



Inequity in out-of-pocket payments for hospitalisation in India: Evidence from the National Sample Surveys, 1995–2014



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ABSTRACT

Objective: We report inequity in out-of-pocket payments (OOPP) for hospitalisation in India between 1995 and 2014 contrasting older population (60 years or more) with a population under 60 years (younger population).

Methods: We used data from nationwide healthcare surveys conducted in India by the National Sample Survey Organisation in 1995–96, 2004 and 2014 with the sample sizes ranging from 333,104 to 629,888. We used generalised linear and fractional response models to study the determinants of OOPP and their burden (share of OOPP in household consumption expenditure) at a constant price. The relationship between predicted OOPP and its burden with monthly per capita consumption expenditure (MPCE) quintiles and selected socioeconomic characteristics were used to examine vertical and horizontal inequities in OOPP.

Results: The older population had higher OOPP for hospitalisation at all time points (range: 1.15–1.48 times) and a greater increase between 1995–96 and 2014 than the younger population (2.43 vs 1.88 times). Between 1995–96 and 2014, the increase in predicted mean OOPP for hospitalisation was higher for the poorest than the richest (3.38 vs 1.85 times) older population. The increase in predicted mean OOPP was higher for the poorest (2.32 vs 1.46 times) and poor (2.87 vs 1.05 times) older population between 1995–96 and 2004 than in the latter decade. In 2014, across all MPCE quintiles, the burden of OOPP was higher for the less developed states, females, private hospitals, and non-communicable disease and injuries, more so for the older than the younger population. In 2014, the predicted absolute OOPP for hospitalisation was positively associated with MPCE quintiles; however, the burden of OOPP was negatively associated with MPCE quintiles indicating a regressive system of healthcare financing.

Conclusion: High OOPP for hospitalisation and greater inequity among older population calls for better risk pooling and prepayment mechanisms in India.

1. Introduction

Achieving equity in the delivery of healthcare, protection from the risk of financial loss and attaining fairness in the distribution of the financing burden are the fundamental goals of healthcare systems. Equitable financing, based on the premise that the risk each household faces due to the costs of the healthcare is distributed according to the ability to pay rather than to the risk of illness is a key dimension of health system's performance (World Health Organization, 2000). Financial protection is also the key element of Universal Health Coverage which aims at ensuring health services for people without the risk of financial catastrophe (World Health Organization, 2010). The increasing dependence on private care with an absence of adequate

medical insurance and increasing cost of medical care are some of the principal causes of direct debt and poverty in India (Balarajan et al., 2011). Catastrophic healthcare expenditures are a major cause of household debt for families on low and middle incomes; indeed, the cost of healthcare is a leading cause of poverty in India (David et al., 2001; Van Doorslaer et al., 2006; Garg and Karan, 2009; Shahrawat and Rao, 2012). Annually, about 7 percent of the population in India is pushed below the poverty line due to the out-of-pocket payments (OOPP) for healthcare alone (Kumar et al., 2015).

India's health system ranks as one of the most heavily dependent on out-of-pocket (OOP) expenditure in the world (Reddy et al., 2011). High proportions of OOPP for healthcare can keep a country from attaining equitable financing because OOPP for healthcare tends to be

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regressive and often impede access to health services (World Health Organization, 2000). Evidence suggests that the healthcare cost in India has become more impoverishing than ever before and almost all hospitalisations, even in public facilities lead to catastrophic health expenditures (Government of India and National health policy draft, 2014). Over the past decade in India, the expenditure on outpatient care increased more than 100 percent while the expenditure on inpatient care increased by almost 300 percent (Jayakrishnan et al., 2016). Moreover, the healthcare expenditure for the older population is found to be considerably higher than other age groups and the concerns over high OOP expenditures are greatest for this group (Kim et al., 2005; Mohanty et al., 2013, 2016; Kumara and Samaratunge, 2016; Baird, 2016). It is of immense importance from a policy perspective to obtain evidence on the inequities in OOPP for hospitalisation of the older population in India, given their increasing proportion in the total population, higher disease burden, increasingly higher cost of healthcare and persistently low public investment in healthcare.

This study is the first of its kind to compare the horizontal and vertical inequities in OOPP for hospitalisation of the older population (60 years or more) with the population under 60 years (younger population) in India in 1995–96, 2004 and 2014 using national wide healthcare surveys.

2. Methods

2.1. Data

We used individual-level data from three rounds of the National Sample Survey Organisation (NSSO): survey on healthcare of 1995–96 (52nd round); survey on morbidity and healthcare of 2004 (60th round); and survey on social consumption: health of 2014 (71st round) conducted under the stewardship of the Ministry of Statistics and Programme Implementation, Government of India. Details of the sampling design, survey instruments, and initial findings can be found in the national reports (Ministry of Statistics and Programme Implementation, 1998; Ministry of Statistics and Programme Implementation, 2004; Ministry of Statistics and Programme Implementation, 2014). All the surveys collected detailed information on the expenditure incurred on each episode of hospitalisation within a 365-days reference period. NSS 1995–96 was a full year survey done in four sub-rounds (July 1995–June 1996), whereas, NSS 2004 and NSS 2014 were half year surveys done in two sub-rounds between January and June. We used full year NSS 1995–96 survey for this analysis. For robustness check, we compared data from the two sub-rounds of NSS 1995–96 conducted between January and June 1996 which corresponds to the survey period of NSS 2004 and NSS 2014 with the full year NSS 1995–96 survey. The predicted mean annual out-of-pocket payments from the half year NSS 1995–96 survey were generally similar to the estimates obtained using all the four sub-rounds; the 95% confidence intervals (95% CI) for most estimates were overlapping (Appendix Table 1). We limit our analysis to the older population who were hospitalised at least once during the 365-days reference period and were alive at the time of survey with sample sizes 3,209 in NSS 1995–96; 4,974 in NSS 2004 and 7,065 in NSS 2014. For comparison purposes, we present results of the hospitalised population under 60 years with sample sizes: 19,597 in NSS 1995–96; 24,062 in NSS 2004 and 28,606 in NSS 2014.

2.2. Dependent variables

Our dependent variable was the OOPP made on all episodes of hospitalisation by an individual and the ratio of individual OOPP on hospitalisation in total household consumption expenditure, henceforth called the burden of OOPP. We exclude from individuals' OOP expenses any payments that were later reimbursed by employers/other agencies. The expenditure on hospitalisation includes doctor's/surgeon's fee, bed

charges, cost of medicines, charges for diagnostics tests, charges for ambulance and other services, cost of oxygen and blood supply, attendant charges, cost of personal medical appliances, physiotherapy, food and other materials, transportation other than ambulance and lodging charges of the escorts. The expenditure reported in Indian rupees (INR) were converted to 2014 prices using the gross domestic product (GDP) deflator and then to United States dollars (US\$; exchange rate: US\$ 1 = 63.33 INR) (International Monetary Fund, 2016a; International Monetary Fund, 2016b). As the consumer price index could be an alternate method of deflating, we also checked how the estimates for the change in OOPP for hospitalisation from NSS 1995–96 to NSS 2014 would compare with those using the GDP deflator (International Monetary Fund, 2016a). The use of GDP deflator produced a somewhat higher increase in the mean annual OOPP for hospitalisation than the consumer price index, but the trends were quite similar (Appendix Table 2).

2.3. Covariates

Information on household consumption expenditure was available in these surveys only in aggregate in the 30-days reference period. We converted the consumption expenditure to correspond to the same recall period to make them comparable with OOPP for hospitalisation. We used household consumption expenditure adjusted for household size and economies of scale as a measure of economic status (Deaton, 1997). Based on the Andersen's model of healthcare utilisation we identified, age, sex, marital status and social group as predisposing factors, monthly per capita consumption expenditure (MPCE) quintiles, education, rural/urban, and less/more developed states as enabling factors, and whether hospitalised more than once, whether hospitalised at least once in private hospital and whether hospitalised at least once for non-communicable diseases and injuries (NCDs) as the need factors (Andersen, 2008).

2.4. Statistical analysis

To model individual OOPP for hospitalisation we used a generalised linear model with gamma distribution and log link function to take into account the positive skewness in the expenditure data (Manning et al., 2005). The output was presented as exponentiated coefficients with 95% CI for NSS 1995–96, NSS 2004 and NSS 2014, separately. In order to analyse the burden of OOPP, a fractional response generalised linear model was used (Papke and Wooldridge, 1996, 2008; Gallani et al., 2015). We used a logit link function which is the canonical link function for generalised linear models for the binomial family. This model can predict determinants of proportions and requires a dependent variable ranging from '0' to '1'. The share of OOPP in household's consumption expenditure is a proportion. However, it could occur that total OOPP exceeded the consumption expenditure in the preceding 365-days. In these cases, when the dependent variable was greater than '1', the values were replaced by '1' for the regression analysis. The results were reported as average marginal effects with robust standard errors for NSS 1995–96, NSS 2004 and NSS 2014, separately. We used P-values for the Wald test to assess the difference in magnitude of coefficients between NSS 1995–96 and NSS 2014.

To assess vertical inequities (similar out-of-pocket payments by households with unequal ability to pay), we examined how predicted OOPP for hospitalisation, both absolute and as a share of household consumption expenditure varied across MPCE quintiles. Mean predicted OOP expenditure and shares were calculated across MPCE quintiles, setting all other covariates at their sample means. To assess horizontal inequities (dissimilar out-of-pocket payments by households with equal ability to pay), we compared whether predicted OOPP, both absolute and as a share of household consumption expenditure, varied among individuals across two groups distinguished by a non-income-related characteristic, but were otherwise similar in terms of MPCE quintiles

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