

# Distressed financing of household out-of-pocket health care payments in India: incidence and correlates

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Out-of-pocket (OOP) health care payments financed through borrowings or sale of household assets are referred to as distressed health care financing. This article expands this concept (to include contributions from friends or relatives) and examines the incidence and correlates of distressed health care financing in India. The analysis finds a decisive influence of distressed financing in India as over 60 and 40% of hospitalization cases from rural and urban areas, respectively, report use of such coping strategies. Altogether, sources such as borrowings, sale of household assets and contributions from friends and relatives account for 58 and 42% share in total OOP payments for inpatient care in rural and urban India, respectively. Further, the results show significant socioeconomic gradient in the distribution of distressed financing with huge disadvantages for marginalized sections, particularly females, elderly and backward social groups. Multivariate logistic regression informs that households are at an elevated risk of indebtedness while seeking treatment for non-communicable diseases, particularly cancer. Evidence based on intersectional framework reveals that, despite similar socioeconomic background, males are more likely to use borrowings for health care financing than females. In conclusion, the need for social protection policies and improved health care coverage is emphasized to curtail the incidence of distressed health care financing in India.

**Keywords** Sources of financing, intersectional approach, out-of-pocket payments, health care financing, India

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## KEY MESSAGES

- Over 60% of the rural households and 40% of urban households with hospitalized cases borrow, sell or rely on contributions from friends and relatives to pay for inpatient care.
- Households are at an elevated risk of indebtedness particularly while seeking treatment for non-communicable diseases such as cancer or cardiovascular diseases.
- Leveraging of gender identity is apparent as probabilities for use of borrowings and sale of assets is significantly higher for groups with men (poor and non-poor).
- Contributions from friends and relatives are a critical source of financing treatment of elderly and female members of the household.

## Introduction

In low-income countries, direct out-of-pocket (OOP) payments are the principal means of health system financing. India is no exception, where OOP payments account for over 70% of the total health care financing (Government of India 2009). Such predominant share of OOP payments is indicative of a highly regressive health care system: one that also intensifies poverty and illfare (Russell 1996). In fact, some recent studies have highlighted the catastrophic and impoverishing effects of OOP payments on Indian households (Bonu *et al.* 2005; 2009; O'Donnell *et al.* 2008; Van Doorslaer *et al.* 2007; Flores *et al.* 2008; Garg and Karan 2009; Selvaraj and Karan 2009; Berman *et al.* 2010; Ghosh 2011; Pal 2012; Mohanty and Srivastava 2013; Modugu *et al.* 2012; Gupta and Joe 2013). Also, a few small area studies have described how illnesses, along with other idiosyncratic shocks, jeopardize customary household living standards (Krishna 2004, 2006). For instance, based on a study of 35 north Indian villages, Krishna (2004: 132) informs how 'three elements—high health care costs, high interest consumption debt from private sources, and social expenses on deaths and marriages—together form a chain that leads many households into abiding poverty'. Similar observations from other low-income countries corroborate that uncertain and high OOP payments cause severe financial distress for households (Bonu *et al.* 2005; Sauerborn *et al.* 1996; van Damme *et al.* 2004; Narayan *et al.* 2000a, 2000b). Nevertheless, the bulk of the evidence has emerged from small area studies, whereas from a policy perspective it is equally important to understand the aggregate incidence, share and correlates of distressed health care financing.

The concept of distressed (or 'hardship') health care financing has been conceived and examined previously by a few studies (Kruk *et al.* 2009; Leive and Xu 2008; Dilip and Duggal 2002; Binnendijk *et al.* 2012). While some refer to borrowing (with or without interest) and selling of household assets as distressed (hardship) financing, a few consider only borrowing with interest payments and selling as distressed financing. However, it is plausible that for several households even the process of arranging contributions or interest-free borrowings could be rather cumbersome and may involve repayments. Therefore, a broader definition of 'distressed financing' is adopted to include components of: (1) borrowings (with or without interest), (2) sale of assets and (3) contributions from friends and relatives (with or without repayments). Following the definition, an analysis of incidence and correlates of distressed financing is presented to further our understanding regarding composition of OOP health care payments in India. Notwithstanding the incidence, a second objective of the article is to examine how key socioeconomic correlates are associated with distressed health care financing (borrowings, sale of assets and contributions from friends or relatives). The analysis is based on the premise that intersections of multiple axes of power including gender, social group affiliations and economic status can have a significant impact while deciding upon use of various sources of health care financing (Springer *et al.* 2012). In fact, on this issue, some robust indicative evidence is available through a small area study (Koppal district, Karnataka) in India, which finds that poor men did had better access to credit markets and were more likely to take loans or sell assets for health care financing

than non-poor women, thus demonstrating a clear gender advantage for men (Sen and Iyer 2012). Such inherent gender advantage for poor men overrules the economic advantage associated with non-poor women and reinforces that socially dominant identities have a leveraging effect and enable better access to various sources of financing. This study therefore explores the significance of such patterns at an aggregate national level and corroborates how intersections of social and material factors could potentially engender inequities in health and health care utilization (McGibbon and McPherson, 2011).

## Data and methods

The analysis is based on the cross-sectional data from the Morbidity and Healthcare Survey 2004 (MHS) of India. This survey is conducted by the National Sample Survey Organization (NSSO), Government of India. MHS 2004 obtains information regarding utilization of health care services and health expenditure incurred by the households (NSSO 2006). The MHS 2004 covered a representative sample of over 73 000 households (around 47 000 in rural areas and 26 000 in urban areas) and collected information on hospitalization (inpatient) and ambulatory (outpatient) care for a reference period of 365 and 15 days, respectively. The survey adopted a two-stage stratified design, with census villages and urban blocks as the first-stage units for the rural and urban areas respectively, and households as the second-stage units. The survey was conducted during January–June 2004 and was split up into two rounds of 3 months each (NSSO 2006). The survey reports information of 29 036 persons (18 346 rural and 10 690 urban) with at least one episode of hospitalization in the 365 days prior to survey and 36 462 persons (22 871 rural and 13 591 urban) who have reported of an ailment during the last 15 days. However, following the literature, we have used households as a unit of analysis while examining the incidence and correlates of various sources of financing (Sauerborn *et al.* 1996).

The survey provides information about OOP health expenditures on inpatient and outpatient care and also about the contributions from various sources of financing. Specifically, the sources of financing are classified as follows: (1) own income and savings, (2) borrowings (with or without interests), (3) resources from sale of assets and (4) contributions or assistance from friends and relatives (with or without repayment). As such, the survey manual does not clarify whether the borrowings are with or without interest (and contributions are with or without repayments); hence, it is assumed that the former may be mostly with repayment and interests, whereas the latter reflects the part which need not involve either interest or repayment. The information on both inpatient and outpatient care are provided separately to arrive at estimates regarding sources of finance and role in overall household OOP spending.

The survey also provides information on key socioeconomic and demographic variables. Because in the Indian context it is difficult to collect reliable income data (NSSO 2006), reported household consumption expenditure is used to proxy the socioeconomic status of the households. This variable is critical to discern the association of distressed financing across socioeconomic status. Gender and social group affiliations are used

to examine their association with the sources of financing. Also, the analysis classifies households into two broad social groups, namely, scheduled caste and scheduled tribe (SC and ST) and non-SCST. The SC and ST households are socially and economically vulnerable population subgroups in India. Particularly, the SC households were subjected to historical disadvantages including widespread discrimination associated with their lowest status in the Hindu caste hierarchy. Consequently, the SCST population is accorded special status by the Constitution of India. In addition to these socioeconomic characteristics, demographic and health-related variables are also included for analysis. Specifically, three important non-communicable diseases, namely cancer, cardiovascular diseases (CVDs) and diabetes are considered to examine their associations with distressed financing. Further, we include the information regarding public and private sector health facilities to understand whether distressed financing is associated with any particular sector. Age of the hospitalized person (elderly person if aged 60 and above), medical expenditure and insurance-related information are used to adjust the likelihood of using various sources of financing across individuals.

Following the descriptive analysis, concentration curve (CC) and concentration index (CI) are computed to discern the socioeconomic gradient in use of various sources of distressed financing (Wagstaff *et al.* 1991). The CC plots the cumulative proportions of the population (ranked by socioeconomic status) on the  $x$ -axis against the cumulative proportions of households using a particular source of financing on  $y$ -axis. For interpretative purposes, if the incidence of a particular source of financing is evenly distributed across the socioeconomic spectrum, then the CC would coincide with the diagonal (line of equality); if it is concentrated among higher (lower) income groups, then CC lies below (above) the diagonal; and farther the CC from the diagonal, greater would be the incidence among the poorer households. The CI could be derived from the CC and is defined as twice the area between the CC and the diagonal. Following Erreygers (2009), the CI could be computed as follows:

$$C(h) = \frac{2}{n^2 \mu_h} \sum_{i=1}^n z_i h_i; z_i = \frac{n+1}{2} - \rho_i$$

where,  $i: (i=1, 2, \dots, n)$  represents a given population;  $\rho_i$  is the socioeconomic rank of the person with the best well-off individual ranked first and the least well-off ranked last. In the case of ties, each member of the tied group is assigned the average rank of the group. The CI ranges between +1 and -1, with zero depicting equal distribution across socioeconomic spectrum and large positive (negative) values indicating greater incidence of a particular source of financing among the richer (poorer) households.

Finally, multivariate logit regression is used to discuss the likelihood of using various sources of financing across key demographic, health and socioeconomic correlates described earlier (see Table 1). While adjusting for these covariates, the aim of the analysis is to examine how various intersectional groups are advantaged (or disadvantaged) in terms of distressed financing. These groups are formed by intersecting three prominent determinants, namely poverty (poor and non-poor), gender (male and female) and social group (SCST and

non-SCST). Although Sen and Iyer (2012) have examined the intersections based on the first two determinants, we expand the analytical domain to unravel intricacies associated with social group disadvantages. For analytical purposes, a household is classified as poor if it belongs to the bottom two quintiles of per capita monthly household expenditure. Similarly, the SC and ST households are clubbed together and then compared with all 'other' non-SCST households. The intersection of these determinants along with gender dimension yields eight mutually exclusive subgroups, namely (1) poor-female-SCST (PFSCST), (2) poor-female-others (PFO), (3) non-poor-female-SCST (NPFSCST), (4) non-poor-female-others (NPFO), (5) poor-male-SCST (PMSCST), (6) poor-male-others (PMO), (7) non-poor-male-SCST (NPMSCST) and (8) non-poor-male-others (NPMO). Finally, it may be noted that the regression analysis is restricted to only those households that have reported hospitalization of one person only. This is because the survey obtains source of finance information at the aggregate household level and inclusion of households with more than one hospitalized persons would disallow any inference regarding association of sources of financing with prominent factors such as gender, ailments and age of the hospitalized person. Nevertheless, the loss in such cases is negligible and yields a sample of 25 502 households for regression analysis (or 9.7% households have only one hospitalization case if analytical weights are applied). All the analysis uses recommended analytical weights to reflect survey design and is performed in statistical software Stata 10 (StataCorp 2007).

## Results

Table 2 shows that 47, 19 and 7% rural households with hospitalization cases have, respectively, used borrowings, contributions from friends and relatives and sale of assets to finance OOP expenditure on inpatient care. In comparison, the incidence among urban households with hospitalization cases is 29, 16 and 4%, respectively. Presence of a significant socioeconomic gradient is apparent with particularly huge disadvantages for the marginalized households (lower consumption quintiles and SC and ST, SCST). The incidence of borrowing is very high (53 and 41% in rural and urban areas, respectively) among the lowest consumption quintile. Nevertheless, a significant proportion of borrowing among richer consumption quintiles (34 and 19% in rural and urban areas, respectively) highlights that distress financing is a key concern even among the better-off sections. Incidence of financial distress is rather unavoidable while seeking inpatient care for cancer and CVDs. For instance, in rural areas, 60, 32 and 14% households have, respectively, reported use of borrowings, contributions and sale of assets to finance hospital care for cancer and other tumours. Households seeking care from private sector hospitals report greater borrowings than those accessing public health care facilities. Importantly, households report lower incidence of borrowings (39 and 20% in rural and urban areas, respectively) for hospitalization of elderly persons (aged 60 and above). Similarly, among female-headed households, financial contributions from friends and relatives are critical to meet OOP payments on inpatient care.

**Table 1** Variables for multivariate logistic regression on likelihood of using various sources of financing OOP payments on health care

Variables	Codes and definitions
Dependent variables for the three models	
Dependent variable in Model 1	1 = financial resources borrowed to meet OOP payments 0 = No borrowings for treatment
Dependent variable in Model 2	1 = Selling of assets to meet OOP payments 0 = No selling of assets
Dependent variable in Model 3	1 = Used contribution from friends and relatives for OOP payments 0 = No contribution from friends and relatives
Independent variables in all the three models	
Eight intersectional groups: Based on intersection of gender, social group (scheduled caste and scheduled tribe, SCST) and household monthly per capita consumption expenditure as a proxy for wealth status (households in bottom two quintiles of household monthly per capita consumption expenditure defined as poor and others as non-poor)	1 = poor-female-SCST (reference category) 2 = poor-female-others 3 = non-poor-female-SCST 4 = non-poor-female-others 5 = poor-male-SCST 6 = poor-male-others 7 = non-poor-male-SCST 8 = non-poor-male-others
Hospitalized person is an elderly person (aged 60 and above)	1 = Yes 0 = No (reference category)
Hospitalized person is a cancer patient	1 = Yes 0 = No (reference category)
Hospitalized person has cardiovascular disease	1 = Yes 0 = No (reference category)
Hospitalized person has diabetes	1 = Yes 0 = No (reference category)
Hospitalization care at public health care facility	1 = Yes 0 = No (reference category)
Household has some health insurance provisions	1 = Yes 0 = No (reference category)
Log of OOP payments on hospitalization care	Continuous variable
Log of household monthly per capita expenditure	Continuous variable
Place of residence of hospitalized person	1 = Rural 0 = Urban (reference category)

Apart from incidence, the information regarding share of distressed financing in overall OOP payments offers further insights regarding the nature and magnitude of the problem. Table 3 reports that financial borrowings account for 40 and 22% of the OOP payments for inpatient care in rural and urban areas, respectively. Across both the regions, financial support from friends and relatives along with sale of assets contribute towards one-fifth of the total OOP expenditure on inpatient care. In case of socioeconomically marginalized households (lowest consumption quintiles and SC) over two-thirds of the hospitalization expenditure is met through distressed financing. Again, it can be discerned that the share of distressed financing is relatively low when inpatient care of elderly or female household members is concerned. The last two columns in Table 3 also report the average household expenditure on hospitalization (reference period of 365 days before the survey)

and draws attention to the severe economic burden caused due to OOP payments on cancer or CVDs (over 2.5 times of the overall average hospitalization expenditure).

Unlike inpatient care, in case of outpatient care, around 10% of households use distressed means of health care financing (Tables A1 and A2). In other words, OOP payments on outpatient visits are mostly met through own income and savings though around one-fifth of the total OOP expenditure still qualifies as distressed financing. A largely self-financed outpatient care indicates that several households may be spending as per their ability to pay, and it is plausible that many poor households avoid health care seeking due to financial constraints (NSSO 2006). These concerns are also apparent through a systematic socioeconomic gradient in the incidence of borrowing for outpatient care. For instance, those in the lowest wealth quintile raise 27% of the OOP expenses

**Table 2** Incidence (%) of using various sources of financing to meet total household OOP expenditure on inpatient care, India

	Income/savings		Borrowings		Contributions		Sale of assets	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Consumption expenditure quintile								
Lowest	81	77	53	41	21	20	8	6
Second	82	86	50	39	20	21	8	5
Middle	86	84	51	41	18	18	6	5
Fourth	87	89	42	36	19	16	6	4
Highest	90	92	34	19	18	13	6	3
Social group								
Scheduled tribe	84	90	44	30	18	19	9	6
Scheduled caste	80	86	54	38	21	14	8	4
Other backward class	84	88	49	34	19	16	6	4
Others	88	91	40	22	19	16	6	3
Female-headed household	82	83	38	30	24	19	7	2
Treatment of at least one								
Elderly member (aged 60+)	82	91	39	20	23	17	6	4
Female household member	86	89	46	30	20	16	7	4
At least one visit to								
Private health facility	85	91	50	31	20	17	7	5
Public health facility	84	87	44	28	19	14	7	3
Disease								
Cancer and other tumours	86	81	60	37	32	19	14	10
Cardiovascular diseases	83	91	52	25	27	18	8	5
Diabetes	89	93	46	26	27	21	9	2
All households with inpatient care	85	90	47	29	19	16	7	4

Source: Computations are based on MHS data from NSSO (2006).

Note: Standard errors are not reported here due to space considerations.

through distressed financing mainly borrowings (Table A2). Also, households with cases of chronic illness (particularly, cancer and other tumours) are at high risk of distress financing while seeking outpatient care. Interestingly, there is no significant difference in the incidence and magnitude of distressed financing associated with public and private facilities even though the latter displays higher average OOP payments.

The foregoing analysis informs that the incidence of distress financing follows a socioeconomic gradient; however, these associations are further examined using CC and CI. The CC and CI are computed and presented separately for inpatient and outpatient care and by region of residence (rural and urban areas). In this regard, two things are obvious from the CI values reported in Table 4: first, that the incidence of borrowings, contributions and sale of assets are concentrated among poorer households; and second, the concentration is significantly higher among urban poor, whereas in rural areas the problem is more evenly distributed across the socioeconomic spectrum. For instance, in urban areas the CI values for the incidence of borrowing for inpatient (CI: -0.200) and outpatient (CI: -0.280) care is significantly high and indicates greater concentration of borrowing among the poorest sections. This information is

graphically depicted through the CCs for borrowings and sale of assets for inpatient (Figure 1) and outpatient care (Figure 2). The CCs reveal that the incidence of distressed financing in urban areas is greater among lower-income households, whereas in rural areas the incidence is more evenly distributed. Clearly, distress financing is a pervasive feature of the rural health care system, and there is a high risk of health-related financial indebtedness for most households.

While it is evident that wealth, gender and social group share a distinct pattern with various sources of financing, it is also critical to further demonstrate the interlocking nature of these determinants as well as their relative influence on the likelihood of using any particular sources of financing. For this purpose, eight intersectional groups based on the intersections of social group (SCST and others), gender (male and female) and wealth status (poor and non-poor) is developed. These groups are labelled as (1) PFSCST, (2) PFO, (3) NPFSCST, (4) NPFO, (5) PMSCST, (6) PMO, (7) NPMSCST and (8) NPMO. Table 5 reports the multivariate logit regressions based odds ratio to understand relative chances of the groups in the use of borrowing, sale of assets and financial contributions from friends and relatives. The estimates are adjusted for variables

**Table 3** Share (%) of various sources of financing in total household OOP expenditure on inpatient care, India

	Income/Savings		Borrowings		Contributions		Sale of assets		Expenditure in Rupees	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Consumption expenditure quintile										
Lowest	33	51	48	32	14	14	6	4	5001	5043
Second	38	38	41	34	14	15	7	13	5719	5206
Middle	40	39	43	44	11	12	6	5	7244	6033
Fourth	45	54	39	30	12	11	5	5	8983	9323
Highest	48	63	33	16	14	12	4	9	13 450	15 847
Social group										
Scheduled tribe	37	55	41	14	15	14	7	17	4547	9293
Scheduled caste	34	56	48	34	12	8	6	2	5607	7679
Other backward class	40	48	43	30	12	11	5	11	7945	9298
Others	47	63	33	16	14	13	6	7	9113	14 189
Female-headed household	46	58	34	27	16	12	5	2	6612	10 197
Treatment of at least one										
Elderly member (aged 60+)	46	64	34	12	16	10	5	14	8760	16 552
Female household member	44	57	39	22	12	14	5	8	7281	10 969
At least one visit to										
Private health facility	42	58	40	21	13	12	5	9	9982	14 969
Public health facility	39	53	43	27	12	14	6	6	4973	5932
Disease										
Cancer and other tumours	38	56	41	28	15	11	6	5	20 947	28 660
Cardiovascular diseases	38	53	38	17	18	9	6	20	14 195	25 164
Diabetes	48	63	37	25	10	11	5	1	10 275	11 365
All	42	58	40	22	13	12	5	8	7606	11 268

Source: Computations are based on MHS data from NSSO (2006).

Note: Standard errors are not reported here due to space considerations.

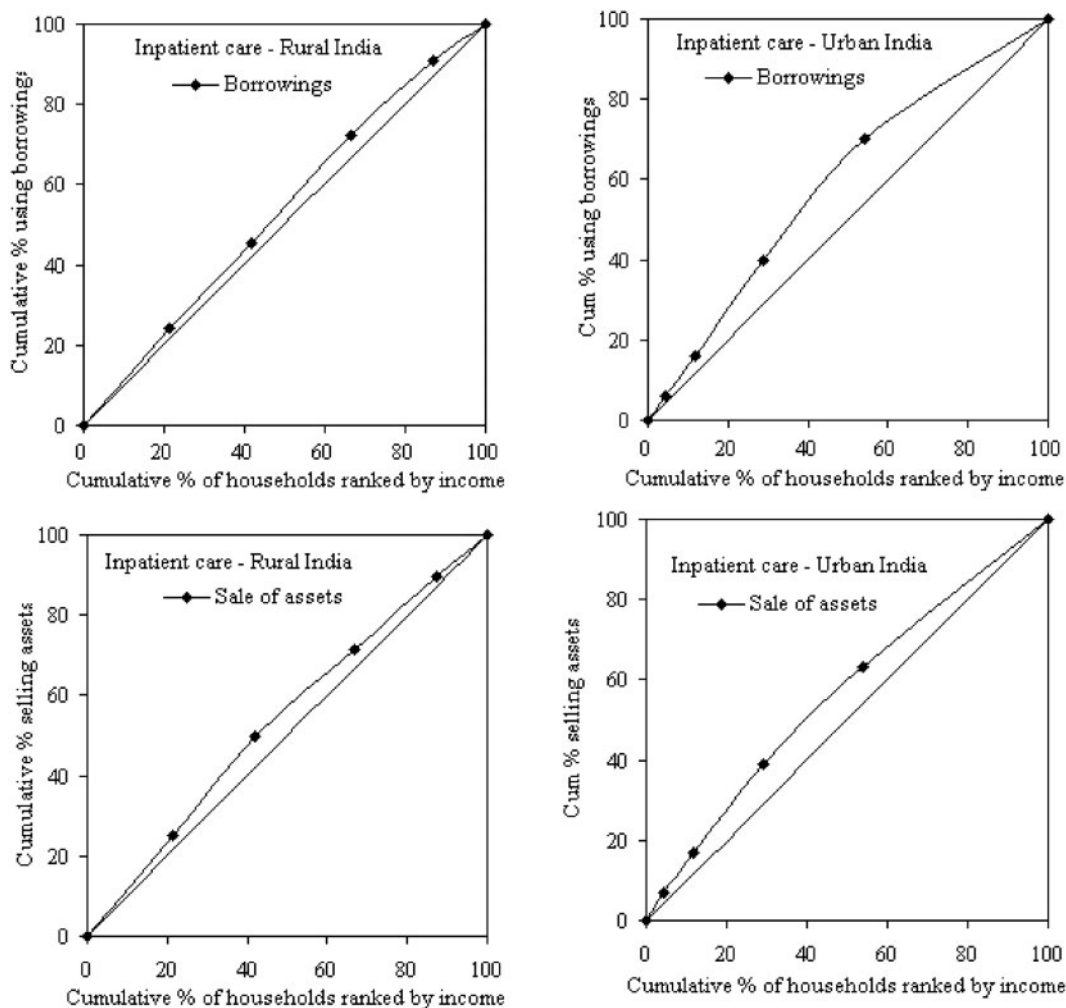
**Table 4** Concentration index for different sources of financing health care by region of residence, India

Source of financing	Inpatient care		Outpatient care	
	Rural	Urban	Rural	Urban
Household income and savings only	0.092 (0.081–0.103)	0.118 (0.108–0.127)	0.017 (0.013–0.021)	0.013 (0.009–0.017)
Using borrowings	–0.071 (–0.080–0.062)	–0.200 (–0.219–0.182)	–0.091 (–0.121–0.061)	–0.280 (–0.346–0.215)
Sale of assets	–0.092 (–0.124–0.060)	–0.119 (–0.177–0.060)	–0.024 (–0.074–0.026)	–0.185 (–0.260–0.110)
Contributions from friends and relatives	–0.027 (–0.045–0.009)	–0.090 (–0.117–0.064)	–0.195 (–0.284–0.106)	0.085 (–0.060–0.230)

Note: Except for the urban outpatient care CI value 0.085 for contributions from friends and relatives, all other CI values are significant at 5%. The confidence intervals (95% CI) are reported in the parentheses.

such as hospitalization of an elderly member (aged 60 and above), information on whether the individual seeking treatment had any major non-communicable diseases (cancer and other tumours, diabetes or CVD); and whether treatment was

sought at private sector hospitals. The analysis also adjusts for important factors such as medical expenditure, household consumption expenditure, insurance of household member and place of residence.



**Figure 1** Concentration curves for borrowings and sale of assets, inpatient care.

The odds ratio presented for these intersectional groups are based on three different models (dependent variables), namely Model 1 for borrowing, Model 2 for sale of assets and Model 3 for contribution from friends and relatives. Overall, the results from the three models inform that low-income household, households with high medical expenditure and those from rural areas are more likely to use distress means for health care financing. Compared to a non-elderly person (aged below 60 years), households are less likely to borrow or sell assets for treatment of elderly persons (aged 60 and above). On the contrary, households are 1.3 times more likely to seek contributions from friends and relatives to meet health care expenditure of elderly members. Expenditures on treatment of CVD and diabetes are significantly associated with sale of assets and greater use of contributions from friends and relatives. Further, it is observed that treatment of cancer has severe economic implications on household welfare and significantly increases the likelihood for borrowings (1.11 times), asset sale (1.33 times) and use of contributions (1.29 times). After controlling for household socioeconomic status and overall medical expenditure, it can be discerned that private health care facilities are generally used by households who could afford the

facilities, whereas economically deprived sections may have to resort to distressed financing even to cope with the costs of treatment in a public sector facility.

Finally, we explore whether there are significant gender differences across the intersectional groups in sources of financing. First, we consider Model 1 which reports the likelihood of borrowings for health care financing. The regression result displays a distinct gender advantage for men across each grouping of similar income and social category affiliations. For instance, compared with females from poor and SCST households (PFSCST group), the males from similar background (PMSCST group) have 7% more chances of borrowing for health care payments. Similar magnitude of male advantage is observed across other intersectional groups such as non-poor SCST households (NPFSCST group with odds ratio 1.42 and NPMSCST group with odds ratio 1.51). In comparison to PFSCST group, males and females from the poor but non-SCST households are less likely to use borrowings (the PFO group with odds ratio 0.67 and the PMO group with odds ratio 0.82). Nevertheless, relative male advantage is apparent even among this category. Model 2 also finds significant male advantage in sale of assets as a mode of health care financing. In particular,

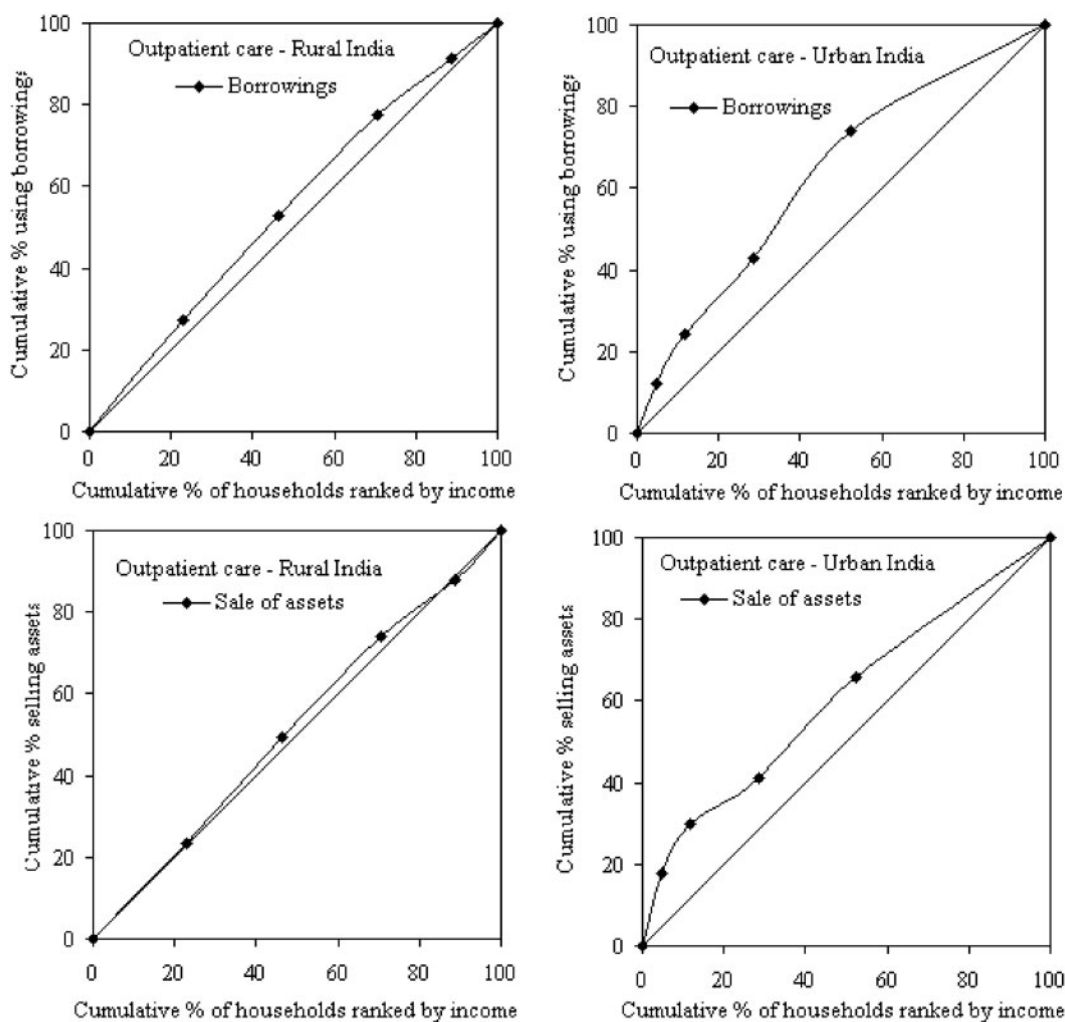


Figure 2 Concentration curves for borrowings and sale of assets, outpatient care.

SCST males from both poor as well as non-poor background have the highest likelihood of financing treatment through sale of household assets, whereas individuals from advantaged sections (non-poor and non-SCST) are less likely to use the option of selling household assets. The inferences from Model 3 are unlike the other two models and reveal a distinct social pattern in use of contributions from friends and relatives to meet OOP expenditure. Specifically, it is observed that among low-income SCST households, males have greater chances of using contributions for health care expenditure, whereas among non-poor and non-SCST households females have greater likelihood of using contributions for health care financing. This indicates that generally poor households resort to all possible sources for financing treatment of males, whereas despite improvements in income status, females continue to depend significantly on contributions from friends and relatives. Overall, these results not only bring forth the magnitude of socioeconomic and gender disadvantages in sources of health care financing but also emphasizes on the need for socioeconomic empowerment of marginalized sections in India, particularly women.

## Discussion

Evidence from low-income countries suggests that several households incur financial debt or sell households assets to cope with medical care payments (Sauerborn *et al.* 1996; Leive and Xu 2008; Wagstaff 2008; Kruk *et al.* 2009). For instance, the World Health Survey (2002–04) across 40 low- and middle-income countries finds the mean prevalence of borrowing and selling to be 22 and 10%, respectively (Kruk *et al.* 2009). In light of such evidence, it is expected that households in a low income and populous country such as India would heavily depend on distressed means of financing to avail health care, particularly inpatient care. In this context, this study finds that, in 2004, over 60% of the rural households (40% urban households) with hospitalized cases had to borrow, sell household assets and use contributions from friends and relatives to cope with the hospitalization costs. Importantly, less than one-tenth of the households reported sale of assets for health care payments. This is perhaps because poorer households may be deprived of valuable assets and are less likely to find credit in formal or informal markets that primarily function on the principal of collateral. In a way, this also suggests that the



**Table 5** Multivariate logistic regression-based likelihood of borrowings (model 1), sale of assets (model 2) and contributions from friends or relatives (model 3)

Dependent variables for the three models <sup>a</sup> (N = 25 502)	Model 1: borrowings vs no borrowings		Model 2: sale of assets vs no sale of assets		Model 3: contributions vs no contributions	
	Odds ratio <sup>b</sup>	95% CI	Odds ratio	95% CI	Odds ratio	95% CI
Poor-female-SCST <sup>d</sup> (intersectional <sup>e</sup> group 1) <sup>c</sup>	1.00		1.00		1.00	
Poor-female-others (intersectional group 2)	0.67	(0.67–0.68)	0.77	(0.77–0.78)	0.98	(0.97–0.98)
Non-poor-female-SCST (intersectional group 3)	1.42	(1.41–1.42)	0.92	(0.91–0.93)	1.13	(1.12–1.14)
Non-poor-female-others (intersectional group 4)	0.91	(0.91–0.92)	0.76	(0.76–0.77)	0.87	(0.87–0.88)
Poor-male-SCST (intersectional group 5)	1.07	(1.07–1.08)	1.18	(1.16–1.19)	1.07	[1.07–1.08]
Poor-male-others (intersectional group 6)	0.82	(0.82–0.83)	0.82	(0.81–0.83)	1.14	(1.14–1.15)
Non-poor-male-SCST (intersectional group 7)	1.51	(1.50–1.52)	1.18	(1.17–1.20)	0.93	[0.92–0.94]
Non-poor-male-others (intersectional group 8)	1.04	(1.03–1.05)	0.76	(0.76–0.77)	0.78	(0.77–0.78)
Elderly person is hospitalized (No) <sup>c</sup>	1.00		1.00		1.00	
Elderly person is hospitalized (Yes)	0.62	(0.62–0.62)	0.90	(0.89–0.90)	1.30	(1.30–1.30)
Person hospitalized has cancer (No) <sup>c</sup>	1.00		1.00		1.00	
Person hospitalized has cancer (Yes)	1.11	(1.10–1.12)	1.33	(1.32–1.34)	1.29	(1.28–1.3)
Person hospitalized has cardiovascular disease (No) <sup>c</sup>	1.00		1.00		1.00	
Person hospitalized has cardiovascular disease (Yes)	0.87	(0.87–0.88)	1.05	[1.04–1.06]	1.12	(1.11–1.12)
Person hospitalized has diabetes (No) <sup>c</sup>	1.00		1.00		1.00	
Person hospitalized has diabetes (Yes)	1.01	(1.00–1.01)	1.13	(1.11–1.15)	1.21	(1.20–1.22)
Treatment at public health care facility <sup>c</sup>	1.00		1.00		1.00	
Treatment at private health care facility	0.93	(0.92–0.93)	0.85	(0.85–0.85)	0.80	(0.80–0.80)
No provision of health insurance <sup>c</sup>	1.00		1.00		1.00	
Any provision of health insurance	0.81	(0.81–0.82)	1.42	(1.40–1.44)	0.72	[0.71–0.72]
Log of OOP payments on hospitalization	1.62	(1.61–1.62)	1.73	(1.73–1.73)	1.52	(1.51–1.52)
Log of household monthly per capita expenditure	0.33	(0.33–0.33)	0.53	(0.53–0.53)	0.76	(0.76–0.76)
Place of residence—Urban <sup>c</sup>	1.00		1.00		1.00	
Place of residence—Rural	1.50	(1.49–1.50)	1.64	(1.63–1.65)	1.14	(1.13–1.14)

<sup>a</sup>The table presents results from multivariate logistic regression for three different models. Model 1 compares the likelihood of borrowing vs no borrowings for health care financing of inpatient care across the selected independent variables. Similarly, Model 2 compares the likelihood of selling assets to meet health care expenditure across different explanatory variables whereas Model 3 estimates the likelihood of using contributions from friends and relatives compared to chances of not using any contributions across the identified correlates.

<sup>b</sup>All the odds ratios are significant at 5% (excluding the odds ratio for diabetes in model 1 regarding any borrowings which is statistically insignificant).

<sup>c</sup>Denotes reference category for comparison of odds ratio.

<sup>d</sup>SCSTs are identified as socially and economically vulnerable population subgroups in India. In particular, the SCs have historical disadvantages of being identified with lowest status in the Hindu caste hierarchy and faced widespread discrimination. Consequently, the SCST groups are accorded special status by the Constitution of India.

<sup>e</sup>The groups are labelled as follows (1) poor-female-SCST (PFSCST); (2) poor-female-others (PFO); (3) non-poor-female-scheduled caste and scheduled tribe (NPFSCST); (4) non-poor-female-others (NPFO); (5) poor-male-SCST (PMSCST); (6) poor-male-others (PMO); (7) non-poor-male-SCST (NPMSCST); (8) non-poor-male-others (NPMO).

analysis presented here is able to capture only the observed incidence of distress financing and it is likely that the true need for financial protection may be even greater than what is revealed. For instance, as pointed out by one of the reviewers, it is plausible that relatively rich households are in a position to borrow or sell their assets, resulting in a higher incidence (and share) of distressed finance, while the poor households are often not in a position to be able to borrow or sell their assets.

An important result is that, unlike inpatient care, a higher proportion of Indian households were able to finance ambulatory care using own income and savings (rural India 80%, urban India 87%). A greater role of distressed financing in inpatient care and largely self-financed outpatient care has significant policy implications. For instance, some recent

studies have noted that inpatient care is a high-cost event for households, but the aggregate impoverishing effect associated with outpatient care is much larger (Berman *et al.* 2010). Similarly, Shahrawat and Rao (2012) suggest that financial protection (such as insurance) to cover only hospital expenses would not have desired protective effect because impoverishment is primarily due to OOP payments on drugs. Such paradoxical situation of low impoverishing effects due to inpatient care is partly an outcome associated with greater concentration of hospitalization among richer households (O'Donnell *et al.* 2008). Our results also confirm that richer households pay for hospitalization using own income and savings, whereas the use of distressed means is concentrated heavily among low-income households. Nevertheless, a low

impoverishing effect of inpatient care is also related to relatively low incidence of hospitalization than outpatient visits. Besides, use of cross-sectional data underestimates the dynamics of household poverty associated with inpatient care. To some extent, this has been captured by small area studies on the jeopardizing effect of health-related borrowings that gradually pushes several households into poverty (Krishna 2004, 2006). Given such intricacies, it is important that publicly provided hospitalization services are expanded and financial protection policies are designed to emphasize on the indivisibility of inpatient and outpatient care services with specific focus on free drugs and medicines.

Furthermore, it is observed that the poor-to-rich ratios in incidence of distressed financing is much higher in urban areas and typifies the ratio pattern observed among middle-income countries (Kruk *et al.* 2009). Socioeconomic deprivation apart, the problem is further complicated by gender inequities, as even among non-poor households, females are largely supported through contributions from friends and relatives and are less advantaged in use of sources that increase financial liabilities of the household. In this context, our results concur with the findings of Sen and Iyer (2012) that in developing society the social role of men as breadwinners or household decision makers can be critical determinant in health care utilization and financing. Leveraging of gender identity is apparent and is indicative of an inherent gender-based decision-making process. These are severe concerns as such differentials in resource allocation for health care are notably associated with differential mortality between boys and girls (Asfaw *et al.* 2008). In fact, such intersectionality is an important pathway causing differences in health care financing, thereby intensifying gender inequalities in health and health care utilization.

Clearly, women continue to be the underprivileged sex and amidst such constraints, and their health care is directly dependent on family and wider social capital in the form of friends and relatives. In fact, female-headed households have also reported greater role of contributions from friends and relatives in financing health care. Similarly, households are also less likely to borrow or sell assets to meet hospitalization expenditure of elderly, and their treatment significantly depends on contributions from friends and relatives. Such relevance of contributions while financing treatment of elderly and female members of the household reiterates the instrumental role of family and social capital in health care utilization in India. Therefore, besides promoting financial protection measures, it is critical to integrate family and the community in policy discourse and ensure effective community provisions for financing health care.

From a policy perspective, it is important to note that a significant proportion of household indebtedness in India is attributable to general preference for private sector hospitals (Dilip and Duggal 2002). The data also shows the average OOP expenditure in private hospitals is more than twice of what is incurred at public hospitals. Given such patterns, it is obvious that situation of health care financing may further deteriorate if the public health system fails to respond to the increasing burden of non-communicable diseases in India (Reddy 2007). Such cautionary evidence has emerged from our results as households seeking care for cancer or CVDs are much more

likely to incur huge medical debt (also see, Rao *et al.* 2011; Mahal *et al.* 2013; Rahman *et al.* 2013). In this regard, a few social insurance policies (such as Rashtriya Swasthya Bima Yojana and Rajiv Arogyasri Community Insurance Scheme) aim at enhancing financial protection in India, but there is limited understanding about its impact on distressed financing (see, however, Selvaraj and Karan 2012). Notwithstanding such initiatives, such concerns merit strategic investments to expand public provision of inpatient and outpatient care with a strong focus on essential drugs and diagnostics.

The findings of this study have direct implications on measurement of catastrophic health care expenditure. Previously, studies have defined health expenditures as 'catastrophic' when it exceeds a certain proportion of household income or ability to pay (Berki 1986; Wagstaff and Van Doorslaer 2003; Xu *et al.* 2003). For example, using the household consumer expenditure survey data for India, studies have noted that catastrophic health payments are concentrated among the richer households (Van Doorslaer *et al.* 2007, Ghosh 2011). However, a similar proportion of income spent on medical care can have different connotations if distressed financing is explicitly incorporated in the measurement exercise. In fact, the discourse on universal health care coverage should also include incidence and share of distressed financing as a fundamental indicator for appraisals and action. Therefore, in view of such intricacies, a more pragmatic approach to understand the incidence of catastrophic expenditure is desirable (Gupta and Joe 2013; Flores *et al.* 2008).

Finally, as limitations of the analysis, it must be acknowledged that in a country where physical labour is the main source of livelihood, the indirect costs of illness (including time costs) and treatment seeking can be very high and needs to be effectively captured (Sauerborn *et al.* 1996). Also, it may be noted that the analysis presented here does not include OOP payments on institutional delivery (see, however, Bonu *et al.* 2009; Mohanty and Srivastava 2013). Besides, there are several important but unanswered policy questions that deserve attention. For instance, little is known about the cost of borrowing (interest rates) or even the mode of repayment of such debts. Also, we are ill-informed about the implications of such financing on basic investments in food and education, including the various trade-off between investing in other competing alternatives. Therefore, further insights on coping strategies and determinants of successful coping can be particularly useful to design social protection policies to improve fairness in health care financing.

## Conclusion

In conclusion, it may be emphasized that distressed financing of inpatient care (and outpatient care) in India is a major concern, both in terms of its incidence and its share in overall health care financing. Heavy dependence on borrowings, contributions and sale of assets implies that only well-endowed households are able to access tertiary care, whereas vulnerable households may be required to compromise with both quantity and quality of care. These findings also caution that the situation could further deteriorate with rising burden of non-communicable diseases and onset of population ageing. As

such, given the state of affairs, it is important to increase public health expenditure and invest in policies that not only improves health care seeking but also simultaneously curtails OOP spending, particularly among the marginalized social groups. Nonetheless, amidst limited reach of existing investment, this study also reiterates the importance of social capital to cope with health uncertainties and quintessentially reminds us of the important role that family plays in resource-poor settings.

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## Appendix

**Table A1** Incidence (%) of using various sources of financing to meet total household OOP expenditure on outpatient care, India

	Income/savings		Borrowings		Contributions		Sale of assets	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Consumption expenditure quintile								
Lowest	84	82	11	10	2	0	3	11
Second	84	86	10	7	2	1	4	5
Middle	88	91	9	4	1	1	3	2
Fourth	89	91	7	5	0	1	3	3
Highest	90	93	7	2	1	1	4	2
Social group								
Scheduled tribe	85	88	7	4	2	1	3	3
Scheduled caste	86	91	12	4	1	0	4	2
Other backward class	87	90	9	6	2	1	3	3
Others	88	92	7	3	1	1	4	3
Female-headed household	78	86	11	4	2	1	8	6
Treatment of at least one								
Elderly member (aged 60+)	83	90	8	3	1	1	5	4
Female household member	87	91	9	4	1	1	4	3
At least one visit to								
Private health facility	91	95	10	4	1	1	4	3
Public health facility	84	85	9	5	1	1	4	2
Disease								
Cancer and other tumours	82	92	15	5	2	0	10	1
Cardiovascular diseases	91	94	7	3	1	1	5	3
Diabetes	91	95	7	3	0	0	6	2
All households with outpatient care	87	91	9	4	1	1	3	3

*Source:* Computations are based on MHS data from NSSO (2006).

*Note:* Standard errors are not reported here due to space considerations.

**Table A2** Share (%) of various sources of financing in total household OOP expenditure on outpatient care, India

	<u>Income/savings</u>		<u>Borrowings</u>		<u>Contributions</u>		<u>Sale of assets</u>		<u>in Rupees</u>	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Consumption expenditure quintile										
Lowest	73	73	20	17	5	10	2	0	272	307
Second	73	79	18	17	6	4	3	1	308	297
Middle	74	80	22	15	3	4	1	0	403	319
Fourth	87	88	10	8	3	2	0	2	405	389
Highest	80	88	14	4	5	6	1	2	561	531
Social group										
Scheduled tribe	78	81	16	7	4	4	3	8	227	283
Scheduled caste	73	87	21	10	5	2	1	0	307	392
Other backward class	78	82	16	14	4	3	2	1	365	357
Others	78	88	16	3	4	6	1	2	448	502
Female-headed household	75	83	16	8	8	7	2	2	318	322
Treatment of at least one										
Elderly member (aged 60+)	80	87	13	6	6	4	1	3	360	548
Female household member	81	86	15	7	4	6	1	1	376	459
At least one visit to										
Private health facility	77	86	17	7	4	5	1	2	417	484
Public health facility	78	85	17	9	4	4	1	1	323	331
Disease										
Cancer and other tumours	65	87	14	6	19	3	2	4	912	880
Cardiovascular diseases	81	83	13	4	5	9	1	4	457	618
Diabetes	81	92	13	5	5	3	0	0	506	572
All	77	86	17	7	4	5	1	1	368	435

Source: Computations are based on MHS data from NSSO (2006).

Note: Standard errors are not reported here due to space considerations.