

Incidence and Correlates of Distressed Financing for Inpatient Care by Households in India: Evidence from National Sample Survey 71st Round Data

Priyanka Dasgupta¹

Subrata Mukherjee²

Abstract

The out-of-pocket (OOP) healthcare payments financed through sale of physical assets, borrowings or contribution from family/friends can be considered as distressed healthcare financing. Resorting to a distressed financing by households for paying hospitalization costs is a matter of concern in developing countries like India where substantial portion of the population is not covered by health insurance or any other means of support. While a number of studies have been carried out in Indian context focusing on distressed financing for meeting medical care expenses, they are mostly focused on specific diseases, geographical areas and confined to the time period before the introduction of various government sponsored insurance schemes. The current study uses the most recent 71st round of National Sample Survey (NSS) data for examining the incidence and correlates of distressed financing for meeting hospitalization expenses, especially in the presence of state sponsored health insurance scheme. We find that as high as 26.0 per cent of the hospitalization episodes resorted to distressed financing as compared to 4.3 per cent for outpatient care. The analysis reveals that the burden of distressed financing disproportionately falls on the socially and economically backward groups as well as on those suffering from chronic ailments (OR=1.37, CI=1.22-1.53) and having multiple episodes of hospitalization (OR=1.96, CI=1.76-2.17). Surprisingly, individuals covered by government health insurance schemes are more likely to face distressed financing (OR=1.27, CI=1.15-1.41). Disease specific analysis shows that cancer and other non-communicable diseases lead to higher odds of distressed financing. The empirical findings suggest any intervention that would want to protect the households from distressed financing for hospitalization episodes must incorporate other characteristics of the households (such as presence of chronically ill member, social class, multiple hospitalization episodes) in designing the measures.

Keywords: distressed financing, inpatient care, hospitalization expenditure, NSSO, India

¹PhD Student, Institute of Development Studies Kolkata. Email: pdg0812@gmail.com

² Associate Professor, Institute of Development Studies Kolkata. Email: msubrata100@gmail.com

Introduction

One of the concerns of any fair healthcare system is to protect the people from huge financial costs associated with illnesses and treatments (WHO, 2000). While in high income countries this is done by risk pooling through public and private insurance programmes, the scenario is quite different in low and middle income countries where a major share of the health expenditure comes from households' out-of-pocket(OOP) payments. India is no exception in this regard where OOP payments constitute more than two-third of total healthcare expenditures (NHA 2009) and absorbs more than one-fourth of the resources net of food cost in at least one-tenth of the households in India (van Doorslaer *et al.*, 2005). Among the various sources of health care financing, household sector finance 67.74 per cent of the total health expenditure in India (NHA 2017). It is, however, not known how the burden of OOP health payments is distributed across households availing inpatient care. The current paper takes up this issue by using the National Sample Survey 71st round unit record data (January-June, 2014).

In the empirical literature on financial hardship due to high OOP health care payments, the concept of catastrophic health care payments is widely used. An OOP health care expense is considered as catastrophic for a household if it exceeds a certain percentage (a threshold value) of household's capacity to pay (Wagstaff and van Doorslaer, 2003). The proxy for household's capacity to pay and threshold values vary across studies. Whereas some studies consider 40 per cent of the non-food expenditure as a threshold, many studies treat 10 per cent of the total household consumption expenditure as threshold (Xu *et al.*, 2003; Russell 2004; and van Doorslaer *et al.*, 2005). There have also been a number of studies on the catastrophic healthcare payments and their effects on the impoverishment of households in Indian as well as other developing countries contexts (Garg and Karan 2008; Berman *et al.*, 2010; Ghosh 2011; Gupta and Joe 2013; Bonu *et al.*, 2005; van Damme *et al.*, 2004). However, the approach of these studies often fail to distinguish the different degrees of hardship faced by households. Their approach also does not incorporate the coping strategies adopted by different types of households for meeting high OOP health care expenses.

A comparison of NSSO data between 60th (2004) and 71st (2014) rounds shows that there has been an absolute increase in inpatient expenditure in both urban and rural areas (NSSO 2006, 2014). For instance, average total medical expenditure for a single case of hospitalization increased from ₹6643 in 2004 to ₹18268 in 2014. Whereas in the rural areas it increased from ₹5695 to ₹14935 between 2004 and 2014, in the urban areas it increased from ₹8851 to ₹24436 during the same period. National Health Accounts (2013-14) estimates show that OOP expenses on inpatient care constituted 31.96 per cent (₹92,992 Crore) of the total health expenditure for the country as a whole. Studies also highlight the fact that around 25-40 per cent of the patients seeking hospitalization had to borrow or sell their assets to finance medical care (van Doorslaer *et al.*, 2006). As a matter of fact, private medical institutions dominated the urban and rural areas for both out-patient and in-patient treatment, although 86 per cent and 82 per cent of rural and urban population respectively were not covered under any scheme of health expenditure support. In addition, NSSO 71st round reports have suggested that 25 percent of the rural households and 18 per cent of the urban households resorted to borrowing to finance hospitalization expenses. This has resulted in inequitable distribution of healthcare access leading to indebtedness of the rural households resulting in their impoverishment (Berman *et al.*, 2010). Thus OOP payments can force households to resort to hardship financing methods such as borrowing and/or sale of assets to finance their healthcare costs which can have grave implications on the well-being of households (Ghosh, 2011).

In this study, we aim to assess the extent of hardship that households face for meeting OOP hospitalisation expenses. We conceptualize hardship in financing health care expenses as distressed financing by looking at how arduously the OOP expenses are financed by the households. This notion has been put forward by the studies of Flores *et al.*, 2008 and Kruk *et al.*, 2009. Available data identifies four sources of financing OOP health payments namely current income, savings, borrowing without interest, borrowing with interest, selling assets, contribution by relatives, contribution by friends etc. The first three sources are considered as less distressing than other sources (Kruk *et al.*, 2009; Asfaw *et al.*, 2010; Steinhardt *et al.*, 2008). The selling of assets, especially productive assets yielding income at regular intervals (such as land, cattle) and borrowing with interest entail a considerable burden. For borrowings, the burden is realized in the form of additional interest on the loan amount while selling productive assets

leads to loss of future income. In other words, a distressing mean of financing would have perpetual effects as interest payments on borrowing and loss of income due to selling of productive assets might make situation further worse-off. Studies have found long term effects of the coping strategies on households as saving rates are low in developing countries and measures like borrowing and selling of assets might result in a welfare trade off over time. This can accentuate the economic distress to the households over time (Flores *et al.*, 2008; van Damme *et al.*, 2004).

While a number of studies have explored sources of financing for specific diseases such as *kala-azar*, dengue, injuries, AIDS (Russell, 2004; Adhikari *et al.*, 2009; van Damme *et al.*, 2004; Wyss *et al.*, 2004; Mock *et al.*, 2003), few studies have focused on different sub-populations (Binnendjik *et al.*, 2012; John and Kumar 2017; Asfaw *et al.*, 2010; Bonu *et al.*, 2005). There are also a few studies based on cross-country analysis (Kruk *et al.*, 2009, Flores *et al.*, 2008, Leive and Xu., 2008). Although Joe (2014) assessed the situation of distressed financing using previous round of NSS data (60th round: 2004), the context has completely changed since the introduction of publicly funded Rashtriya Swasthya Bima Yojana (RSBY) for the poor in 2008. Though Yeshasvini Health Insurance was introduced in rural Karnataka in 2003, there are couple of state-specific schemes which were introduced after 2004 such as Kudumbasree in Kerala (2006), Rajiv Aarogyashree Scheme in Andhra Pradesh (2010) and Vajpayee Arogyashree Scheme in Karnataka (2010). The effects of RSBY and state specific health insurance schemes in financially protecting the poor households are expected to be present in 2014 which were absent during the 60th round of NSS data in 2004.

Against the background, the paper takes up the following objectives: (i) to examine distribution of *households with distressed financing* by various household and contextual level characteristics; (ii) to explore and examine the household- and contextual-level factors that show strong association of *households with distressed financing*. Both the objectives are addressed considering households' distress financing due to hospitalization expenses.

Data source and Methods

We use data from National Sample Survey's 71st round which was conducted during January to June 2014. In addition to standard household and individual level information, the survey collected a rich set of information on reported morbidity, health care utilization and health care expenditure from 65,932 households. Whereas data for reported illness and OP visits were collected with 15 days recall period, information on hospitalization were collected with 365 days recall period. Our analysis is based on 57456 hospitalization episodes reported by 51650 individuals from 46688 households.

The sources of financing (major and secondary) for meeting OOP expenses for hospitalization episodes are classified into the following sources by the NSS 71st round: (i) household income and/or savings; (ii) borrowings; (iii) sale of physical assets; (iv) contribution from friends/relatives; and (v) others. It is reasonable to argue that when hospitalization expenses are financed by borrowing, sale of physical assets or contribution by relatives/friends, it is a distressful situation for a household compared to a situation when the household is able to fund the hospitalization expenses from its income or savings. However, one may not completely rule out the possibility that spending current income or using savings kept for an emergency purpose can also be equally distressing for households, especially the poor ones. Options like borrowing, selling of physical assets or drawing helps from friends or relatives are also indications of a household's social capital – which the poor households often lack.

The distressed financing is first analyzed by its composition at the aggregate level. In the next stage, the incidence of distressed financing is estimated for various sub-groups based on socio-economic, demographic and contextual characteristics. In other words, the incidence of distressed financing is estimated and compared across sub-groups based on individual-, ailment-, utilization-, household- and contextual-level characteristics. Among the individual-level characteristics, we consider sex, age group and whether covered any health insurance scheme. The broad category of the ailment for which hospitalisation took place and whether the ailment in question is a chronic one or not are considered as ailment-level characteristics. The type of hospital (public or private) utilized and medical expenses incurred are utilization level-characteristics. The economic class (measured by per capita consumption expenditure), social class / caste, household's occupational type, number of hospitalisation that took place in the

family in last one year are considered as household-level characteristics. The place of residence (rural/urban) and region can be considered as contextual-characteristics. For medical expenses of hospitalisation and household's per capita consumption expenditure, quintiles are created to explore how the incidence of distressed financing varies with quintile classes. For all other variables, mostly their actual response categories are used for comparing the incidence of distressed financing.

Whereas economic status of a household can broadly be measured by per capita consumption expenditure, caste may provide an important marker of a household's social status. In NSS, castes are classified into four categories, namely scheduled caste (SC), scheduled tribe (ST), other backward households (OBC) and others. Historically sub-groups belonging to present classification of ST, SC and OBC are socio-economically more backward than the Other (General) groups with some variations observed at the household level. As a part of the investigation on how incidence of distressed financing varies across space, it may provide us useful insight to look at the variations across major Indian states. Any health expenditure coverage scheme aiming at protecting the households from incurring large OOP expenditure is expected to reduce the extent of distressed financing. A government sponsored insurance scheme for the poor, named, Rashtriya Swasthya Bima Yojana was introduced in 2008 to financially protect households from incurring high OOP expenses for hospitalisation purposes. Though a large number of households were brought under the purview of the scheme in the subsequent years, states varied substantially from one another in coverage and in implementing the scheme effectively. The states may also vary substantially from one another in average cost of hospitalisation. This aspect needs to be examined empirically.

The type of ailments may also matter in deciding hospitalisation expenses as some ailments are less expensive to treat while many chronic ailments and ailments requiring surgical interventions may be expensive to treat. An ailment with higher cost of hospitalisation is expected to put the household in more distressing position compared to a situation when hospitalisation costs are within the reach of the household or substantially covered by health insurance or employer. This aspect too needs empirical investigation.

Finally, a logistic regression is estimated to examine the association between a household's likelihood of resorting to a distressed financing and various individual-, household-level and contextual characteristics. The dependent variable (Y_i), which captures if a household depends on distressing means of financing hospitalization expenses, takes on value 1 if household goes for borrowing, selling of assets or seeking help from friends/relatives; takes on value 0 if it depends only on its current income or savings. An extensive review of literature focusing on determinants of high health expenditure or catastrophic health expenditure guide us to identify a list of correlates which can be assumed to show relation with distress financing. Sex and age group may matter because of two reasons: First, females and elderly always show higher rates of hospitalisation than the males and non-elderly counterparts respectively. Second, if there is intra-household discrimination, females and elderly always find themselves in the receiving end. Type of ailment, especially the chronic nature of the ailment may influence the possibility of distressed financing through higher and repeated cost of hospitalisation. Socio-economic status of the household measured by per capita consumption expenditure and caste identity may affect the likelihood of distressed financing as households will vary in capacity to pay as well as social capital based on their socio-economic positions. Type of hospital and number of hospitalisation are expected to have direct influence on the possibility of distressed financing. A typical hospitalisation in a private facility is expected to cost much higher than that in a public facility, thereby increasing the possibility of distressed financing. Similarly, as number of hospitalisation increases in a household in a given year, it may find more and more difficult to finance the expenses from its current income or savings if there is no other alternative such as employer provision or insurance. The medical cost of hospitalisation must have a direct and positive effect on the possibility of distressed financing but that may be countered by household's capacity to pay and/or insurance coverage. To capture the contextual effects and spatial effects we include place of residence (rural/urban) and country regions

We estimate the logistic regressions represented by the following equation:

$$L_i = \log_e \left(\frac{\text{Prob}(Y_i = 1)}{1 - \text{Prob}(Y_i = 1)} \right) = \beta_0 + \sum_{i=1}^n \beta_i X_i + \varepsilon_i \dots (1)$$

Where L_i is the logit for the i^{th} hospitalisation episode; β_0 is the constant term, β_i are the corresponding coefficients for the independent variables/correlates X_i and ε_i is the error term. The parameter β_0 estimates the log odds of distressed financing for the reference group and the parameter β_i estimates with maximum likelihood, the differential log odds of distressed financing associated with the independent variables X_i , as compared to the reference category. The analysis is done using STATA 14. All point estimates and logistic regressions take into account the sample weight.

Results

For more than one-quarter of the hospitalization episodes, households resorted to distressed financing as a major source (Table 1). For little less than three-fourth of the hospitalization episodes (73.8 per cent), the households depended on current income or savings as major source of financing OOP expenses, followed by borrowing (20.5 per cent), contribution from friends/relatives (4.3 per cent), other sources (0.8 per cent) and sale of assets (0.5 per cent). The dependence on distressing means of financing is not so high for outpatient care. For outpatient care, 95.7 per cent of the individuals are able to finance their OOP expenses from current income/savings leaving only 4.3 individuals resorting to distress finance (Table A1). Exorbitantly higher percentage of households resorting to distress financing for meeting hospitalization expenses compared to outpatient visit is the reason that we have confined our analysis to inpatient care (hospitalization).

Table 2 shows the percentage of hospitalization episodes which resorted to distressed financing for different socio-economic, demographic and spatial groups. The incidence of distressed financing is higher for the males (31.3 per cent) compared to the females (23.0 per cent), higher for children (0-12 years), mid-age (40-59 years) and elderly (60 years & above) groups compared to the productive-young age group (13-39 years). Compared to ST and others, SC and OBC show much higher incidence of distressed financing. The incidence of distressed financing is higher in the rural areas than urban areas. As far as regions are concerned, south India shows

the highest incidence of distressed financing compared to North and Central, Eastern and Western India but surprisingly incidence of distressed finance is very low in north-eastern India (5.3 per cent). Surprisingly, incidence of distressed financing is highest for those covered by government supported health insurance compared to those who are covered by employer, privately arranged insurance, even no insurance. The incidence of distressed financing sharply increases with hospitalization expenses but increase in one's economic status (measured by per capita consumption expenditure) does not significantly reduce the incidence of distressed financing. Across household occupational categories, casual labourers face higher distressed financing for meeting hospitalization expenses as compared to self-employed and regular wage/salaried groups. The incidence of distress financing is also markedly higher when hospitalization take places in a private facility as compared to a government facility. The incidence of distressed financing steadily increases with number of hospitalization in the family. Estimates of the incidence of distressed financing across broad ailment categories show that cancer leads to higher percentage of distressed financing in comparison to other diseases. It is also followed by other ailments such as psychiatric and neurological diseases, injuries, skin, obstetric, genito-urinary and musculo-skeletal diseases.

In order to have a closer look at the incidence of distressed financing across health expenditure coverage categories and across space, we have estimated the insurance status-wise incidence for each major Indian states along with total incidence and average cost of hospitalization (Table 3). The states with very high incidence of distressed financing are Tamil Nadu (38.7 per cent), Karnataka (40.5 per cent), Telengana (44.0 per cent) and Andhra Pradesh (50.5 per cent). The states with very low incidence of distressed financing are Delhi (4.6 per cent), Assam (4.8 per cent) and Jammu & Kashmir (5.2 per cent). For half of the states (10 out of 20), the incidence of distressed financing is higher for the individuals covered by government health insurance scheme than individuals without any insurance coverage. For majority of the states, the incidence of distressed financing is higher for individuals covered by government supported insurance scheme than insurance scheme supported either by employer or arranged by household themselves. Given other conditions similar, incidence of distressed financing is expected to be higher in states with higher average hospitalization expenditure and vice versa. It is observed that except Maharashtra, Haryana, Punjab and Delhi, there is strong positive correlation between

average cost of hospitalization and incidence of distressed financing (correlation coefficient = 0.7036, significant at 1% level).

The mean and median cost of hospitalization, average reimbursement amount and incidence of distressed financing for different ailments categories (broad) are presented in Table 4. The ailments with very high incidence of distressed financing are cancer (43.5 per cent), psychiatric and neurological (37.3 per cent), skin (37.1 per cent), genito urinary (35.8 per cent), gastro intestinal (34.7 per cent) and injuries (34 per cent). Both mean and median cost of hospitalization give similar ordering of ailments. The variations in the incidence of distressed financing across ailment types is probably due to variations in average cost of hospitalization. A detailed exploration suggests that except endocrine & metabolic, respiratory, blood and skin related ailments, there is positive correlation between average cost of hospitalization and incidence of distressed financing. In spite of having lower average cost of hospitalization, these four ailments show higher incidence of distressed financing. The average amount of reimbursement shows positive correlation with average cost of hospitalization but there does not seem to be any relation between average reimbursement amount and incidence of distressed financing.

Finally, logistic regressions are estimated to explore the possible correlates of distressed financing due to hospitalization expenses (Table 5). Based on the review of literature we consider the following correlates which are expected to impact the incidence of distressed financing: sex, age, presence of chronic ailment, type of insurance coverage, medical cost of hospitalisation, type of ailments, per capita consumption expenditure, household's occupation type, caste, number of hospitalisation episodes in the family, sector (place of residence) and country region. The multicollinearity between the correlates/independent variables are tested and values of variance inflation factor (VIF) are presented in Table A2. The logistic regression results reveal that distress financing is more likely for the males as compared to the females. Compared to 13-39 years age group, the odds favouring distressed financing are higher for the elderly (60 years & above). Individuals suffering from chronic ailment are more likely to face distressed financing than individuals without chronic ailment. There is no evidence that in comparison to government facility, those who choose private facility for hospitalization face

higher chances of distressed financing. However, individuals having two or more spells of hospitalization face higher odds of facing distressed financing (OR = 1.49 and OR =1.96 respectively) than individuals with single episode of hospitalization. It is further observed that compared to no insurance, individuals covered by government insurance have higher odds of facing distressed financing (OR =1.27, CI = 1.15-1.41), but health expenditure support provided by employer or insurance arranged by households show lower odds (OR =0.59, 0.31 respectively) favouring distressed financing. In other words, in comparison to no insurance situation, individuals with government provided insurance are more likely to experience distressed financing but individuals with employer provided health expenditure support and privately arranged insurance are less likely to experience distressed financing. As expected, an increase in total medical expenditure rises the likelihood of distressed financing (OR =1.74, CI =1.67-1.80).

In comparison to regular wage or salaried group, both self-employed and casual labour groups are more likely to experience distressed financing (ORs = 1.65, 1.48). Across caste groups, with reference to other (general) category, all other caste groups (viz. ST, SC, OBC) are more likely to experience distressed financing (ORs = 1.35, 1.50, 1.28 respectively). Our results show that rural India faces higher odds of distressed financing (OR =1.28, CI = 1.16-1.40) in comparison to urban India. Across the regions, compared to north-central India, south India (OR= 3.05, CI = 2.71-3.42) and eastern India (OR = 1.73, CI = 1.51-1.99) show higher odds favoring distressed financing.

The same table presents both adjusted and unadjusted odd ratios for different categories of ailments. The adjusted odds ratios for different ailment categories show that with reference to infectious ailments, blood related ailments (OR=1.30, CI= 0.98-1.74), psychiatric and neurological ailments (OR=1.27, CI= 1.05-1.53), gastro intestinal ailments (OR=1.38, CI=1.16-1.65), skin related ailments (OR=1.72, CI=0.91-3.28) and injuries (OR=1.18, CI=1.00-1.39) have higher likelihood of resorting to distressed financing. On the contrary, eye and obstetric ailments (OR=0.76 and OR=0.70 respectively) have lower odds of distressed financing in comparison to infectious ailments. With reference to infectious ailments, the unadjusted odds ratios are significant for all ailments except ear ailments. For instance, the odds favouring distressed

financing is 2.5 times higher for availing inpatient care for cancer (OR=2.50, CI= 1.95-3.19) and 1.9 times higher, each for psychiatric and neurological ailments and skin related ailments (OR=1.93 and OR=1.91 respectively) as compared to infectious ailments. However, odds ratio for eye, obstetric and other ailments have lower odds of distressed financing (OR =0.70, 0.78, 0.72 respectively) in comparison to infectious ailments.

Discussion

This study attempts to explore the factors determining distressed financing for hospitalization. We have defined distressed financing as a situation when a household borrows, sells assets or seeks contribution from family and friends for funding hospitalization expenses instead of paying from current income or own savings. In addition to showing a household's helpless situation in funding its hospitalization expenditure, it also indicates a long-term welfare loss as borrowing and selling of assets may make future situation worse. A number of studies in the context of low and middle income countries show that households resort to distressed financing and incur financial debt and sell off physical assets to cope with high medical expenses (Leive and Xu 2008; Wagstaff 2008; Kruk *et al.*, 2009). Like many developing countries, India is no exception where a large section of the population resort to distressed financing for meeting high OOP healthcare expenditure. Our analysis does not consider those financing as distressed if they are funded from current income or savings. However, it can be argued that when a poor household spends from its current income or savings on something which is more urgent or life threatening, it would probably have greater negative impact on its welfare in the future. Therefore, the real extent of distress financing would be higher than what our analysis and result suggest. Along with household's socio-economic and occupational characteristics, we have found that sex of a hospitalized individual exhibit strong correlations with distressed financing. Given the fact that hospitalization rate is higher for the females than the males, a higher percentage of distressed financing for males than the females could be an indication of gender inequity. For a male's hospitalization, a household explores all possible options to mobilize funds – a desperation which is observed with lower frequency for the female members. Our finding with regard to gender goes in line with the findings of Sen and Iyer (2012) and Asfaw *et al.* (2008). Their studies show that the role of men in the Indian society in terms of bread earners and household decision makers act as important determinants in healthcare utilization and financing.

We find that households resort to distressed financing more for hospitalization (26 per cent) and less for outpatient care (4.3 per cent). This is quite expected as the cost of a typical hospitalization is much higher than the cost of a typical outpatient care. A study by Peters and others (2002) has found that in India about 40 per cent of the hospitalized patients have to face distressed financing in the form of borrowing and sale of assets to pay for the health care. The study also reveal that thepoorer and socioeconomically backward groups are more likely to have distressed financing for meeting health care costs. In fact, Duggal (2004) reported that 50 per cent of the poorest quintile in India had to face hardship to pay for hospitalization costs. The findings of Joe (2014) also identify the concentration of distressed financing among the low income households. The results from our logistic regressions make it clear that presence of a chronic ailment and more number of hospitalisation in the family lead to distressed financing but not the type of hospitals (private or public). Events of hospitalization and chronic illness might also generate indirect costs such as loss of income of the ill member and/or hospitalized patient as well as loss of income of the care giving member along with transportation and accommodation costs. One would expect that people opting for private hospitals are more likely to face distressed financing than people going to government hospitals. The difference shown in the bivariate analysis disappears in the multivariate analysis. Evidence from a cross country analysis reveals thatalthough utilization of private facilities is more common among the rich population; the poor people also use private facilities to a considerable extent (Saksena *et al.* 2012). This happens even though price at private hospitals are well above that of public ones. The major reasons for valuing private hospitals over public hospitals are better perceived quality, responsiveness and geographical access to the facility. It is also observed that hospitalization in public facilities do not necessarily mean many sub-components of services (such as diagnostic tests, medicines, different medical equipment) are obtained free of cost. Patients often need to buy these items from the market outside the public hospital consequently resorting to distressed modes of financing such expenditures (Bose and Dutta 2015; Dilip 2010).

One of the important findings of our analysis is that having covered under government supported insurance scheme does not reduce the likelihood of distressed financing. The government supported health insurance schemes include Rashtriya Swasthya Bima Yojana (RSBY), Central

Government Health Scheme (CGHS), Employment State Insurance Scheme(ESIS) etc. There are also a few state governments who run separate health insurance schemes for the poor. Although the schemes have been designed to be entirely cashless for the patients, there are evidence of high OOP payments by the patients. There have been a number of studies in the Indian context examining the effectiveness of the government sponsored health insurance schemes in reducing household impoverishment because of high healthcare costs. With regard to a centrally sponsored schemes like RSBY, it has also been found that families enrolled in RSBY incur OOP spending on drugs and diagnostics during hospitalization as well as following hospitalization (Rathi et al., 2012; Devadasan et al., 2013). Empirical evidence also suggests that the role of RSBY in providing financial protection is limited as the beneficiaries often spend a substantial amount on drugs as they are not available in the empaneled hospitals or the drugs are not prescribed as per RSBY guidelines (Rathi et al., 2012; Devadasan et al., 2013; Karan et al., 2017). The overall enrollment rate of RSBY crossed a half-way mark (57 per cent) a few years ago (Karan et al., 2017) which indicates that there were a substantial number of eligible but uncovered households and that probably explains why PCCE shows significant and clear negative relationship with likelihood of distressed financing. Other plausible reasons for the ineffectiveness of government sponsored schemes in financially protecting the poor have been pointed out by Devadasan *et al.*, 2013; Reddy *et al.*, 2011 and Ghosh 2014. In many cases it was found that hospitals showed reluctance, even refused to admit patients covered by government insurance schemes fearing delayed reimbursement of the funds. Also the limited coverage amount of RSBY (₹ 30,000) might have forced them to spend substantial amount out of their pocket. Evidence from field studies reveals that families are asked to purchase costly drugs and diagnostics which are not covered by RSBY.

The study further points to a higher incidence of distressed financing among the Southern states in spite of having greater penetration of health insurance schemes. Government sponsored healthcare schemes like RSBY, though played a role in reducing out of pocket payments, were not enough to eliminate it in the states of Andhra Pradesh and Maharashtra (Gupt *et al.*, 2016; Rao *et al.*, 2014). A study on impacts of Rajiv Aarogyasri by Fan and others (2011) show that while health insurance programmes lead to a decline in OOP payments, they yield no significant impact on catastrophic healthcare payments or on medical impoverishment. Empirical findings

from Kerala also demonstrate that RSBY enrolled patients have reportedly paid additional OOP expenses (RSBY-CHIS, 2009). A study by Selvaraj and Karan (2012) show that in the post insurance years there has been a significant increase in hospitalization expenditure which tend to increase gradually over the years and this rise in seen across rural and urban India.

There also exists a marked difference across states in terms of resorting to distressed financing for availing hospitalization care. In this context, it should be noted that Indian states are at different phases of health transition. Whereas in a few states non-communicable ailments have formed the dominant disease burden, many states are still grappling with the already existing burden of infectious diseases as well as emergence of non-communicable chronic diseases. Thus while chronic ailments entail a higher cost of treatment, the amount increases further with the additional costs of treatment for infectious ailments. The inter-region difference in incidence of distressed financing with southern and eastern states showing higher incidence of distressed financing than the other regions can also be explained from a different angle. Studies provide evidence that high and moderate income states have higher burden of non-communicable diseases and also higher per capita health expenditure (Ghosh 2011; Narang 2010). Whereas the main reason for higher incidence of distress financing in the southern states could be higher cost of hospitalisation, the reasons for the eastern states could be lower financial capacity of the people to fund hospitalisation expenses. which might be the causal factor for higher incidence of distressed financing. Eastern states also contribute to a large chunk of poor and vulnerable population who live in geographically isolated locations with poor access to inpatient care (Prachitha and Shanmugam, 2012 and Prinja *et al.*, 2012).

Our disease specific analysis of distress financing finds support from Joe (2014) and Kastor and Mohanty (2018). Their studies also observe that seeking inpatient care for diseases such as cancer and cardio-vascular diseases put households at a greater risk of indebtedness. The duration of hospital stay coupled with high treatment costs aggravates not only the direct hospitalization expenses but also escalates the indirect expenses of food, lodging and transportation and cost of care giver.

Our analysis is not free from limitations. First, in our definition of distressed financing is a situation when household finances a major part of OOP hospitalisation expenses by borrowing, selling assets or taking help from family or friends. When OOP expenses are financed from current income or savings, we have not considered it as a distressed financing. This binary classification would have its limitation. For a poor household with little social capital, borrowing, selling assets or getting financial help from friends/families may not be a feasible option. Moreover, when a poor household spends on health care from current income or savings, one cannot rule out the possibility of long-term negative impact in the form of compromising consumption of other basic necessities. Second, hospitalisation for a poor, casual labour or low earning self-employed household also means substantial indirect and intangible costs in the form of forgone income which never gets accounted in the cost of hospitalisation. There will be households which incur substantial indirect cost in spite of not incurring huge hospitalisation expenses. Our approach fails to capture that part of the distress.

Conclusion:

The paper sought to estimate the extent of distressed financing by households for meeting hospitalisation expenses and how the incidence of distressed financing varied across population sub-groups based on individual-, household- and contextual-level characteristics. It finally tried to explore and identify the correlates of distressed financing. Distressed financing is defined as a situation when a household is forced to borrow money, sell assets or seek financial help from friends/relatives in order to finance the OOP cost of hospitalisation instead of being able to finance the cost from its current income or savings. We used NSS 71st Round Data (January – June 2014) for our analyses. Appropriate point estimations were carried out for assessing the overall and population sub-group wise incidence of distressed financing. Multivariate (adjusted and unadjusted) logistic regressions were estimated for identifying and assessing the correlates of distressed financing. For more than one-fourth of the hospitalisation episodes, households resort to distress financing. Incidence of distress financing is higher for the males (compared to females), middle and elderly age groups (compared to children and young), SC and OBC (compared to ST and Others/General), rural (compared to urban), eastern and southern regions of the country (compared to other regions), individuals with government sponsored insurance schemes, casual labour households (compared to other household categories), persons with

chronic ailments (compared to persons with no chronic ailments) and households with two or more hospitalizations in a year (compared to households with just one hospitalisation). The incidence of distressed financing shows steady increase with increase in medical cost of hospitalisation but as we move from lower to higher PCCE quintiles, incidence of distressed financing does not show any significant fall. The incidence of distressed financing is very high for cancer, psychiatric and neurological ailments, skin disease, gastro-intestinal, genito-urinary and injuries.

The logistic regressions reveal that hospitalisation of the elderly (compared to young age group), chronic ailments (compared to non-chronic), coverage of government sponsored health insurance schemes (compared to no-insurance coverage), lower economic status, higher medical cost of hospitalisation, belonging to casual labour households (compared to regular wage or salaried), belonging to ST-SC-OBC caste groups (compared to general castes), having two or more episodes of hospitalisation in the family (compared to only one episode of hospitalisation), living in rural areas (compared to urban areas) and residing in eastern and southern parts of the country (compared to other regions) lead to higher likelihood of distressed financing. When controlled for all relevant confounders, adjusted and unadjusted odd ratios shows that the ailments leading to higher distressed financing are blood diseases, psychiatric & neurological, gastro-intestinal, skin ailments and injuries. When we consider the unadjusted odd ratios, in addition to the above mentioned ailments, other ailments leading to higher likelihood of distressed financing (compared to infectious ailments) are cancers, cardiovascular, respiratory, musculoskeletal and genito-urinary ailments.

The findings of the study also indicate to the myopic and narrow focus of the government health insurance schemes which concerns hospitalization treatment as the single solution to health problems, keeping preventive and promotive healthcare at the hindsight. The tendency of the private healthcare providers to turn simple ailments into hospitalization episodes leads to distressed financing for payment of such high costs of hospitalization. It is important to note that hospitalisation in government facility does not reduce the likelihood of distressed financing. This finding questions the policy prescription which argues for higher public provisioning of health care for protecting people from incurring high OOP expenses. The public hospitals in their

current form of functioning do not seem to protect people enough from incurring high OOP costs. To conclude, it can be said that incidence of distressed financing shows an unjust correlation with gender, age group, caste, occupation, economic status and there is no evidence of government sponsored health insurance schemes reducing the incidence of distressed financing. This disturbing pattern coupled with the growing burden of the non-communicable diseases and population ageing can further worsen the situation. Association between types of ailments and likelihood of distressed financing clearly calls disease specific enhanced coverage under the health insurance schemes. A government health insurance intended to protect the household from incurring distress financing must incorporate many individual and household specific criteria while designing the scheme.

Table 1: Distribution of first and second major sources of financing for meeting hospitalization expenses across households

First major source	Percentage of hospitalization cases (N)	Second major source	Percentage of hospitalization cases (N)
Income/savings	73.8 (42244)	Income/savings	15.5 (8810)
borrowings	20.5 (11681)	borrowings	13.3 (7570)
Sale of assets	0.5 (298)	Sale of assets	0.4 (237)
Contribution from friends /relatives	4.3 (2476)	Contribution from friends /relatives	9.1 (5175)
Other sources	0.8 (504)	Other sources	1.2 (658)
		No second source	60.6 (35006)
Total	100 (57456)	Total	100 (57456)

Source: Estimated from NSS 71st round (2014) unit-record data

Table 2: Incidence of distress financing by individual-, ailment, household and contextual characteristics

Variables	Hospitalization episodes with distressed financing (%)	Variables	Hospitalization episodes with distressed financing (%)
<i>Sex</i>		<i>Coverage by any scheme for health expenditure support</i>	
Male	31.3(6567)	Government insurance	36.2(3395)
Female	22.9(8386)	Employer funded insurance	20.1(170)
<i>Age Group (years)</i>		Arranged by households with insurance	10.3(82)
0-12	28.2(1699)	Others	29.4(49)
13-39	22.7(6628)	Not covered	24.3(11258)
40-59	30.8(3812)	<i>Total medical expenditure Quintiles</i>	
Above 60	28.5(2814)	Q1	8.9 (1008)
<i>Social Group</i>		Q2	18.7 (2162)

ST	20.9(882)	Q3	26.8 (3045)
SC	30.1(3343)	Q4	35.4 (4054)
OBC	28.4(7222)	Q5	40.2 (4684)
Others	20.9(3507)	<i>Per capita consumption expenditure(PCCE) Quintiles</i>	
<i>Sector</i>		Q1	26.5 (2089)
Rural	27.7(10679)	Q2	27.6 (2719)
Urban	22.7(4275)	Q3	26.6 (2907)
<i>Region</i>		Q4	26.1 (3326)
North Central	18.6 (3431)	Q5	24.4 (3913)
East	27.4(3090)	<i>Type of ailments</i>	
North East	5.3(74)	Infection	23.6(2454)
West	15.2(1298)	Cancers	43.5(427)
South	39.7(7060)	Blood diseases	32.1(259)
<i>Household Occupational Category</i>		Endocrine, metabolic	29.3(326)
Self employed	23.6(6706)	Psychiatric & neurolo	37.4(932)
Regular Wage	21.7(2470)	Eye	17.9(338)
Casual Labour	33.2(4663)	Ear	23.1(44)
Others	30.2(1115)	Cardio-vascular	29.9(1132)
Chronic Ailment		Respiratory	27.0(577)
Yes	36.0(3589)	Gastro-intestinal	34.8(1582)
No	23.3(10500)	Skin	37.1(142)
<i>Type of hospital</i>		Musculo-skeletal	31.6(623)
Government	19.1(4970)	Genito-urinary	35.8(1006)
Private	31.8(9984)	Obstetric	19.6(442)
<i>Number of hospitalization in household</i>		Injuries	34.1(1577)
1	21.9(22)	Others	18.4(3094)
2	31.7(32)	Total	26.2(14954)
≥2	37.3(37)	Total hospitalization cases	57456 (100)

Note: Figures in the parentheses are sample size

Source: Estimated from NSS 71st round (2014) unit-record data

Table 3: Incidence of distress financing for different types of health expenditure coverage and average hospitalization expenses across major Indian states.

State	Type of support for healthcare					Average hospitalization expenditure (In ₹)
	Government funded	Employee Funded	Household funded	No Insurance	Total*	
Andhra Pradesh	55.2	32.8	2.3	44.1	50.5	18898
Assam	0.0	32.8	0.0	4.2	4.8	11411
Bihar	36.3	0.0	40.7	26.8	27.3	11921
Chhattisgarh	21.1	0.0	0.0	22.0	21.5	13682

Delhi	2.3	1.5	3.4	5.5	4.6	31463
Gujarat	18.9	1.2	2.1	10.5	10.5	15321
Haryana	8.4	0.0	10.4	14.5	13.8	22136
Jharkhand	0.0	0.0	0.0	23.8	22.6	9443
Jammu& Kashmir	0.0	4.6	0.0	5.5	5.2	10117
Karnataka	44.5	31.9	32.3	40.6	40.5	17029
Kerala	32.9	42.5	19.9	29.9	31.3	18295
Maharashtra	14.3	7.2	4.7	18.4	17.6	22487
Madhya Pradesh	21.5	0.0	0.0	18.7	18.6	13806
Odhisia	31.1	30.2	6.9	29.7	29.9	12083
Punjab	9.5	3.0	0.0	16.2	15.6	26148
Rajasthan	22.2	0.0	22.0	15.1	16.7	11938
Telangana	51.3	18.7	20.2	36.8	44.0	20864
Tamil Nadu	37.1	14.9	30.7	40.0	38.7	19265
Uttar Pradesh	33.6	7.4	2.6	22.1	22.4	18499
West Bengal	24.5	24.2	6.6	28.5	27.5	15134
India	36.2	20.1	10.3	24.3	26.0	17074

Note: Total includes health expenditure supported by 'other' means.

Source: Estimated from NSS 71st round (2014) unit-record data

Table 4: Mean and median medical expenses of hospitalization, average reimbursement and incidence of distress financing for different ailment categories for all India.

Type of ailments	Average medical expenditure (₹)	Median medical expenditure (₹)	Average reimbursements (₹)	Distress financing (%)
Infection	9367	4375	384	23.5
Cancers	62297	23050	5118	43.5
Blood diseases	15035	8950	231	31.9
Endocrine and metabolic	15859	8450	643	29.3
Psychiatric and neurological	26428	9670	1042	37.3
Eye	10770	5500	698	17.8
Ear	17191	12700	474	23.1
Cardio-vascular	34167	9350	1944	29.8
Respiratory	14491	6670	869	26.8
Gastro-intestinal	19587	9890	1288	34.7
Skin	12123	5200	390	37.1
Musko skeletal	24380	10200	1642	31.6
Genito urinary	27085	14400	2806	35.8
Obstetric	13050	4100	218	19.5
Injuries	26242	9300	1358	34.0
Others	10148	3700	255	18.3
Total	17074	6080	896	26.0

Source: Estimated from NSS 71st round (2014) unit-record data

Table 5: Results of logistic regression

Dependent variable: Distress financing = 1 if financing through borrowing, sale of assets, help from friends/relatives, others; = 0 otherwise.

Variables	Adjusted Odds Ratio	95 % Confidence Interval for odds ratio	Unadjusted Odds Ratio	95 % Confidence Interval for odds ratio
<i>Type of ailments (Reference: Infection)</i>				
Cancers	1.03	(0.79,1.33)	2.50***	(1.95,3.19)
Blood diseases	1.30*	(0.98,1.74)	1.52***	(1.13,2.04)
Endocrine and metabolic	0.91	(0.72,1.15)	1.34***	(1.09,1.65)
Psychiatric and neurological	1.27**	(1.05,1.53)	1.93***	(1.62,2.30)
Eye	0.76**	(0.58,0.99)	0.70***	(0.54,0.92)
Ear	0.72	(0.42,1.24)	0.98	(0.57,1.67)
Cardio-vascular	0.88	(0.72,1.08)	1.38***	(1.16,1.64)
Respiratory	0.91	(0.74,1.13)	1.19*	(1.00,1.42)
Gastro-intestinal	1.38***	(1.16,1.65)	1.73***	(1.47,2.03)
Skin	1.72*	(0.91,3.28)	1.91***	(1.22,3.01)
Musko skeletal	1.01	(0.80,1.26)	1.50***	(1.22,1.84)
Genito urinary	1.14	(0.94,1.39)	1.81***	(1.50,2.18)
Obstetric	0.70***	(0.56,0.88)	0.78**	(0.64,0.96)
Injuries	1.18**	(1.00,1.39)	1.67***	(1.44,1.94)
Others	0.82***	(0.70,0.95)	0.72***	(0.64,0.82)
<i>Sex(Reference: Male)</i>				
Female	0.92*	(0.84,1.00)		
<i>Age group (Reference: 13-39 years)</i>				
Age 0-12	1.01	(0.88,1.16)		
Age 40-59	0.98	(0.87,1.10)		
Age 60 & above	0.84**	(0.73,0.97)		
<i>Chronic illness (Reference: No chronic illness)</i>				
Chronic illness	1.37***	(1.22,1.53)		
no information	1.24*	(0.99,1.55)		
<i>Type of health expenditure coverage (Reference: Not covered)</i>				
Government insurance	1.27***	(1.15, 1.41)		
Private protection	0.59***	(0.44,0.79)		
Arranged by household	0.31***	(0.22,0.44)		
others	1.06	(0.57,1.99)		
log(total	1.74***	(1.67,1.80)		

<i>medical expenditure</i>				
<i>Type of hospital utilized (Reference: Government hospital)</i>				
Private	0.97	(0.86,1.08)		
<i>log(per capita consumption expenditure)</i>	0.55***	(0.51,0.60)		
<i>Household's occupation (Reference: regular wage or salaried)</i>				
Self employed	1.05	(0.92,1.19)		
Casual Labour	1.65***	(1.44,1.89)		
Others	1.48***	(1.23,1.77)		
<i>Caste (Reference : Others)</i>				
Scheduled Tribe	1.35***	(1.13,1.62)		
Scheduled Caste	1.50***	(1.31,1.72)		
OBC	1.28***	(1.14,1.43)		
<i>No of hospitalization in the family (Reference : 1 hospitalization)</i>				
2	1.49***	(1.35,1.65)		
more than 2	1.96***	(1.76,2.17)		
<i>Sector (Reference : Urban)</i>				
Rural	1.28***	(1.16,1.40)		
<i>Region (Reference: North and Central India)</i>				
Eastern India	1.73***	(1.51,1.99)		
North-Eastern India	0.33***	(0.26,0.42)		
Western India	0.81***	(0.71,0.93)		
South India	3.05***	(2.71,3.42)		
Constant	0.06***	(0.03,0.12)	0.31***	(0.28,0.34)

Notes: *, ** and *** indicate 10%, 5% and 1% level of significance respectively.

Source: Estimated from NSS 71st round (2014) unit-record data

Appendix Tables

Table A1: Distribution of first and second major sources of financing for meeting outpatient expenses for ailments (15-day recall period)

First major source	Percentage of outpatient cases	Second major source	Percentage of outpatient cases
Income/savings	95.7 (29379)	Income/savings	2.3 (697)
borrowings	2.8 (861)	borrowings	3.2 (978)
Sale of assets	0.01 (3)	Sale of assets	0.04 (11)
Contribution from friends /relatives	1.3 (386)	Contribution from friends /relatives	2.0 (612)
Other sources	0.2 (58)	Other sources	0.9 (279)
		No second source	91.6 (28109)
Total	100 (30687)		100 (30687)

Source: Estimated from NSS 71st round (2014) unit-record data

Table A2: Testing of multicollinearity

Variables	VIF	Variables	VIF
<i>Sex (Reference: Male)</i>		<i>No of hospitalization in the family (Reference : 1 hospitalization)</i>	
Female	1.37	2	1.1
<i>Age group (Reference: 13-39 years)</i>		more than 2	1.15
0-12 years	1.37	<i>Sector (Reference : Urban)</i>	
40-59 years	1.59	Rural	1.27
60 years & above	1.86	<i>Region (Reference: North and Central India)</i>	
<i>Chronic illness (Reference: No chronic illness)</i>		Eastern India	1.37
Chronic illness	1.4	North-Eastern India	1.12
no information	1.19	Western India	1.38
<i>Type of health expenditure coverage (Reference: Not covered)</i>		South India	1.72
Government insurance	1.14	<i>Type of ailments (Reference: Infection)</i>	
Private protection	1.04	Cancers	1.19
Arranged by household	1.06	Blood diseases	1.07
others	1.01	Endocrine and metabolic	1.15
log(total medical expenditure)	1.62	Psychiatric and neurological	1.25
<i>Type of hospital utilized (Reference: Government hospital)</i>		Eye	1.24
Private	1.69	Ear	1.02
<i>log(per capita consumption expenditure)</i>	1.58	Cardio-vascular	1.45
<i>Household's occupation (Reference: regular wage or salaried)</i>		Respiratory	1.21
Self employed	2	Gastro-intestinal	1.38
Labour	1.99	Skin	1.03
Others	1.32	Musko skeletal	1.2
Caste (Reference : Others)		Genito urinary	1.28
Scheduled Tribe	1.3	Obstetric	1.27
Scheduled Caste	1.61	Injuries	1.4
OBC	1.55	Others	2.65
		Mean VIF	1.35

Source: Estimated from NSS 71st round (2014) unit-record data

References

- Adhikari, S. R., Maskay, N. M., & Sharma, B. P. (2009). Paying for hospital-based care of Kala-azar in Nepal: assessing catastrophic, impoverishment and economic consequences. *Health policy and planning*, 24(2), 129-139.
- Asfaw, A., Klasen, S., & Lamanna, F. (2008). *Intrahousehold health care financing strategy and the gender gap: Empirical evidence from India* (No. 177). Discussion papers, Ibero America Institute for Economic Research.
- Asfaw, A., Lamanna, F., & Klasen, S. (2010). Gender gap in parents' financing strategy for hospitalization of their children: evidence from India. *Health economics*, 19(3), 265-279.
- Berman, P., Ahuja, R., & Bhandari, L. (2010). The impoverishing effect of healthcare payments in India: new methodology and findings. *Economic and Political Weekly*, 65-71.
- Binnendijk, E., Koren, R., & Dror, D. M. (2012). Hardship financing of healthcare among rural poor in Orissa, India. *BMC health services research*, 12(1), 23.
- fBonu, S., Rani, M., Peters, D. H., Jha, P., & Nguyen, S. N. (2005). Does use of tobacco or alcohol contribute to impoverishment from hospitalization costs in India?. *Health Policy and Planning*, 20(1), 41-49.
- Bose, M., & Dutta, A. (2015). Inequity in hospitalization care: a study on utilization of healthcare services in West Bengal, India. *International journal of health policy and management*, 4(1), 29.
- Damme, W. V., Leemput, L. V., Por, I., Hardeman, W., & Meessen, B. (2004). Out-of-pocket health expenditure and debt in poor households: evidence from Cambodia. *Tropical Medicine & International Health*, 9(2), 273-280.
- Das, J., Leino, J., 2011. Evaluating the RSBY: lessons from an experimental information campaign. *Econ. Political Wkly*. 46 (32), 85e93.
- Devadasan, N., Seshadri, T., Trivedi, M., & Criel, B. (2013). Promoting universal financial protection: evidence from the Rashtriya Swasthya Bima Yojana (RSBY) in Gujarat, India. *Health Research Policy and Systems*, 11(1), 29.
- Dilip, T. R. (2010). Utilization of inpatient care from private hospitals: trends emerging from Kerala, India. *Health policy and planning*, 25(5), 437-446.
- Duggal, R. (2004). Financing healthcare in India-Prospects for health insurance. *Express Healthcare Management*.
- Fan, Y Victoria Anup Karan and Ajay Mahal (2011): "The Impacts of Aarogyasri Health Insurance in Andhra Pradesh, India", paper presented at "Global Health Metrics and Evaluation Conference" held at Seattle between 13-17 June, abstract published in the *Lancet* 2011; published online 14 March, DOI:10.1016/S0140-6736(11) 60169-64.
- Flores, G., Krishnakumar, J., O'donnell, O., & Van Doorslaer, E. (2008). Coping with health-care costs: implications for the measurement of catastrophic expenditures and poverty. *Health economics*, 17(12), 1393-1412.
- Garg, C. C., & Karan, A. K. (2008). Reducing out-of-pocket expenditures to reduce poverty: a disaggregated analysis at rural-urban and state level in India. *Health policy and planning*, 24(2), 116-128.
- Ghosh, S. (2011). Catastrophic payments and impoverishment due to out-of-pocket health spending. *Economic and Political Weekly*, 63-70.
- Ghosh, S. (2014). Publicly-financed health insurance for the poor understanding RSBY in Maharashtra. *Economic & Political Weekly*, 49(43-44), 93-99.

- Gupt, A., Kaur, P., Kamraj, P., & Murthy, B. N. (2016). Out of pocket expenditure for hospitalization among below poverty line households in district Solan, Himachal Pradesh, India, 2013. *PloS one*, *11*(2), e0149824.
- Gupta, I., & Joe, W. (2013). Refining estimates of catastrophic healthcare expenditure: an application in the Indian context. *International journal of health care finance and economics*, *13*(2), 157-172.
- Joe, W. (2014). Distressed financing of household out-of-pocket health care payments in India: incidence and correlates. *Health policy and planning*, *30*(6), 728-741.
- John, D., & Kumar, V. (2017). Exposure to Hardship Financing for Healthcare among Rural Poor in Chhattisgarh, India. *Journal of Health Management*, *19*(3), 387-400.
- Karan, A., Yip, W., & Mahal, A. (2017). Extending health insurance to the poor in India: An impact evaluation of Rashtriya Swasthya Bima Yojana on out of pocket spending for healthcare. *Social Science & Medicine*, *181*, 83-92.
- Kastor, A., & Mohanty, S. K. (2018). Disease-specific out-of-pocket and catastrophic health expenditure on hospitalization in India: Do Indian households face distress health financing?. *PloS one*, *13*(5), e0196106
- Kruk, M. E., Goldmann, E., & Galea, S. (2009). Borrowing and selling to pay for health care in low-and middle-income countries. *Health Affairs*, *28*(4), 1056-1066.
- Leive, A., & Xu, K. (2008). Coping with out-of-pocket health payments: empirical evidence from 15 African countries. *Bulletin of the World Health Organization*, *86*, 849-856C.
- Ministry of Health and Family Welfare India: National Health Accounts, India - 2004/2005.
- Mock, C. N., Gloyd, S., Adjei, S., Acheampong, F., & Gish, O. (2003). Economic consequences of injury and resulting family coping strategies in Ghana. *Accident Analysis & Prevention*, *35*(1), 81-90.
- Narang, R. (2010). Measuring perceived quality of health care services in India. *International journal of health care quality assurance*, *23*(2), 171-186.
- National Health Accounts Cell, Ministry of Health and Family Welfare, Government of India, New Delhi; 2009.
- National Health Systems Resource Centre (2017). National Health Accounts Estimates for India (2014-15). New Delhi, Ministry of Health and Family Welfare, Government of India.
- National Sample Survey Organization (NSSO)(2006). Morbidity health care and the condition of aged. *Report No 507*. New Delhi: Ministry of Statistics and Programme Implementation
- National Sample Survey Organization (NSSO) (2014). Key indicators of social consumption in India-Health, NSS 71st Round. New Delhi: Government of India
- Peters, D. H., Yazbeck, A. S., Sharma, R. R., Ramana, G. N. V., Pritchett, L. H., & Wagstaff, A. (2002). *Better health systems for India's poor: findings, analysis, and options*. The World Bank.
- Prachitha, J., & Shanmugam, K. R. (2012). *Efficiency of raising health outcomes in the Indian states*. Chennai, India: Madras School of Economics.
- Prinja, S., Kanavos, P., & Kumar, R. (2012). Health care inequities in north India: role of public sector in universalizing health care. *The Indian journal of medical research*, *136*(3), 421.
- Rao, M., Katyal, A., Singh, P. V., Samarth, A., Bergkvist, S., Kancharla, M., ... & Renton, A. (2014). Changes in addressing inequalities in access to hospital care in Andhra Pradesh and Maharashtra states of India: a difference-in-differences study using repeated cross-sectional surveys. *BMJ open*, *4*(6), e004471.
- Rathi, P., Mukherji, A., & Sen, G. (2012). Rashtriya Swasthya Bima Yojana: evaluating utilisation, roll-out and perceptions in Amaravati district, Maharashtra. *Economic and Political Weekly*, 57-64.

- Reddy, K. S., Selvaraj, S., Rao, K. D., Chokshi, M., Kumar, P., Arora, V., ... & Ganguly, I. (2011). A critical assessment of the existing health insurance models in India. *Public Health Foundation of India*, 4, 1-15.
- Russell, S. (2004). The economic burden of illness for households in developing countries: a review of studies focusing on malaria, tuberculosis, and human immunodeficiency virus/acquired immunodeficiency syndrome. *The American journal of tropical medicine and hygiene*, 71(2_suppl), 147-155.
- Saksena, P., Xu, K., Elovainio, R., & Perrot, J. (2012). Utilization and expenditure at public and private facilities in 39 low-income countries. *Tropical Medicine & International Health*, 17(1), 23-35.
- Selvaraj, S., & Karan, A. K. (2012). Why publicly-financed health insurance schemes are ineffective in providing financial risk protection. *Economic and Political Weekly*, 60-68.
- Sen, G., & Iyer, A. (2012). Who gains, who loses and how: leveraging gender and class intersections to secure health entitlements. *Social science & medicine*, 74(11), 1802-1811.
- Steinhardt, L. C., Waters, H., Rao, K. D., Naeem, A. J., Hansen, P., & Peters, D. H. (2008). The effect of wealth status on care seeking and health expenditures in Afghanistan. *Health policy and planning*, 24(1), 1-17.
- Van Doorslaer, E., O'Donnell, O., Rannan-Eliya, R. P., Somanathan, A., Adhikari, S. R., Akkazieva, B., & Ibragimova, S. (2005). Paying out-of-pocket for health care in Asia: Catastrophic and poverty impact. *Erasmus University, Rotterdam and IPS, Colombo*.
- Van Doorslaer, E., O'Donnell, O., Rannan-Eliya, R. P., Somanathan, A., Adhikari, S. R., Garg, C. C., & Karan, A. (2006). Effect of payments for health care on poverty estimates in 11 countries in Asia: an analysis of household survey data. *The lancet*, 368(9544), 1357-1364.
- Wagstaff A. (2008). Measuring financial protection in health. Policy Research Working Paper 4554, Washington DC: The World Bank.
- Available at: documents.worldbank.org/curated/en/157391468140940134/pdf/wps4554.pdf
- Accessed on: 17th September 2018
- Wagstaff, A., & Doorslaer, E. V. (2003). Catastrophe and impoverishment in paying for health care: with applications to Vietnam 1993–1998. *Health economics*, 12(11), 921-933.
- World Health Organization. (2000). *The world health report 2000: health systems: improving performance*. World Health Organization
- Wyss, K., Hutton, G., & N'diekhor, Y. (2004). Costs attributable to AIDS at household level in Chad. *aids Care*, 16(7), 808-816.
- Xu, K., Evans, D. B., Kawabata, K., Zeramdini, R., Klavus, J., & Murray, C. J. (2003). Household catastrophic health expenditure: a multicountry analysis. *The lancet*, 362(9378), 111-117.