

Article

Gender disparities in health care expenditures and financing strategies (HCFS) for inpatient care in India

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ABSTRACT

Despite the vast literature on health care expenditures (HCE) and health care financing strategies (HCFS) in low- and middle-income countries, there is limited evidence of gender disparity in HCFS for inpatient care. We examined gender disparities in HCE and HCFS for inpatient care among adults aged 15 and older in India which is widely known for gender-based discrimination in sex-selective abortion, nutrition, and access to health care. Using data from a nationally representative large-scale population-based survey, we investigated the relationship between the gender of adult patients and HCE as well as sources of health care financing. Simple percentage distribution, cross-tabulation, a two-level random intercept model, and multinomial logit regression were used to examine the role of gender in HCE and sources of health care financing for inpatient care. Average HCE is lower for women in adult age groups, regardless of the type of disease and duration of stay in the hospital. This result remained unchanged after controlling for other background variables of the patients. Women are also discriminated against more when health care has to be paid for by borrowing, sale of assets, or contributions from friends and relatives (distressed financing). Multinomial logit results show that the probability of distressed financing is less for females than for males (borrowing: $\beta = -0.27$; confidence interval [CI], -0.37 to -0.17 ; $P = .001$; selling assets/contribution from friends and relatives: $\beta = -0.27$; CI, -0.39 to -0.14 ; $P = .001$). The predicted probability of using health care financing implies that the health of adult men is considered to be more important, in terms of resorting to distressed financing, than that of adult women HCE on adult women inpatients is systematically lower than that of adult men inpatients. Further, women in India have less access to inpatient care through distressed HCFS.

1. Background

Globally, women live longer than men because of the biologic and behavioral advantages of being female (Barford, Dorling, Smith, & Shaw, 2006; Seifarth, McGowan, & Milne, 2012). Yet in certain regions of Asia, the life expectancy gap for women versus men is nearly or marginally higher than zero (Canudas-Romo, Saikia, & Diamond-Smith, 2015; Saikia, Jasilionis, Ram, & Shkolnikov, 2011; United Nations, 2015). Female life expectancy from birth masks the disproportionate number of deaths among young and adult women in these regions (Anderson & Ray, 2012; Bongaarts & Guilmoto, 2015; Khanna, Kumar,

Vaghela, Sreenivas, & Puliyl, 2003; ORG 2014; Saikia, Moradhvaj, & Bora, 2016; Sudha & Rajan, 1999). Contributors to poor health outcomes among women in South Asia include gender-based discrimination in breastfeeding, food allocation, immunization, access to health care services, and finances available to pay for treatment (Asfaw, Klasen, & Lamanna, 2007; Borooah, 2004; Gupta, 1987; Kurz & Johnson-Welch, 1997; Pande, 2003; Rajeshwari, 1996; Roy & Chaudhuri, 2008; Singh 2012, 2013; Song & Bian, 2014). Although a great deal is known about gender-based discrimination in the sectors mentioned above, much less is known about how this practice influences the health care expenditures (HCE) and health care financing strategies (HCFS) of households. This

Abbreviations: HCE, health care expenditures; HCFS, health care financing strategies; CI, confidence interval; OOPE, out-of-pocket expenditures (OOPE); NSSO, National Sample Survey Office; INR, Indian Rupees; OBC, Other Backward classes; SC/ST, Scheduled caste/scheduled tribe.

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paper aims to examine gender disparities in HCFS for inpatient care in India, a South Asian country widely known for gender-based discrimination in abortion, nutrition, and access to health care (Arnold, Choe, & Roy, 1998; Fledderjohann et al., 2014; Guilmoto, Saikia, Tamrakar, & Bora, 2018).

Numerous studies address the health care financing strategies of households in developing countries (Asfaw, Lamanna, & Klasen, 2010; Flores, Krishnakumar, O'Donnell, & Van Doorslaer, 2008; Hoque, Dasgupta, Naznin, & Al Mamun, 2015; Kabir, Rahman, Salway, & Pryer, 2000; Russell, 1996; Sauerborn, Adams, & Hien, 1996; Skarbinski et al., 2002; Wilkes, Hao, Bloom, & Xingyuan, 1997). In general, in many low- and middle-income countries, people tend to pay for individual healthcare from their own pockets rather than from insurance or government-aided health schemes (O'Donnell et al., 2008; Russell, 1996; Van Doorslaer et al., 2005). Therefore, a financing strategy to cover the cost of illness is affected by a household's economic status and by the type, severity, and duration of the illness (Bonfrer & Gustafsson-Wright, 2016). Households in developing countries use a wide range of strategies to afford health care services and manage the economic burden of health care (Bonfrer & Gustafsson-Wright, 2016; Hoque et al., 2015; Joe, 2014; Rahman, Gilmour, Saito, Sultana, & Shibuya, 2013; Russell, 1996). One of the first strategies that families utilize to meet healthcare costs is to use currently available income and savings. Nearly half of total households deal with the financial cost of an illness through their available income or by using cash reserves (Bonfrer & Gustafsson-Wright, 2016; Russell, 1996; Sauerborn et al., 1996; Wilkes et al., 1997).

In situations with low income and savings and high out-of-pocket health care expenditures, households are compelled to borrow, sell assets, and seek financial contributions or assistance from friends and relatives (not in the form of borrowing but in the form of contribution or support) in order to pay medical bills (Russell, 1996; Wagstaff & Doorslaer, 2003). Such out-of-pocket health care payments are often known as "distressed health care financing" or "hardship financing" (Alamgir, Naheed, & Luby, 2010; Joe, 2014; Kruk, Goldmann, & Galea, 2009; Leive & Xu, 2008). Using data from 40 low- and middle-income countries, Kruk et al. (2009) showed that 26% of households borrow money and sell assets to meet health care costs in those countries; the probability is higher among the poorest households and those with less insurance coverage. In a study among 15 African countries, out-of-pocket health payments from borrowing and selling assets ranged from 23% of households in Zambia to a staggering 86% in Burkina Faso. Households with higher inpatient care expenses are more likely to borrow and deplete assets than those receiving outpatient care (Leive & Xu, 2008). High out-of-pocket expenditures (OOPE) pushes households towards impoverishment and curtails consumption of other basic needs (Russell, 1996; Wagstaff & Doorslaer, 2003).

Research findings reveal that out-of-pocket HCE in India is the highest in the world (WHO 2015). Almost 71% of HCE in India involves OOPE incurred by households (MoHFW, 2009). The distribution of HCE depends on the household members involved in decision making for seeking treatments and is dependent on a number of factors, including the perceived cost of illness and the perceived severity of illness. (Begashaw & Tesfaye, 2016; Buor, 2005; Mojumdar, 2018). In India, 58% of households finance inpatient care through borrowing, sale of assets, and contributions from friends and relatives, accounting for a considerable 42% of the total share of OOPE payments. This percentage is higher in rural than in urban areas (Joe, 2014). In a small study conducted in the Indian state of Orissa, approximately 25% of households faced hardship in financing HCE during the 365 days preceding the survey. In another study, approximately 40% of households experienced hardship in financing expenditures for hospitalization and 25% for outpatient or maternity care (Binnendijk, Koren, & Dror, 2012).

Do health care financing strategies differ systematically for men and women in India? A review of existing literature suggests that more attention has been given to gender disparity in HCE than to financing strategies (Asfaw et al., 2010; Maharana & Ladusingh, 2014; Saikia

et al., 2016). Studies in India show that HCE was systematically lower for women than for men across all socioeconomic subgroups, despite women having a higher prevalence of morbidity than men (Batra, Gupta, & Mukhopadhyay, 2014; Maharana & Ladusingh, 2014; Saikia et al., 2016). In a study on rural cancer patients in a public tertiary hospital in an eastern Indian state, HCE on female adults was significantly less than on male adults, and approximately one-third of the difference can be attributed to gender discrimination (Batra et al., 2014).

However, there is limited evidence of gender disparity in health care financing strategies in South Asian countries. For instance, while addressing gender discrimination in HCFS among children younger than 10 years in India, Asfaw et al. (2010) found that girls have a lower chance of being hospitalized than boys when households face tight budget constraints. The probability of financing the hospitalization of boys through borrowing, sale of assets, and help from relatives, is much higher than it is for girls. Another study corroborated that there is a significant socioeconomic gradient in the distribution of distressed financing, with a huge disadvantage for marginalized individuals, such as women, the elderly, and backward caste groups (Joe, 2014). Following these few studies, we aim to deepen our understanding of persistent gender discrimination in health care financing for adults in India, using recently available nationally representative data from the National Sample Survey Office (NSSO). While doing so, we first re-examine the gender difference in HCE inpatient care using the same set of data. We focused on inpatient care for adults aged 15 years and older, as expenditures for inpatient care is substantially higher (about 25 times) than for outpatient care. We examined the association between various types of HCFS and the gender of the inpatient, while controlling the role of demographic, socioeconomic, and disease-related characteristics. Finally, we scrutinized the pattern of gender discrimination in HCFS in the adult age group, as well as by the income status of households.

2. Methods

2.1. Study design

In this study, we used data from the 25th schedule of the 71st round of the NSSO (NSSO, 2014). The NSSO is a public organization under the Ministry of Statistics and Programme Implementation of the Government of India since 1950. The NSSO 71st round is a nationally representative, cross-sectional, population-based survey.

2.2. Data collection procedures

The NSSO collects data on various issues such as employment, migration, consumption expenditures, educational attainment, and morbidity. The 25th schedule of the 71st round of the NSSO, known as "Social Consumption: Health," collected information on the demographic and socioeconomic conditions of the population surveyed, with an emphasis on health conditions, health care access, and health care financing. It thus gives detailed information about the prevalence of sickness insurance coverage, medical treatment, sources of HCF, as well as maternity care for inpatients in the year preceding the survey, and outpatient care during the previous 15 days. There were 65,932 households (sample size: 168,697 men and 164,407 women) in the 71st round of the NSSO. Our study population consists of adults aged 15 years and older (a sample of 35,515) who were inpatients in the 365 days prior to the survey.

The NSSO provides information separately for inpatient and outpatient care on the sources of HCF. The NSSO collected information on inpatient expenses incurred in the 365 days preceding the survey. The survey lists, separately, the medical expenses (doctor's fee, medicine costs, testing costs, bed charge, etc.) and nonmedical expenses (food, transport for attendants of patients, expenditures on escort, lodging

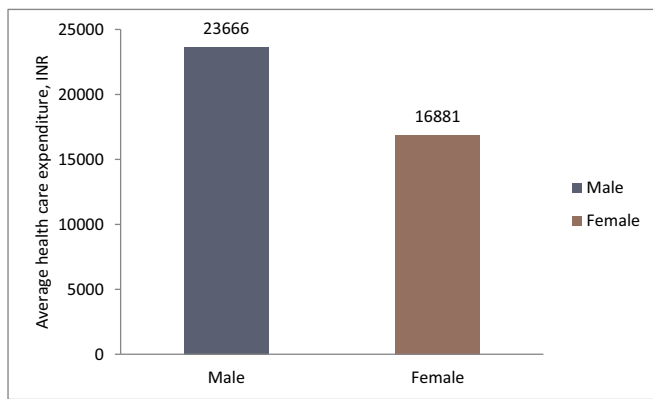


Fig. 1. Gender disparity in health care expenditures (age adjusted) among inpatients in India, 2014.

charges if any, etc.). Total HCE includes both medical and nonmedical expenditures incurred for inpatient care during the 365 days. We analyzed the information on total HCE to investigate gender differences in the HCE. The sources of HCF for each inpatient case are listed as primary and secondary sources of financing. The various sources of HCF reported by households are listed as: 1) current savings and household income 2) borrowing money; 3) selling assets (sale of jewelry and other physical assets); and 4) financial contributions or assistance from friends and relatives (not in the form of borrowing).

2.3. Measures

The outcome variable for HCF is the source of HCF for hospitalization for each individual. The sources of HCF for hospitalization are divided into four mutually exclusive categories: 1) using only current income/savings; 2) using only money from borrowing; 3) using money from selling assets and contributions from relatives/friends; and 4) using multiple sources (current income/savings, money from borrowing, selling assets/contributions from relatives and friends; hereafter referred to as multiple sources). The use of multiple sources, the fourth category, indicates that a single source was not enough to cover inpatient expenditures.

We categorised explanatory variables as individual- or household-level variables. In regression models, we used relevant demographic and socioeconomic predictors: age; gender (male and female); type of residence (rural and urban); educational status of head of the household; relation to head of the household (self or spouse of head, child or spouse of child, father/mother/father-in-law/mother-in-law, brother/sister/

brother-in-law/sister-in-law); religion (Hindu, Muslim, or other); caste (other, other backward classes, scheduled tribes, and scheduled castes); the economic status of household (poorest, poorer, middle, richer, and richest); and dependency ratio. These predictor variables are relevant for determining health care expenses and sources (Maharana & Ladusingh, 2014; Saikia et al., 2016; Song & Bian, 2014; Willis et al., 2009). We estimated the economic status of a household on the basis of its consumer expenditures. A household's usual consumer expenditures is the sum of the monetary values of all goods and services usually consumed by members of the household domestically during one month.

Besides demographic and socioeconomic indicators, the survey questionnaire included questions on health care service utilization and cost. Interviewees were asked about the type of health care facility used (public or private), the type of disease (communicable, non-communicable, and other diseases), duration of stay at the hospital, and any type of health insurance. These variables were controlled in the regression analysis, as they may determine the amount of expenditures and, consequently, the source of HCF.

2.4. Data analysis

We used descriptive statistics to compare the average HCE for male and female adults by background characteristics of the inpatients. We carried out a two-level random intercept model for the HCE (expressed in log scale) to analyze the role of gender, after controlling for other background variables. The two-level random intercept model is appropriate for addressing the clustering of individuals within a household. The degree of clustering has been measured by intraclass correlation coefficient and variance partition coefficient to explain the correlation between individuals from the same household and the proportion of total variance that lies at the household level, respectively.

Further, we have estimated the mean and percentage distribution of type of HCFS used for inpatient care for each gender by demographic, socioeconomic, and health care related characteristics in India during 2014. Chi-square tests were conducted to examine the statistical significance of this difference.

We carried out multinomial logit regression to examine the association between the gender of the inpatient and sources of HCF for inpatient care. Multinomial logit regression is a simple extension of binary logit regression that allows for more than two categories of the dependent or outcome variable. Multinomial logit regression is used to predict categorical placement in or the probability of category membership on a dependent variable based on multiple independent variables. Our dependent variable y_i is the source of finance that takes a value from 1 to 4 ($y_i = 1 =$ income/savings [reference category], $y_i = 2 =$ borrowing, $y_i = 3 =$ sale of assets and contributions from relatives, and

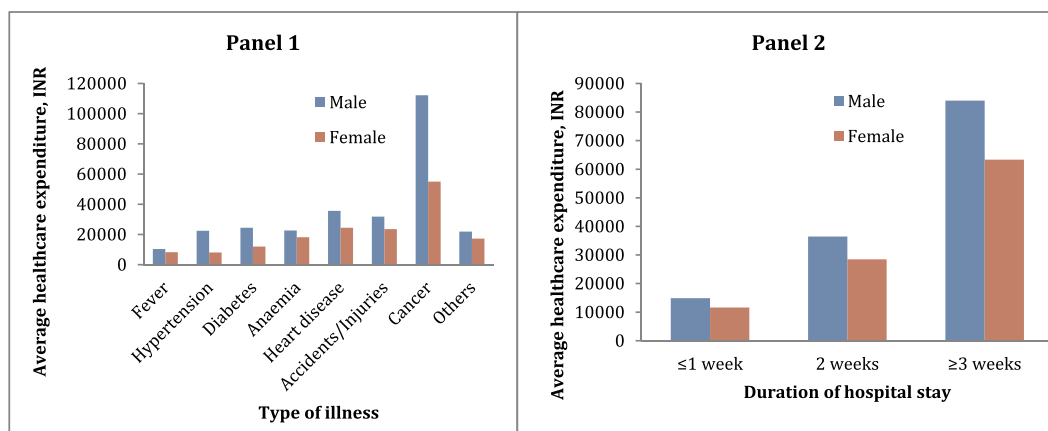


Fig. 2. Gender disparity in health care expenditures (age adjusted) among inpatients aged 15 years and older, by type of illness and duration of stay in the hospital in India, 2014.

Table 1

Average total (medical and nonmedical) expenditures for hospitalization, by gender and background characteristics of patients, India, 2014 (n = 35515).

Background Characteristics	Male (95% CI)	Female (95% CI)	Absolute gap (Male/Female) (95% CI)	Ratio(Male/Female)	Male (N)	Female (N)
Age group (years)						
15–59	23537(22388 to 24686)	17255(16484 to 18025)	6282(5904 to 6661)	1.4	11736	13777
≥60	32211(30246 to 34176)	19499(18230 to 20767)	12712(12016 to 13409)	1.7	5269	4734
Type of residence						
Urban	33799(29409 to 38188)	23756(20729 to 26783)	10043(8680 to 11405)	1.4	6105	6489
Rural	21990(19815 to 24164)	14624(13474 to 15774)	7366(6341 to 8390)	1.5	10899	12021
Education of household head						
No education	17876(15898 to 19854)	13107(11122 to 15091)	4769(4776 to 4763)	1.4	4948	5809
Up to primary	22710(18610 to 26810)	14207(12938 to 15475)	8503(5672 to 11335)	1.6	4527	4675
Up to secondary	22367(19580 to 25155)	17133(13007 to 21258)	5234(6573 to 3897)	1.3	2791	2892
Up to higher secondary	32188(28361 to 36014)	22129(20141 to 24117)	10059(8220 to 11897)	1.5	3386	3592
Graduate and above	61711(44466 to 78955)	37903(28228 to 47577)	23808(16238 to 31378)	1.6	1353	1542
Relation to household head						
Self/spouse of head	24940(22726 to 27154)	17082(15477 to 18687)	7858(7249 to 8467)	1.5	11277	12102
Child/spouse of child	22139(19560 to 24717)	15960(12641 to 19280)	6179(6919 to 5437)	1.4	3462	3292
Father/mother/father-in-law/mother-in-law	22292(17656 to 26928)	16409(14743 to 18074)	5883(2913 to 8854)	1.4	597	1895
Brother/sister/brother-in-law/sister-in-law	31808(18073 to 45543)	19647(14460 to 24833)	12161(3613 to 20710)	1.6	284	413
Religion						
Hindu	26274(23813 to 28736)	18197(16610 to 19784)	8077(7203 to 8952)	1.4	13778	14794
Muslim	22723(18766 to 26680)	14427(12395 to 16459)	8296(6371 to 10221)	1.6	2138	2397
Other	32466(23880 to 41051)	19873(17430 to 22317)	12593(6450 to 18734)	1.6	1088	1319
Caste						
SC/ST	16848(14709 to 18987)	12918(10225 to 15611)	3930(4484 to 3376)	1.3	4114	4704
OBC	25968(21890 to 30046)	16267(14751 to 17783)	9701(7139 to 12263)	1.6	7494	8350
Other	33748(30647 to 36850)	24423(21443 to 27403)	9325(9204 to 9447)	1.4	5396	5457
Economic status of household head						
Poorest	15232(12848 to 17615)	10031(8949 to 11112)	5201(3899 to 6503)	1.5	3645	4056
Poorer	16843(15046 to 18640)	13904(10876 to 16932)	2939(4170 to 1708)	1.2	3258	3513
Middle	19438(16888 to 21988)	14374(12972 to 15775)	5064(3916 to 6213)	1.4	3645	4028
Richer	25742(23133 to 28352)	19552(17021 to 22083)	6190(6112 to 6269)	1.3	3236	3469
Richest	56367(47136 to 65597)	33285(28123 to 38446)	23082(19013 to 27151)	1.7	3217	3442
Type of disease						
Communicable	9531(8425 to 10636)	9690(7352 to 12028)	–159(1073 to 1392)	1.0	2910	5226
Noncommunicable	28660(25359 to 31961)	19896(18013 to 21779)	8764(7346 to 10182)	1.4	9723	9987
Other	31943(28336 to 35551)	24423(21501 to 27345)	7520(6835 to 8206)	1.3	4371	3298
Type of health care facility						
Public	11459(9569 to 13349)	6888(6278 to 7498)	4571(3291 to 5851)	1.7	6539	7268
Private	35401(32226 to 38575)	24857(22779 to 26934)	10544(9447 to 11641)	1.4	10465	11243
Duration of stay (days)						
<5	13647(12279 to 15014)	10403(9356 to 11450)	3244(2923 to 3564)	1.3	9411	11586
6–10	27246(24890 to 29602)	21749(20349 to 23149)	5497(4541 to 6453)	1.3	4474	4609
≥11	62613(52994 to 72233)	47055(39111 to 55000)	15558(13883 to 17233)	1.3	3119	2315

(continued on next page)

Table 1 (continued)

Background Characteristics	Male (95% CI)	Female (95% CI)	Absolute gap (Male/Female) (95% CI)	Ratio(Male/Female)	Male (N)	Female (N)
Any type of health insurance						
No	27255(24567 to 29944)	18177(16573 to 19781)	9078(7994 to 10163)	1.5	13066	14789
Yes	22793(20586 to 25001)	16441(15146 to 17736)	6352(5440 to 7265)	1.4	3938	3722
Doctor's/surgeon's fee	4198(3490 to 4907)	2617(2428 to 2805)	1581(1062 to 2102)	1.6		
Medicines costs	5589(5133 to 6046)	3819(3544 to 4094)	1770(1589 to 1952)	1.5		
Diagnostic tests costs	2284(1969 to 2599)	1533(1447 to 1620)	751(522 to 979)	1.5		
Bed charges	2379(2014 to 2744)	1527(1378 to 1676)	852(636 to 1068)	1.6		
Other medical expenses ^a	2104(1558 to 2650)	1187(1050 to 1324)	917(508 to 1326)	1.8		
Total medical expenditures	23818(21745 to 25891)	15992(14704 to 17280)	7826(7041 to 8611)	1.5		
Transportation costs	783(729 to 838)	594(568 to 620)	189(161 to 218)	1.3		
Other nonmedical expenses ^b	1623(1547 to 1699)	1241(1182 to 1301)	382(365 to 398)	1.3		
Total health care expenditures	26224(24095 to 28354)	17827(16519 to 19136)	8397(7576 to 9218)	1.5	17,004	18,511

Abbreviations: CI, confidence interval; OBC, other backward classes; SC/ST, scheduled caste/scheduled tribe.

Notes: A *t*-test performance shows that there exists statistical significance in the health care expenditures by gender.

^a Other medical expenses include attendant charges, physiotherapy, personal medical appliances, blood, and oxygen.

^b Other nonmedical expenses include food, transport for others, expenditures on escort, and lodging charges if any.

$y_i = 4 =$ multiple sources).

We calculated the predicted probability of each category of the dependent variable, using the appropriate mathematical relationship. Before using the multinomial logit models, we tested the independence of the irrelevant alternative property of the models. Using the test suggested by Hausman and McFadden (1984) and Small and Hsiao (1985), we tested the value of coefficients by changing the number of categories of the outcome variable, we found that coefficient did not change for the remaining outcome categories. We did the entire analysis on STATA version 13.0.

3. Results

3.1. Gender disparity in average health care expenditures in hospitalization

In Fig. 1, we present age-adjusted HCE by gender for individuals aged 15 years and older. The inpatient HCE for men is substantially higher than for women (Rs. 23,666 for men vs Rs. 16,881 for women). Panel 1 of Fig. 2 shows the age-adjusted average HCE for men and women by type of illness. Panel 2 of Fig. 2 shows that the age-adjusted average HCE is higher for men than women when the duration of hospitalization is the same. Inpatient HCE is higher among men than women, regardless of the type of disease and duration of the stay in the hospital.

Table 1 presents the average HCE for men and women, separately by background characteristics. It also presents the absolute and relative gaps in HCE by gender. A total of 35,515 adults received inpatient care in the year leading up to the survey. The amount of health care expenditures in hospitalization is systematically higher among male patients than female patients across demographic and socioeconomic characteristics, although the extent of this difference varies by group. On average, HCE for men is about Indian Rupees (INR) 8397 (USD \$1 = ~INR 61.4 in 2014) more than that for women. Older patients spend more on HCE. The absolute and relative gaps in HCE by gender are higher among older adults (age 60 years and older), among non-Hindu patients, and among patients belonging to the richest wealth quintile. We observed the absence of a gender difference in HCE only in the case of communicable diseases. By the relationship of the patient to the head of the household, HCE is higher among the head of household and spouse of the head than other members of the household, although we observed a clear difference in the expenditures by gender. Average HCE on doctor fees, medicine costs, diagnostic test costs, and costs of other medical items for inpatients are invariably higher among men than

women.

Table 2 shows results of the two-level random intercept model performed to examine the association between gender and HCE (in log scale), after adjusting for the effects of other variables. Random parts of the two-level model point out considerable variation in average HCE between households and between individuals in households. Variations in HCE are higher at the individual level ($\Omega_{e2} = 1.315$) than the household level ($\Omega_{u2} = 0.534$). Variance partition coefficient shows that 29% of the variation in hospitalization costs is due to the household-level clustering of the individual, controlled for socioeconomic and health care predictors. The results show that average HCE is significantly less among women ($\beta = -0.059$; $P < .000$) than men, even after controlling for demographic, socioeconomic, and health care variables at the individual and household levels. The results indicate that women are facing discriminatory behavior in health care spending for inpatient care. The associations between other predictors and dependent variables are in expected directions (eg, there is more HCE among older individuals, highly educated individuals, in private health facilities, and in individuals with chronic diseases).

3.2. Gender disparity in health care financing strategy

Table 3 presents the type of financing strategy used for inpatient care for each gender by demographic, socioeconomic, and health care-related characteristics. Table 3 shows that there is a systematic variation in the different financing strategies between men and women regardless of background characteristics. The percentage of women hospitalized with income or savings as HCF is higher than that of men (51.02% vs 45.73%). The percentage of men hospitalized with distressed financing is higher than that of women regardless of background characteristics. The application of the Chi-square test confirms the statistical significance of these results. We also observe a similar pattern in HCF when gender interacts with age and place of residence.

As the level of education increases, the percentage share of HCF through current income or savings increases. Although there is no substantial difference in the HCF pattern between inpatients belonging to the Hindu and Muslim religions, the percentage of patients using distressed financing is lower among those belonging to other religions. As the economic status of the household increases, the percentage share of income or savings rises as HCF increases. The percentage shares of distressed HCF are high for noncommunicable diseases and private health care facilities. Mean transportation costs and doctors' fees are high in all types of distressed HCF.

Table 2
Results of the two-level random intercept model: Predictors of health care expenditures in hospitalization, India, 2014 (n = 35515).

Background characteristics	Coefficient	SE	P > z	95% CI	
Fixed effects				Lower Limit	Upper Limit
Constant	6.809	0.046	0.000	6.720	6.899
Age (years)					
Gender	0.002	0.001	0.004	0.001	0.003
Male®					
Female	-0.059	0.016	0.000	-0.090	-0.027
Type of residence					
Urban®					
Rural	0.167	0.017	0.000	0.133	0.200
Education of household head					
No education®					
Up to primary	0.013	0.022	0.553	-0.030	0.056
Up to secondary	0.145	0.026	0.000	0.094	0.195
Up to higher secondary	0.216	0.025	0.000	0.167	0.264
Graduate and above	0.392	0.032	0.000	0.328	0.455
Relation to household head					
Self/spouse of head®					
Child/spouse of child	0.054	0.025	0.033	0.004	0.103
Father/mother/father-in-law/mother-in-law	-0.239	0.033	0.000	-0.304	-0.173
brother/sister/brother-in-law/sister-in-law	-0.090	0.056	0.107	-0.199	0.019
Religion					
Hindu®					
Muslim	-0.024	0.024	0.327	-0.071	0.024
Other	0.152	0.029	0.000	0.096	0.208
Caste					
SC/ST®					
OBC	0.047	0.021	0.022	0.007	0.088
Other	0.195	0.022	0.000	0.151	0.238
Economic status of household head					
Poorest®					
Poorer	0.169	0.025	0.000	0.120	0.217
Middle	0.256	0.025	0.000	0.208	0.304
Richer	0.377	0.026	0.000	0.325	0.429
Richest	0.602	0.028	0.000	0.547	0.657
Dependency ratio	-0.038	0.013	0.003	-0.064	-0.013
Type of disease					
Communicable®					
Noncommunicable	0.471	0.020	0.000	0.432	0.510
Other	0.637	0.023	0.000	0.592	0.683
Type of health care facility					
Public ®					
Private	1.409	0.016	0.000	1.377	1.440
Duration of stay	0.041	0.001	0.000	0.039	0.042
Any type of health insurance					
No®					
Yes	-0.243	0.020	0.000	-0.282	-0.205
Random effects parameters					
Household-level variance	0.534	0.023		0.490	0.578
Individual-level variance	1.316	0.022		1.273	1.359
VPC	28.88				

Abbreviations: CI, confidence interval; OBC, other backward classes; SC/ST, scheduled caste/scheduled tribe; VPC, variance partition coefficient; ®: reference category.

Table 4 presents the results of multinomial logit regression, examining the association between gender and sources of HCF, after adjusting for the role of demographic, socioeconomic, and other health-related characteristics. The foremost finding of this analysis is that the probability of hospitalization is lower among women, with respect to all sources of HCF, relative to income/savings, even after controlling for the role of demographic, socioeconomic, and health-related variables. For example, the probability of using distressed financing is lower for women than for men (borrowing: $\beta = -0.27$; confidence interval [CI], -0.37 to -0.17 ; $P = .001$; selling assets and contributions from friends and relatives: $\beta = -0.27$; CI, -0.39 to -0.14 ; $P = .001$). The probability of

using HCF from multiple sources is also lower for women than for men ($\beta = -0.11$; CI, -0.16 to -0.06 ; $P = .001$).

Table 4 shows that the probability of using distressed sources for HCF decreases among inpatients aged 60 years and older. This implies that households avoid using distressed resources to provide inpatient care for individuals in older age groups. Households in rural India are more likely to pay inpatient care costs through borrowing, sale of assets, and contributions from friends and relatives than their urban counterparts. The education level of the head of the household has a significant effect on sources of financing for health care. Patients having Heads of household that lack formal education are consistently shown to have higher chances of obtaining HCF from borrowing, selling assets, or multiple sources than from current income/savings, whereas patients from an educated heads of household have lower chances of borrowing, selling assets, and asking for contributions than using current income/savings.

Another finding from Table 4 is that all the marginalized sections of the Indian population meet their HCF through sources other than income/savings. Inpatients belonging to deprived castes, such as scheduled castes/scheduled tribes, tend to finance inpatient care from borrowing, sale of assets, and contributions from relatives rather than using income/savings. Likewise, poorer households are more likely to borrow for inpatient care than richer households. Households with higher dependency ratios are more likely to finance inpatient care through the sale of assets and contributions from friends than from income/savings.

The amount of HCE, and consequently HCF, may vary by the types of diseases inpatients have. Patients hospitalized for the treatment of non-communicable and other diseases have a greater chance of borrowing and selling assets than those undergoing treatment for communicable diseases. Longer periods of hospitalization lead to borrowing and sale of assets, alongside seeking help from friends and relatives. Patients using private facilities have greater chances of resorting to distressed financing than paying through current income/savings than those using public facilities. As doctors' fees and transportation costs increase, the chances of using distressed resources for HCF also increase.

3.3. Gender disparity in the predicted probability of HCF by age group

Fig. 3 explains gender disparity in the probability of using different sources of financing for hospitalization by the age of the inpatients. Among women, the probability of paying for hospitalization using current income/savings rather than other sources is higher across all age groups. For older adults (aged 60 and above) income/savings is the most-used source, compared with adults aged below age 60 who use multiple sources.

As age increases, the probability of using borrowing as a source of HCF decreases continuously for both genders, yet the gap between the genders is notable. Similarly, women are less likely than men to pay for hospitalization through the sale of assets and contributions from relatives. In contrast, the chance of borrowing for men's health care increases with the onset of adulthood but declines in older age (aged 60 and above).

3.4. Gender disparity in the predicted probability of HCF by household income status

Does the gender differential in hospitalization decrease as household income status changes from low-income to high-income? To answer this, we estimated the predicted probabilities of receiving inpatient care, using different sources of HCF according to income groups, following multinomial logit regression analysis. The results are presented in Fig. 4, below.

Fig. 4 shows that the probability of using income/savings as an exclusive source of HCF increases as household income status changes from the low- to the high-income group. Here, too, we observe that use

Table 3

Mean and percentage distribution of type of health care financing strategy used for inpatient care for each gender, by demographic, socioeconomic, and health care-related characteristics, India, 2014 (n = 35515).

Background characteristics	Male				Female			
	Income/savings	Borrowing	Sale of assets/contributions from friends and relatives	Multiple sources	Income/savings	Borrowing	Sale of assets/contributions from friends and relatives	Multiple sources
Age (years)								
15–59	43.48 (41.72 to 45.25)	9.23(8.22 to 10.35)	4.19(3.28 to 5.34)	43.1(41.29 to 44.93)	49.6(47.83 to 51.38)	7.13(6.21 to 8.17)	2.93(2.36 to 3.62)	40.34(38.61 to 42.09)
≥60	50.92 (48.13 to 53.7)	5.63(4.83 to 6.56)	4.01(2.68 to 5.95)	39.44(36.58 to 42.38)	55.3(51.82 to 58.72)	6.24(4.85 to 8.01)	2.33(1.79 to 3.04)	36.12(32.81 to 39.58)
Type of residence								
Urban	52.86(50.6 to 55.11)	6.98(6.11 to 7.96)	4.35(3.09 to 6.09)	35.8(33.61 to 38.06)	60.9(58.55 to 63.19)	5.51(4.72 to 6.43)	2.52(1.77 to 3.57)	31.08(28.9 to 33.33)
Rural	41.71 (39.79 to 43.65)	8.79(7.73 to 9.98)	4.01(3.08 to 5.22)	45.49(43.46 to 47.53)	45.78 (43.72 to 47.85)	7.65(6.55 to 8.92)	2.92(2.38 to 3.58)	43.65(41.61 to 45.71)
Education of household head								
No education	37.77 (35.11 to 40.5)	11.59(9.91 to 13.51)	3.81(3.03 to 4.8)	46.83(44.05 to 49.64)	43.5(40.42 to 46.63)	10.27(8.47 to 12.39)	2.65(1.89 to 3.7)	43.59(40.46 to 46.76)
Up to primary	44.15 (41.44 to 46.9)	8.75(7.54 to 10.14)	5.19(3.21 to 8.28)	41.91(39.22 to 44.64)	47.6(44.91 to 50.31)	5.31(4.41 to 6.38)	3.62(2.44 to 5.34)	43.47(40.74 to 46.24)
Up to secondary	42.51 (38.67 to 46.45)	7.62(5.46 to 10.53)	3.97(2.97 to 5.29)	45.9(41.6 to 50.26)	51.23 (47.69 to 54.74)	6.23(4.99 to 7.76)	3.25(2.45 to 4.3)	39.29(35.91 to 42.78)
Up to higher secondary	53.95 (50.37 to 57.49)	4.94(3.94 to 6.18)	3.84(2.12 to 6.85)	37.27(33.73 to 40.95)	58.47 (54.82 to 62.04)	5.94(4.07 to 8.59)	1.8(1.29 to 2.52)	33.79(30.47 to 37.28)
Graduate and above	65.91 (61.29 to 70.25)	2.68(1.84 to 3.87)	2.9(2.11 to 3.97)	28.51(24.28 to 33.16)	71.41(66.6 to 75.78)	2.66(1.71 to 4.13)	2.2(1.48 to 3.25)	23.73(19.7 to 28.29)
Relation to household head								
Self/spouse of head	46.66 (44.83 to 48.51)	8.36(7.37 to 9.48)	4.57(3.51 to 5.92)	40.41(38.55 to 42.28)	49.63 (47.59 to 51.67)	7.29(6.26 to 8.46)	2.94(2.34 to 3.7)	40.14(38.12 to 42.19)
Child/spouse of child	45.71(42.5 to 48.96)	7.97(6.68 to 9.5)	3.31(2.09 to 5.2)	43(39.74 to 46.33)	54.43(51.2 to 57.62)	5.64(4.22 to 7.5)	2.48(1.6 to 3.83)	37.45(34.45 to 40.56)
Father/mother/father-in-law/mother-in-law	58.63 (52.65 to 64.36)	4.01(2.47 to 6.47)	4.47(2.35 to 8.36)	32.89(27.72 to 38.5)	57.52 (53.07 to 61.86)	5.97(4.2 to 8.42)	2.89(1.95 to 4.27)	33.61(29.79 to 37.66)
brother/sister/brother-in-law/sister-in-law	43.05 (33.21 to 53.48)	2.26(0.87 to 5.78)	2.64(1.17 to 5.87)	52.05(41.26 to 62.64)	48.55 (37.44 to 59.81)	10.26(4.44 to 21.95)	2.7(1.4 to 5.14)	38.49(27.14 to 51.25)
Religion								
Hindu	45.35(43.7 to 47)	8.34(7.47 to 9.31)	4.21(3.29 to 5.38)	42.09(40.38 to 43.83)	51.21 (49.38 to 53.03)	7.04(6.14 to 8.06)	2.82(2.29 to 3.47)	38.93(37.15 to 40.73)
Muslim	44.91 (40.69 to 49.2)	7.25(5.7 to 9.18)	3.79(2.61 to 5.47)	44.05(39.83 to 48.36)	47.33(43.6 to 51.09)	6.39(4.63 to 8.75)	2.77(1.91 to 4)	43.5(39.78 to 47.31)
Others	52.26 (46.83 to 57.65)	7.27(5.08 to 10.3)	3.83(2.55 to 5.73)	36.63(31.58 to 41.99)	55.96 (50.69 to 61.09)	6.32(4.19 to 9.43)	2.26(1.43 to 3.56)	35.46(30.52 to 40.73)
Caste								
SC/ST	39.1(36.08 to 42.2)	9.86(8.08 to 11.98)	3.35(2.71 to 4.15)	47.69(44.33 to 51.07)	47.2(43.93 to 50.48)	6.86(5.32 to 8.81)	3.34(2.28 to 4.85)	42.6(39.31 to 45.97)
OBC	44.01 (41.78 to 46.26)	9.23(8.04 to 10.57)	3.86(2.77 to 5.36)	42.9(40.59 to 45.26)	48.66 (46.16 to 51.17)	8.68(7.34 to 10.24)	2.21(1.6 to 3.05)	40.44(38.04 to 42.89)
Others	53.16 (50.64 to 55.66)	5.34(4.45 to 6.39)	5.1(3.46 to 7.48)	36.4(34.06 to 38.8)	57.92 (55.46 to 60.34)	4.24(3.44 to 5.21)	3.16(2.56 to 3.9)	34.68(32.35 to 37.08)
Economic status								
Poorest	37.85 (34.73 to 41.08)	9.72(7.75 to 12.12)	4.77(3.77 to 6.02)	47.66(44.24 to 51.11)	43.19 (39.72 to 46.74)	6.59(5.35 to 8.09)	2.63(2.01 to 3.44)	47.58(43.96 to 51.23)
Poorer	42.18 (38.86 to 45.56)	9.73(7.7 to 12.23)	3.3(2.52 to 4.31)	44.79(41.42 to 48.21)	45.82 (42.31 to 49.36)	7.57(6.06 to 9.42)	4.94(3.21 to 7.55)	41.67(38.28 to 45.15)
Middle	45.27 (42.14 to 48.44)	9.25(7.85 to 10.86)	3.35(2.53 to 4.43)	42.13(38.94 to 45.39)	49.63 (46.23 to 53.05)	9.38(7 to 12.46)	2.18(1.54 to 3.07)	38.81(35.59 to 42.12)

(continued on next page)

Table 3 (continued)

Background characteristics	Male				Female			
	Income/savings	Borrowing	Sale of assets/contributions from friends and relatives	Multiple sources	Income/savings	Borrowing	Sale of assets/contributions from friends and relatives	Multiple sources
Richer	44.47 (40.92 to 48.09)	7.61(6.21 to 9.3)	6(3.17 to 11.08)	41.91(38.08 to 45.84)	53.02 (49.75 to 56.27)	6.3(5.11 to 7.75)	2.1(1.58 to 2.8)	38.57(35.37 to 41.87)
Richest	59.7(56.46 to 62.85)	4.07(3.23 to 5.12)	3.32(2.09 to 5.24)	32.91(29.84 to 36.14)	64.93 (61.34 to 68.35)	4.35(3.07 to 6.14)	2.11(1.6 to 2.78)	28.61(25.43 to 32.02)
Dependency ratio	0.57(0.56 to 0.58)	0.52(0.49 to 0.55)	0.8(0.71 to 0.88)	0.56(0.55 to 0.58)	0.65(0.64 to 0.66)	0.57(0.53 to 0.61)	0.61(0.56 to 0.66)	0.64(0.62 to 0.65)
Type of diseases								
Communicable	55.78(52 to 59.49)	8.2(6.03 to 11.06)	1.91(1.37 to 2.66)	34.11(30.67 to 37.73)	55.18 (52.22 to 58.1)	5.67(4.32 to 7.39)	2.15(1.4 to 3.29)	37.01(34.1 to 40.01)
Noncommunicable	44.2(42.29 to 46.13)	8.1(7.29 to 8.99)	4.67(3.56 to 6.11)	43.03(40.97 to 45.11)	50.52 (48.24 to 52.8)	6.85(5.84 to 8.02)	2.68(2.1 to 3.42)	39.94(37.76 to 42.17)
Others	42.37 (39.54 to 45.26)	8.18(6.57 to 10.14)	4.45(2.97 to 6.61)	45(42.09 to 47.93)	45.91 (42.56 to 49.29)	9.07(7.06 to 11.58)	4.07(2.97 to 5.56)	40.96(37.82 to 44.17)
Type of health facility								
Public	51.51 (49.01 to 54)	7.46(6.24 to 8.89)	2.99(2.42 to 3.7)	38.04(35.54 to 40.6)	57.51 (55.18 to 59.81)	4.54(3.86 to 5.32)	3.08(2.32 to 4.08)	34.87(32.63 to 37.18)
Private	42.12 (40.31 to 43.95)	8.56(7.62 to 9.6)	4.85(3.68 to 6.38)	44.47(42.54 to 46.41)	46.83(44.7 to 48.98)	8.44(7.25 to 9.8)	2.59(2.06 to 3.24)	42.14(40.05 to 44.26)
Duration of stay (no. of days)	6.10(5.92 to 6.29)	8.77(8.16 to 9.38)	11(10.01 to 11.99)	9.97(9.58 to 10.36)	5.01(4.88 to 5.14)	8.06(7.29 to 8.82)	8.05(7.28 to 8.83)	7.87(7.58 to 8.15)
Any type of health insurance								
No	44.39(42.7 to 46.1)	6.71(5.97 to 7.53)	3.54(2.8 to 4.47)	45.35(43.58 to 47.14)	50.38 (48.57 to 52.2)	5.92(5.16 to 6.78)	2.56(2.12 to 3.09)	41.14(39.36 to 42.95)
Yes	50.16 (47.12 to 53.2)	12.85(10.81 to 15.2)	6.09(4.03 to 9.1)	30.9(28.34 to 33.58)	53.56 (50.32 to 56.77)	10.86(8.57 to 13.67)	3.66(2.41 to 5.52)	31.92(29.03 to 34.95)
Transportation cost (proxy of distance) *	557(533 to 582)	996(889 to 1103)	1593(1324 to 1862)	1073(1024 to 1122)	459(438 to 479)	701(633 to 770)	1194(1028 to 1359)	834(802 to 866)
Doctor fee*	4907(4490 to 5323)	6607(5592 to 7623)	12208(7421 to 16995)	9304(8490 to 10117)	3292(3039 to 3545)	5725(4509 to 6940)	5666(4617 to 6715)	5707(5252 to 6162)
Total	45.73 (44.25 to 47.23)	8.14(7.38 to 8.96)	4.14(3.35 to 5.09)	41.99(40.46 to 43.54)	51.02 (49.43 to 52.61)	6.91(6.12 to 7.79)	2.78(2.33 to 3.32)	39.29(37.74 to 40.86)

Abbreviations: OBC, other backward classes; SC/ST, scheduled caste/scheduled tribe.

Note: 95% Confidence interval in parentheses; *expenditures expressed in Indian rupees (Rs.); \$1US = 61.4 INR in 2014; Chi-square tests were significant at $P < .0001$.

of income/savings as a source of HCF is higher for women than for men. In contrast, the probability of borrowing, for all patients, is higher among poor households than rich households. At the same time, the probability of using borrowing as an exclusive source of HCF for women is substantially lower than for men belonging to poor households. This gap diminishes as the income of the household rises. The probability of using HCF from selling assets for men is higher than women when household income is either high or low. At the same time, the probability of using HCF as selling assets is always lower for women than men.

Finally, addressing HCF through multiple sources is also higher among male inpatients than female inpatients (Fig. 4, multiple sources). Moreover, in using a combination of different sources of HCF, the gender gap remains constant across the various income groups of households.

4. Discussion

Previous research has demonstrated that one in four households in developing countries resort to hardship financing by borrowing and selling assets to meet health care costs (Kruk et al., 2009). Often, large health care costs have long-term adverse economic and social consequences for households in developing countries (Leive & Xu, 2008;

Russell, 1996; Wagstaff & Doorslaer, 2003). With India being a low-income country, the percentage of OOPE is as high as 89% (The World Bank, 2017a; 2017b). A study recorded that 47%, 19%, and 7% of rural Indian households have used borrowing, contributions from friends and relatives, and sale of assets, respectively, to finance out-of-pocket expenditures for inpatient care (Joe, 2014).

In cases of distress financing of health care in households, is such financing unbiased toward the gender of inpatients? Although there are numerous studies by health economists on OOPE, as well as sources of HCF and related consequences in developing countries, a discussion on gender disparity in OOPE has not been highlighted. Demographers, public health researchers, and other social scientists have successfully underscored gender disparities in various health outcomes (Arnold et al., 1998; Guilamoto et al., 2018; Gupta, 1987; Pande, 2003; Rajeshwari, 1996; Roy & Chaudhuri, 2008; Saikia et al., 2016; United Nations, 2011). However, much less attention has been paid to gender-based discrimination in health care costs and related sources of finance. This study is an attempt to bridge this gap. We emphasise gender disparity in health input in India rather than health outcomes. Because of rising life expectancy, this kind of study is crucial to understanding the overall well-being of women, as well as rising HCE and distressed HCF.

Table 4

Results of Multinomial logit Regression: Predictors of Source of Health Care Financing for Hospitalization, India, 2014 (n = 35515).

Background Characteristics	Borrowing	Sale of Assets and Contributions From Relatives	Multiple Sources
Age (years)			
15–59®			
≥60	–0.5*** (–0.64 to 0.37)	–0.42*** (–0.59 to 0.25)	–0.32*** (–0.39 to 0.26)
Gender			
Male®			
Female	–0.27*** (–0.37 to 0.17)	–0.27*** (–0.39 to 0.14)	–0.11*** (–0.16 to 0.06)
Type of residence			
Urban®			
Rural	0.16*** (0.06 to 0.26)	0.09 (–0.04 to 0.22)	0.28*** (0.23 to 0.34)
Education of household head			
No education®			
Up to primary	–0.46*** (–0.58 to 0.34)	–0.08 (–0.25 to 0.08)	–0.13*** (–0.2 to 0.06)
Up to secondary	–0.56*** (–0.71 to 0.41)	0.07 (–0.11 to 0.26)	–0.2*** (–0.28 to 0.12)
Up to higher secondary	–0.96*** (–1.11 to 0.8)	–0.32*** (–0.52 to 0.13)	–0.41*** (–0.49 to 0.33)
Graduate and above	–1.4*** (–1.65 to 1.16)	–0.26** (–0.5 to 0.02)	–0.68*** (–0.78 to 0.58)
Relation to head of the household			
Self/spouse of head®			
Child/spouse of child	–0.24*** (–0.37 to 0.11)	–0.25*** (–0.42 to 0.09)	–0.04 (–0.1 to 0.03)
Father/mother/father-in-low/mother-in-low	0.23** (0.01 to 0.45)	0.24* (–0.02 to 0.49)	0.13** (0.02 to 0.23)
brother/sister/brother-in-law/sister-in-low	–0.09 (–0.47 to 0.28)	0.06 (–0.35 to 0.48)	–0.04 (–0.22 to 0.13)
Religion			
Hindu®			
Muslim	–0.08 (–0.23 to 0.08)	0.25*** (0.07 to 0.44)	0.21*** (0.14 to 0.29)
Other	–0.34*** (–0.55 to 0.12)	0.49*** (0.3 to 0.68)	0.14*** (0.05 to 0.23)
Caste			
SC/ST®			
OBC	0.15** (0.03 to 0.27)	–0.34*** (–0.49 to 0.18)	–0.09*** (–0.16 to 0.03)
General	–0.43*** (–0.58 to 0.28)	–0.16* (–0.32 to 0)	–0.31*** (–0.37 to 0.24)
Economic status of household head			
Poorest®			
Poorer	–0.09 (–0.23 to 0.06)	–0.12 (–0.3 to 0.06)	–0.18*** (–0.26 to 0.1)
Middle	–0.18** (–0.33 to 0.04)	–0.52*** (–0.71 to 0.33)	–0.32*** (–0.39 to 0.24)
Richer	–0.37*** (–0.53 to 0.21)	–0.51*** (–0.71 to 0.31)	–0.49*** (–0.57 to 0.41)
Richest	–0.99*** (–1.18 to 0.8)	–0.89*** (–1.11 to 0.67)	–0.86*** (–0.94 to 0.77)
Dependency ratio	–0.06 (–0.14 to 0.03)	0.09* (–0.01 to 0.19)	0.05** (0.01 to 0.09)
Type of disease			
Communicable®			
Noncommunicable	0.32*** (0.2 to 0.45)	0.28*** (0.12 to 0.45)	0.37*** (0.3 to 0.43)
Other	0.33*** (0.18 to 0.48)	0.42*** (0.24 to 0.61)	0.46*** (0.38 to 0.53)
Type of health care facility			
Public®			
Private	0.91*** (0.81 to 1.02)	0.36*** (0.24 to 0.49)	0.7*** (0.65 to 0.75)
Duration of stay	0.05*** (0.04 to 0.05)	0.05*** (0.04 to 0.05)	0.05*** (0.04 to 0.05)
Any type of health insurance			
No			
Yes	0.4*** (0.29 to 0.51)	0.34*** (0.21 to 0.48)	–0.3*** (–0.36 to 0.23)
Constant	–2.22*** (–2.44 to 2.01)	–2.75*** (–3.01 to 2.49)	–0.61*** (–0.72 to 0.5)

Abbreviations: OBC, other backward classes; SC/ST, scheduled caste/scheduled tribe; ®: reference category.

Note: Finance using income/savings is reference category; 95% confidence interval in parentheses; significance level: ***significant at 1%, **significant at 5%, *significant at 10%; ® is reference category of independent variables.

To examine gender disparities in households' HCF strategies, in terms of paying for inpatient care in India, we analyzed gender discrimination according to sources of HCF among hospitalized patients in India. We found that the percentage of women's hospitalizations paid for using HCF sources such as borrowing, sale of assets, and contributions from relatives is lower than that for men's hospitalizations. Multinomial logit regression shows that these results are valid, even after controlling for demographic, socioeconomic, and other variables. We also found that distressed sources of HCF are used for adult men, indicating a strong preference for the health of men over women. With an increase in household income, the chance of using income as a source for HCF increases. As the income of a household increases, gender disparities in using borrowing as an HCF strategy also diminish.

Consistent with previous studies, this study also finds that average HCE is lower among women than men, despite women suffering from a higher incidence and prevalence of morbidity (Batra et al., 2014; Maharana & Ladusingh, 2014; Saikia et al., 2016). Our analysis shows that female inpatient HCE is much lower than that of men, even after

controlling for the demographic and socioeconomic characteristics of the patient. Particularly, findings remain similar after controlling for a patient's relationship with the head of the household. Asfaw et al. (2010) found that compared with non-hospitalized children younger than 10 years, the probability of paying for hospitalization by using any means of HCF (eg, income, borrowing, selling assets, and multiple sources) is always higher for men than women. Unlike Asfaw et al. (2010), we restricted our present analysis to inpatients of adult age. This study demonstrates a new aspect of gender discrimination in the financial strategies of households paying for hospitalizations in India. For women, the probability of receiving inpatient care, in the event of resorting to distressed financial resources is likely to decrease, while controlling for all other variables.

There may be two reasons why women in India are facing discrimination in accessing distressed HCF. First, as 60% of rural households in India use distressed means of HCF to avail themselves of inpatient care (Joe, 2014), households may make a trade-off between a breadwinner and a caregiver. Only 27% of Indian women are engaged in paid jobs,

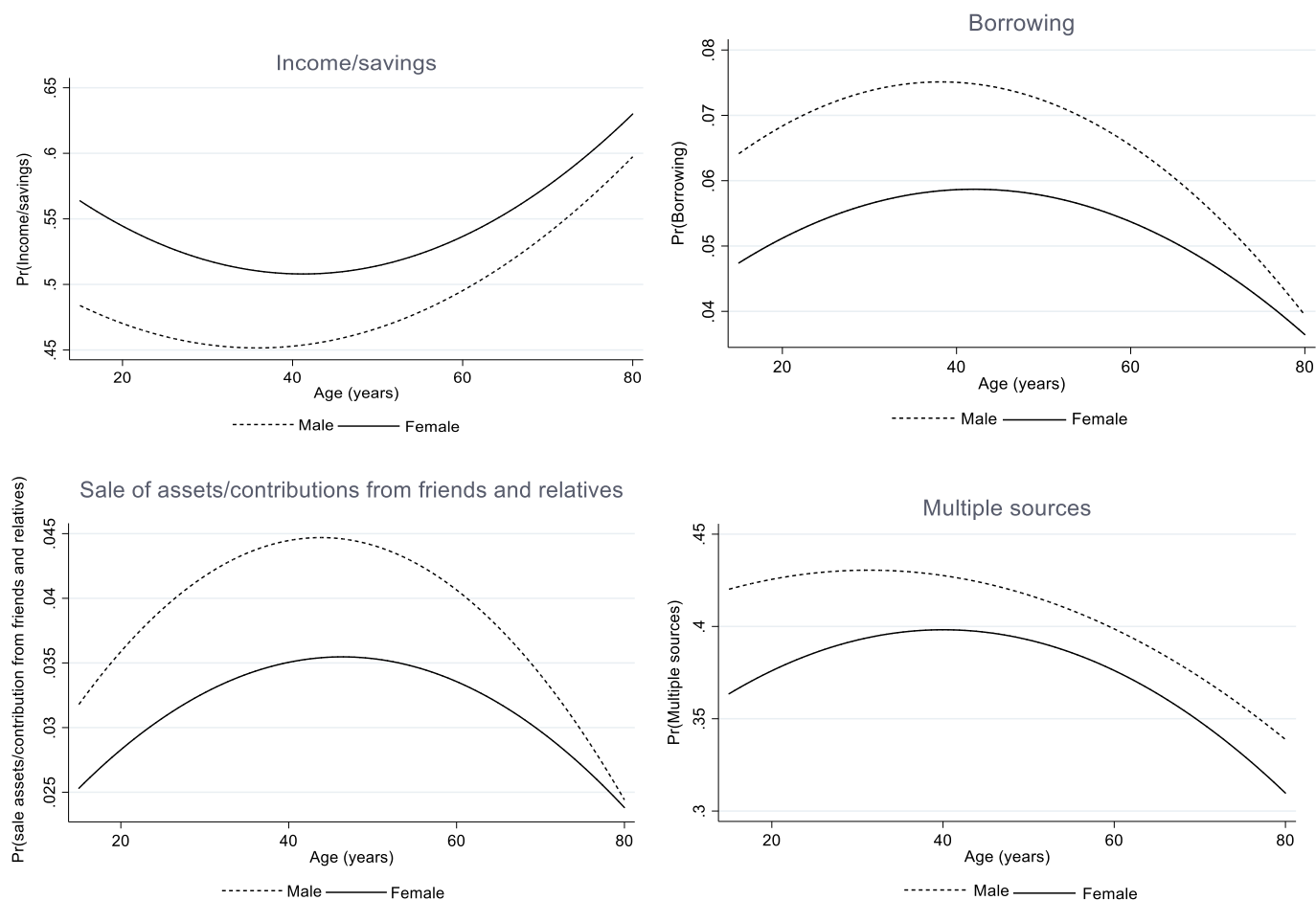


Fig. 3. Gender differences in sources of health care financing, by age group of the patient, in India, 2014.

and the rest are involved in unpaid household chores and caregiving, which are noneconomic activities (The World Bank, 2017a; 2017b). Because household chores and caregiving do not yield direct economic benefits, the relative importance of women's health is underestimated. Second, a discriminatory attitude toward the health of women in India has existed for generations because of social hierarchy and deep-rooted patriarchal structures. Just like sex-selective abortion, discriminatory food allocation, or access to health care, the present evidence on HCF strategies may be yet another manifestation of centuries-old gender discrimination in India.

5. Limitations

This study has a few limitations. The HCE for inpatient care was collected one year before the survey; therefore, there is a possibility of recall bias in the expenditures data. However, this recall bias should affect health expenditures data on both men and women, and our results on gender difference might not be affected considerably. Secondly, by analyzing gender disparity in morbidity-related expenditures, we are documenting only part of the discrimination that women may face in the process of health-seeking behavior. In reality, women may face sequential discrimination at different stages of health care, for instance, in terms of a decision to access health care facilities as an outpatient or to continue treatment as an inpatient or in terms of the duration of inpatient care. This can be analyzed in future studies. Lastly, it may be possible that there is a systematic difference in delaying treatment by gender, which finally leads to gender differences in HCE. Because this information is not available in our data, we could not test this

hypothesis. Yet studies in South Asian countries, including India, have found that women either receive less care or experience more delays in treatment than men (Costa, Wehrmeister, Barros, & Victora, 2017; Gosoni et al., 2008; Rivera-Franco & Leon-Rodriguez, 2018).

6. Policy implications

Our finding suggests women have less chance of using hardship financing for inpatient care. To ensure gender equality in accessing health care, there is an urgent need to introduce gender-inclusive social health security and micro-insurance schemes in India. At the same time, it is necessary to empower women by engaging them in economic activities to reduce gender-based discrimination in health care.

Ethics statement

This study used the unit-level data from the 71st round of the NSS on social consumption relating to health that is widely accepted and is considered to be reliable. The survey was conducted by the office of the NSSO under the aegis of the Ministry of Statistics and Program Implementation, Government of India. Ethical approval for the survey was obtained at two levels: first, the ethical approval for the survey was obtained from the NSSO, and second, a standard consent form approved by the ethics review committee was read out to the respondent in their native language. Once the respondent agreed to participate in the survey, the interviewer obtained a signed consent form from the respondent acknowledging that the respondent had read the form, understood the purpose of the study, and agreed to participate. This database does not

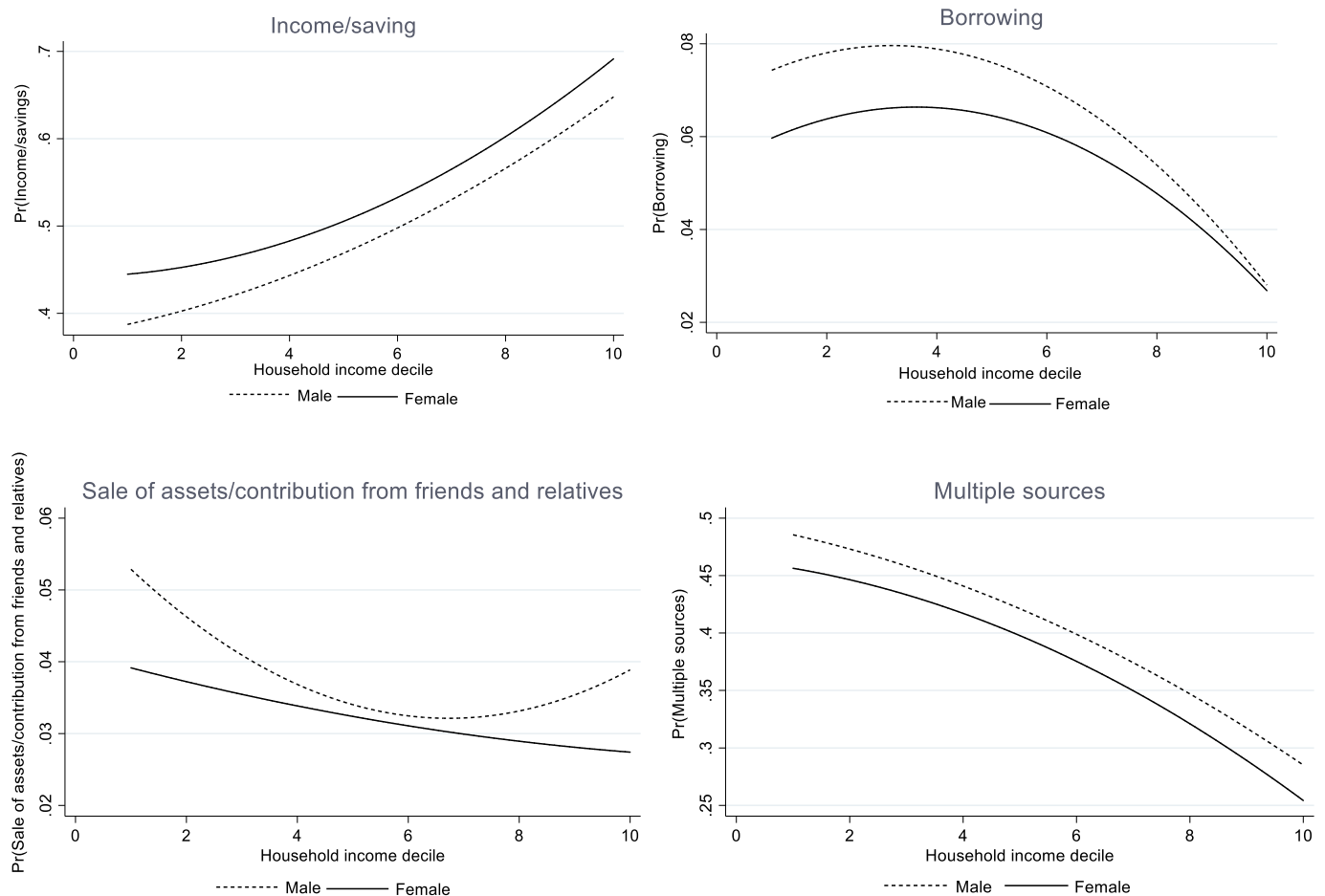


Fig. 4. Predicted probabilities for the source of health care financing, by gender and household income in India.

contain information that allows personal identification of participants, so that their privacy is secure. The dataset used in this study is also available in the public domain.

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Declaration of competing interest

None.

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