proportions, i.e., Chi-square test and Fisher's exact test were applied and the calculated results were considered significant at a p-value < 0.05. After data entry, every 10th questionnaire was picked randomly and data entry was verified. An independent person verified data entry of two randomly chosen forms after entry of every twenty-five questionnaires. Each eligible subject was explicitly explained about the purpose of the study by the investigator and informed consent was obtained before inclusion. Privacy of subjects and confidentiality of information was maintained, and this was also explained to the subjects before inclusion.

RESULTS

The present study was conducted in 188 households of an urban village located in the Aliganj area of Delhi in 2020.

The mean age of the head of the households in the study was 41.5 years (SD±11.3), almost all heads of households were males (177, 94.1%).

Most of the households (174; 92.5%) were Hindu by religion. Out of 188 head of households, 22 (11.7%) were unemployed, rest 166 (88.3%) had some employment. The median number of members a family had was 4. Eighty percent (151) of the households resided in rented accommodations, while 37 (19.4%) had a house of their own. Almost half (92; 48.9%) were General by caste, 59 (31.4%) belonged to Other Backward Castes, 34 (18.1%) to Scheduled Castes, and rest 3 (1.6%) belonged to Scheduled Tribes. Only 11 (5.9%) households were BPL card holders, 37 (19.7%) had ration cards. Seventy-nine (42.0%) households had vulnerable members like children less than five-year-old, pregnant women and geriatric (Table 2). The study included 188 households having a cumulative of 795 individuals, wherein in the last 30 days 258 morbidity episodes were reported, along with 45 hospitalizations in the last 1 year (Figure 1). Out of 795 study participants, 221 (27.8%) reported morbidities which required outpatient care, and 45 (5.7%) sought inpatient treatment in the last 1 year (Table 2). Out of all households, 56.4% had OOPE on healthcare during outpatient care having a mean OOPE of INR 13,345.2 (SD±26,377.8), and 21.8% households had OOPE on inpatient care during last one year with a mean OOPE of INR 6,870.3 (SD±30,580.6). The total OOPE was calculated for annual healthcare expenditure where OOPE on outpatient care in last 30 days was multiplied by 12 and was added to inpatient care OOPE in the last one year. The mean OOPE per inpatient episode was INR 28,702.6 (Table 3). The study found that 114 (60.6%) households incurred OOPE on healthcare, and the mean OOPE was INR 20,125.5 (SD±50,772.3) with a median of INR 1800, IQR of INR 17,100.0 and Range of INR 2,99,000. Out of 188 households, 43 (22.9%) of the households incurred catastrophic OOPE on healthcare in the last one year (Table 4).

Out of 188 households, a total of 106 (56.4%) households had OOPE on outpatient care (mean (SD): INR 13345.2 (26377.8)), with 94 (50.0%) having direct OOPE (mean (SD): INR 9924.1 (23231.1)), and 49 (26.1%) indirect OOPE (mean (SD): INR 3421.0 (10958.2)). Similarly, a total of 41 (21.8%) households had OOPE on inpatient care (mean (SD): INR 6870.3 (30580.6)), with 35 (18.6%) having direct OOPE (mean (SD): INR 6896.1 (32084.9)), and 31 (16.5%) indirect OOPE (mean (SD): INR 1075.3 (5388.5)). Overall, a total of 114 (60.6%) households had OOPE on healthcare, with 77 (41.0%) having direct OOPE and 39 (20.7%) indirect OOPE (Figure 2). Out of total household OOPE, a mean OOPE of INR 16,820.1 (SD±37,835.4) was incurred as direct payments, which amounted to 78.9% of the total OOPE; and a mean amount of INR 4,491.1 (SD±11,907.1) was incurred as indirect OOPE which amounted to 21.1% of the total OOPE. The median (IQR) direct and indirect OOPE were INR 3300 (10994) and INR 240 (3525), respectively (Table 5).

Table 1: Distribution of study households according to socio-demographic characteristics (n=188).

Parameters	N (%)
Age of head of household (years)	
18-27	17 (9.0)
28-37	64 (34.1)
38-47	44 (23.4)
48-57	47 (25.0)
58-67	12 (6.4)
68-77	4 (2.12)
*Mean age=41.5 years; SD=±11.3; Max=76; Min=20; Range=56	
Sex of head of the household	
Male	177 (94.1)
Female	11 (5.9)
Religion	
Hinduism	174 (92.5)
Islam	12 (6.4)
Christianity	2 (1.1)
Education of head of the household	
Illiterate	15 (8.0)
Primary School	13 (7.0)
Middle School	38 (20.2)
High School	46 (24.5)
Intermediate	49 (26.0)
Graduate and other higher education	27 (14.3)
Occupation of the head of the household	
Unemployed	22 (11.7)
Unskilled worker	66 (35.1)
Semi-skilled worker	51 (27.1)
Skilled worker	18 (9.7)
Clerical/shop/farm	19 (10.1)
Semi-professional	10 (5.3)
Professional	2 (1.0)
Number of family members	
2	28 (14.9)
3	32 (7.0)
4	64 (7.0)
5	36 (7.0)
≥6	28 (7.0)
Median =4; IQR =2; Max =13; Min =2; Range =11;	
Type of family	
Nuclear	147 (78.2)
Joint	41 (21.8)
Socio-economic class as per Modified Kuppuswamy Scale 2019	
Upper-middle (II)	59 (31.4)
Lower-middle (III)	58 (30.8)
Upper-lower (IV)	71 (37.8)
House ownership	
Rent	151 (80.3)
Owned	37 (19.4)
State of origin	
Uttar Pradesh	40 (21.3)
Delhi	38 (20.2)
Bihar	34 (18.1)
Uttarakhand	32 (17.0)
Odisha	13 (6.9)
Others	31 (16.4)

Continued.

Parameters	N (%)
Caste	
General	92 (48.9)
Other Backward Class	59 (31.4)
Scheduled Class	34 (18.1)
Scheduled Tribe	2 (1.6)
Below poverty line card holder	
No	177 (94.1)
Yes	11 (5.9)
Ration card holder	
No	151 (80.3)
Yes	37 (19.7)
Households with vulnerable groups present	
No	109 (58.0)
Yes	79 (42.0)
Health Insurance coverage for any member of household	
No	114 (60.6)
Yes	74 (39.4)

Table 2: Distribution of study participants according to type of care sought (n=795).

Type of care sought	N (%)
Outpatient care (Less than 30 days), episodes of illness per person in the last 30 days, N (%)	221 (27.8)
One	192 (86.9)
Two to three	23 (10.4)
More than three	6 (2.7)
Inpatient care (Less than 1 year), **Number of episodes**, N (%)	45 (5.7)
One	42 (92.9)
Two to three	2 (4.8)
More than three	1 (2.4)

A mean OOPE of INR 28,739.6 (SD±55,882.1) was incurred while seeking treatment from private sources contributing 55.9% to total OOPE incurred.

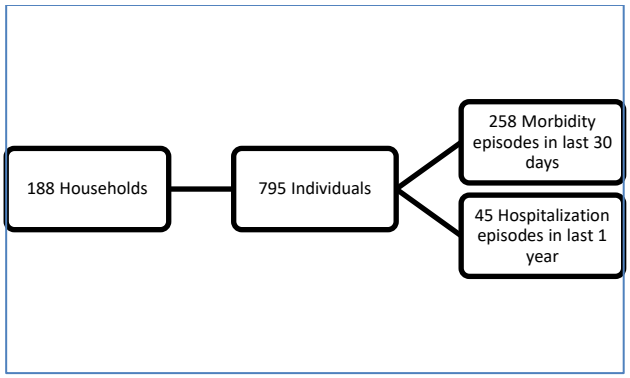

Figure 1: Distribution of study households according to morbidity episodes.

Likewise, a mean OOPE of INR 8,841.1 (SD±18,841.9) was incurred while seeking healthcare from both government and private facilities together; and INR 7,902.8 (SD±15,994.8) while seeking healthcare from government sources (Table 6). A statistically significant association of OOPE was found with the age of head of household, number of household members, type of family and the presence of vulnerable members in the house ($p<0.05$) (Table 7).

Table 3: Distribution of OOPE by type of care sought (n=188).

Parameters	N (%)	Mean (SD) (INR)
Outpatient care	106 (56.4)	13345.2 (26377.8)
Inpatient care	41 (21.8)	6870.3 (30580.6)

Table 4: Distribution of households incurring out-of-pocket expenditure (OOPE) and catastrophic health expenditure (CHE) while seeking healthcare (n=188).

Parameters	N (%)
OOPE incurred	
Yes	114 (60.6)
No	74 (39.4)
Catastrophic health expenditure incurred	
Yes	43 (22.9)
No	145 (77.1)

There was no statistically significant relationship between total household expenditure and their OOPE on healthcare ($p>0.05$). A statistically significant association of CHE was found with, number of household members, type of

family, house ownership and the state of origin ($p<0.05$) (Table 8).

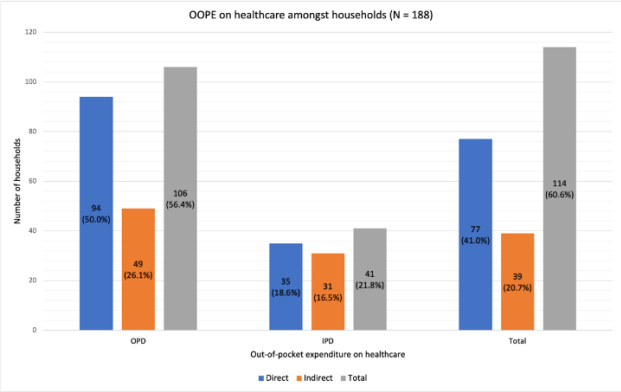

Figure 2: Distribution of households on OOPE (n=188).

Table 5: Distribution of households according to type of OOPE.

Type of OOPE expenditure	Mean OOP SD (INR)	% of total OOPE
Direct OOPE	16820.1 (37835.4)	78.9
Indirect OOPE	4491.1 (11907.1)	21.1
Total	13238.0 (34601.4)	100

Table 6. Distribution of households according to OOPE on type of health facility utilized.

Type of facility utilized	Mean OOPE SD (INR)	% of total OOPE
Only private	28739.6 (55882.1)	55.9
Government and private both	8841.1 (18841.9)	6.4
Only government	7902.8 (15994.8)	37.6
Total	13238.0 (34601.4)	100

The factors which had a statistically significant association with OOPE and catastrophic health expenditure, did not have significant odds for incurring CHE as seen on multivariate logistic regression analysis ($p>0.05$).

DISCUSSION

The study had aimed to find out the mean OOPE on healthcare and the proportion of households incurring catastrophic expenditure on health, and their associated factors in the study population. The study found that out of 188 households, 114 (60.6%) incurred OOPE on healthcare, which is in congruence to what Vasudevan et al. (Puducherry, 2019) reported in their study conducted in rural and urban households, where they found the prevalence of OOPE in the rural households to be 68.3% and 65.8% in the urban households, while the overall prevalence of OOPE was 67.1%.[9] National Health Accounts Estimates (India, 2019) which describe health expenditures and the flow of funds in country's health system over a financial year for India, reported in year 2016-2017, OOPE contributed 58.7% of Total Health Expenditure, and 63.2% of Current Health Expenditure, which reflects the findings of the current study.[2]

The current study found the annual mean OOPE on healthcare incurred by the study household was INR 20,125.5 (SD±50,772.3) with a median OOPE of INR 1,800 (IQR: 17,100.0). The mean OOPE of INR 20,125.5 (SD±50,772.3) in the current study was higher than the mean OOPE of INR 6,689, that Sharma et al. (India, 2020) found in their cross-sectional study conducted in multiple states of India (Rajasthan, Telangana, West Bengal and Odisha) in 2020 to assess morbidity, healthcare utilization patterns, OOPE and financial risk protection, among the urban poor.[10] Their study did not included Delhi where cost of living and health expenditure is higher. The median OOPE in the current study was lesser than the median OOPE of INR 3,870 (IQR: 2156-4952) that Dalui et al. in their rural community based cross-sectional study.[11] Similarly, it was lesser than the median OOPE of INR 3,348 (IQR: 600-13,368) in rural and INR 824 (IQR: 600-2,400) in urabn areas, which Vasudevan et al reported in their cross-sectional study to estimate the proportion of households incurring OOPE and the average amount spent by the household for healthcare.[9] The variation in OOPE from our findings may possibly be on account of different study populations and study settings, also in the current study few households incurred more OOPE than the rest, as also shown by the contrast in median and mean OOPE values. Our study found that direct costs (78.9%) contributed most towards healthcare expenditure, with average direct costs in the study population being INR 16,820.1 (SD±37835.4) and Indirect OOPE being INR 4491.1 (SD±11907.1). These findings were much higher than what Dalui et al reported. They found the median direct and Indirect health expenditure amongst those who sought healthcare to be INR 1,780 and 2,100 respectively.[11] The difference could be due to higher healthcare cost in an urban population of Delhi. Furthermore, they reported indirect costs to be more than direct costs, suggesting that rural households had to spend more in order to excess healthcare. Similarly, Loganathan et al in their study reported the median direct expenditure to be INR 863.85 (IQR: 358.45-2709.50) and median indirect health expenditure to be INR 100.00 (IQR: 0-540.00).[12] Though showing that the major contributor to OOPE are direct healthcare costs, the difference could be due to regional disparities in healthcare costs, and also because we reported annual mean OOPE incurred amongst all the study households in an urbanized village, as against to annual mean OOPE on healthcare for outpatient care reported in a rural community in the Loganathan et al study.

Table 7: Association between socio-demographic characteristics of head of the household and out-of-pocket expenditure amongst study households (n=188).

Parameters	Out-of-pocket health expenditure			P value
	Present N (%)	Absent N (%)	Total N (%)	
	114 (60.6)	74 (39.4)	188 (100)	
Age (years)				
<60	102 (58.6)	72 (41.4)	174 (100)	**0.04***
≥60	12 (85.7)	2 (14.3)	14 (100)	
Sex				
Male	108 (61.0)	69 (39.0)	177 (100)	0.75**
Female	6 (54.5)	5 (45.5)	11 (100)	
Religion				
Hindu	107 (61.5)	67 (38.5)	174 (100)	0.40*
Others	7 (50.0)	7 (50.0)	14 (100)	
Education				
Illiterate	11 (73.3)	4 (26.7)	15 (100)	0.75**
Literate	103 (59.5)	70 (40.5)	173 (100)	
Occupation				
Unemployed	17 (77.3)	5 (22.7)	22 (100)	0.09*
Gainfully employed	97 (58.4)	69 (41.6)	166 (100)	
Number of family members				
≤4	66 (53.2)	58 (46.8)	124 (100)	**0.01***
>4	48 (75.0)	16 (25.0)	64 (100)	
Socio-economic status				
Middle	73 (62.4)	44 (37.6)	114 (100)	0.53*
Lower	41 (57.7)	30 (42.3)	71 (100)	
Type of family				
Nuclear	80 (54.4)	67 (45.6)	147 (100)	**0.01***
Joint	34 (82.9)	7 (17.1)	41 (100)	
House ownership				
Rent	89 (58.9)	62 (41.1)	151 (100)	0.34*
Owned	25 (67.6)	12 (32.4)	37 (100)	
Caste				
General	51 (55.4)	41 (44.6)	92 (100)	0.36*
OBC	114 (60.6)	74 (39.4)	59 (100)	
SC/ST	24 (64.9)	13 (35.1)	37 (100)	
BPL card holder				
Yes	6 (54.5)	5 (45.5)	11 (100)	0.75**
No	108 (61.0)	69 (39.0)	177 (100)	
Ration card holder				
Yes	24 (64.9)	13 (35.1)	37 (100)	0.56*
No	90 (59.6)	61 (40.4)	151 (100)	
State of origin				
Delhi	26 (68.4)	12 (31.6)	38 (100)	0.27*
Other States	88 (58.7)	62 (41.3)	150 (100)	
Vulnerable groups				
Yes	58 (73.4)	21 (26.6)	79 (100)	**0.01***
No	56 (51.4)	53 (48.6)	109 (100)	
Health Insurance coverage for any member				
Yes	46 (62.2)	28 (37.8)	74 (100)	0.73*
No	68 (59.6)	46 (40.4)	114 (100)	

*Chi-square test, **Fisher Exact test, Bold values indicate statistically significant p values.

NSO survey 75th round, HSC data on Health reported that a major fraction of medical expenditure was incurred on medicine costs (70.3%), while only 12.6% was incurred on diagnostics tests, 13.3% on doctor's fee and 3.8% on other scomponents, which reflects the expenditure distributions as found in the current study.[13] Similar findings were reported by Dalui et al in their community based cross-sectional study, in which expenditure on drugs contributed

maximum to the total direct OOPE, even though the median OOPE incurred on each category of expenditure was lower that our average findings, likely due to difference in health system and difference in median and average OOPE.

Table 8: Association between socio-demographic characteristics of head of the household and catastrophic expenditure amongst study households (n=188).

Parameters	Catastrophic expenditure			P value
	Present, N (%)	Absent, N (%)	Total, N (%)	
	43 (22.9)	**145 (77.1)**	**188 (100)**	
Age (years)				
<60	40 (23.0)	134 (77.0)	174 (100)	1.0**
≥60	3 (21.4)	11 (78.6)	14 (100)	
Sex				
Male	41 (23.2)	136 (76.8)	177 (100)	1.0**
Female	2 (18.2)	9 (81.8)	11 (100)	
Religion				
Hindu	40 (23.0)	134 (77.0)	174 (100)	1.0**
Others	3 (21.4)	11 (78.6)	14 (100)	
Education				
Illiterate	4 (26.7)	11 (73.3)	15 (100)	0.75**
Literate	39 (22.5)	134 (77.5)	173 (100)	
Occupation				
Unemployed	8 (36.4)	14 (63.6)	22 (100)	0.11*
Gainfully employed	35 (21.1)	131 (78.9)	166 (100)	
Number of family members				
≤4	22 (17.7)	102 (82.3)	124 (100)	**0.02***
>4	21 (32.8)	43 (67.2)	64 (100)	
Socio-economic status				
Middle	29 (24.8)	88 (75.2)	117 (100)	0.43*
Lower	14 (19.7)	57 (80.3)	71 (100)	
Type of family				
Nuclear	27 (18.4)	120 (81.6)	147 (100)	**0.01***
Joint	16 (39.0)	25 (61.0)	41 (100)	
House ownership				
Rent	30 (19.9)	121 (80.1)	151 (100)	**0.04***
Owned	13 (35.1)	24 (64.9)	37 (100)	
Caste				
General	17 (18.5)	75 (81.5)	92 (100)	0.12*
OBC	19 (32.2)	40 (67.8)	59 (100)	
SC/ST	7 (18.9)	30 (81.1)	37 (100)	
BPL card holder				
Yes	4 (36.4)	7 (63.6)	11 (100)	0.28**
No	39 (22.0)	138 (78.0)	177 (100)	
Ration card holder				
Yes	9 (24.3)	28 (75.7)	37 (100)	0.81*
No	34 (22.5)	117 (77.5)	151 (100)	
State of origin				
Delhi	14 (36.8)	24 (36.2)	38 (100)	**0.02***
Other states	29 (19.3)	121 (80.7)	150 (100)	
Vulnerable Groups				
Yes	21 (26.6)	58 (73.4)	79 (100)	0.38*
No	22 (20.2)	87 (79.8)	109 (100)	
Health Insurance coverage for any member				
Yes	46 (62.2)	28 (37.8)	74 (100)	0.73*
No	68 (59.6)	46 (40.4)	114 (100)	

*Chi-square test, **Fisher Exact test, Bold values indicate statistically significant p values

Likewise, in their study in the indirect expenditure a major contribution was of loss of wages, of both attendants' as well as patients', similar to our findings.[11] Prinja et al also found that in public healthcare facilities, OOPE on drugs constituted the largest category of expenditure on outpatient care (49.2%).[14] Our study found that 22.9% of the household incurred catastrophic OOPE on healthcare in the last one year, when defined as OOPE more than 10% of household expenditure. A study by Mohanty et al based on NSO surveys reported household prevalence of CHE to be 17.44% when estimated as OOPE more than 10% of household expenditure.[15] The difference although small could be due to our study participants being migrants residing in an urban village who are vulnerable to morbidities and large OOPE. In a study conducted by Sharma amongst urban poor in multiple randomly selected states of India found the prevalence of CHE to be 10.3% amongst the households.[10] This likely could be due to higher cut off for defining CHE (OOPE beyond 40% of capacity to pay) used in their study. The varied CHE definitions in different studies leads to multiple interpretations of CHE prevalence, as reported by Hadaye and Thampi. They reported CHE in 22.4% of the households when CHE was defined as more than 10% of total monthly expenditure and 17.4% when it was defined as more than 40% of the non-food expenditure.[16] With CHE was defined as OOPE more than 10% of total monthly expenditure, the CHE prevalence resonated with our findings. Similarly, Loganathan et al in their study found 18.9% of the study households had catastrophic health expenditure, when defined as annual health expenditure exceeding 10% of total annual household income.[12] Additionally, it was established in multiple studies that the major contributing expenditure on CHE was inpatient care costs. Kastor et al in their analysis of data from the 71st round of the NSO reported about 28% of the households incurred CHE on healthcare, while 49% of households who had sought inpatient care incurred CHE (OOPE more than 10% of household consumption expenditure).[17] Likewise, Singh et al reported that in outpatient care catastrophic expenditure was incurred by 7% of the households, while in inpatient care catastrophic expenditure was incurred in 57% households.[18] Thus highlighting the impoverishing effects of healthcare costs of inpatient treatment.

The current study found that households having the age of head of the household more than sixty, were statistically associated with incurring OOPE on healthcare ($p<0.05$). Kusuma et al on the other hand had found the age of the sick person as significant predictors of OOPE for episodic illnesses.[19] We further found that households having more than 4 members, or a joint family had an statistically significant association with incurring OOPE on healthcare ($p<0.05$), similar to the study conducted by Loganathan et al.[12] We saw that households having a member from a vulnerable group had a statistically significant association with incurring OOPE on healthcare ($p<0.05$). Kusuma et al in their study amongst poor in Delhi had reported geriatric population had more odds of incurring OOPE on episodic illness adjusted ($R^2=0.100$), and for chronic illness more OOPE for incurred on ailments on children ($\beta=-0.096$).[19]

Emphasizing the need for special focus on vulnerable groups. We could not find any association between having health insurance and possibility of incurring OOPE. The study conducted by Kusuma et al had reported that having health insurance was a negative predictor of incurring OOPE.[19] This could be due to lesser utilization of health insurance by the residents. Study emphasis that the majority (60.6%) of the households had incurred OOPE on healthcare, and almost a quarter (23%) of the households bore catastrophic expenditure on healthcare highlighting the need for active interventions to bring down the OOPE, in form of providing accessible and economical healthcare for the urban poor. Further, significant reduction can be made in OOPE by increasing government spending from GDP on public healthcare.

Strengths and limitations

Strengths were; this single study attempted to extensively cover out-of-pocket expenditure, catastrophic expenditure, health insurance, and the associated factors, further having the unique setting of studying OOPE on health during the pandemic SARS-CoV-2. Limitations were: The current study was conducted only in one urban village of Delhi and hence the findings of the study cannot be extrapolated to other areas of the country. Recall bias may have influenced the responses of the participants, especially pertaining to inpatient expenditure and indirect expenditure.

CONCLUSION

The households of an urban village of Aliganj, Delhi, have high out-of-pocket expenditure (60.6%), and catastrophic health expenditure (22.9%). The study advocates for the need of health sector reforms to protect the urban poor from health expenditure.

Recommendations

There is an immediate need for better financial protection against OOPE and catastrophic expenditure on healthcare for the urban poor households to protect them from the poverty health trap. Schemes like Ayushman Bharat Pradhan Mantri Jan Arogya Yojana of the Government of India should be extended to accommodate more fractions of urban poor households, along with other group insurance schemes to protect employees. OOPE and CHE were significantly high for large families. Hence, small family norms should be encouraged in the urban poor to protect them from large healthcare expenditure. There is a need for conducting a prospective community-based study in the urban poor households, with expenditure cards to log the expenditure on both outpatient and inpatient care including both direct and indirect expenses, to avoid recall bias and provide better estimation of expenditure on health.

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