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RESEARCH ARTICLE

WAYS OF HEALTH FINANCING DURING ILLNESS EVENTS AT HOUSEHOLD LEVEL; AND ITS DETERMINANTS AMONG RURAL COMMUNITY OF DELHI, INDIA

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ABSTRACT

Background: In developing countries like India, where coverage of health insurance schemes is low, most healthcare costs are meted by out-of-pocket expenditure by people which leads to the vicious cycle of indebtness and impoverishment. The present study was done to identify the various ways of financing illness events and examine their relationship with health insurance and socio-demographic factors of a rural population of Delhi, India.

Materials and method: The study was conducted in five randomly selected villages of Najafgarh, Delhi. Probability proportional to size was used to decide the samples to be taken from each of the five villages and systematic random sampling was done for selection of households in each village. The head of household (HoH) of the selected households were included in the study. Data was collected using pretested semi structured questionnaire through personal interview method.

Results: A total of 370 HoH were interviewed. Out of these, 25.9% were covered by health insurance schemes. A total of 39.7% study subjects had history of illness in family (chronic disease or hospitalization for any duration / treatment for any illness lasting 1 week and more within the past one year). Only 23.1% of these subjects met the medical expenses by health insurance scheme while the remaining 76.9% made out-of-pocket expenditure (OOP) to meet the medical expenses. OOP was more significantly more common in study subjects who were less educated, employed in unorganised sector and belonged to low socio-economic status.

Conclusion: There is need to increase the health insurance/ social security net to the larger section of rural population to decrease out-of-pocket expenditure on health.

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INTRODUCTION

Inadequately funded public health care system, especially in low and middle income countries, puts catastrophic burden on households pushing a significant proportion of them into poverty each year (Gwatkin, 2007). India spends 1.04% of its gross domestic product (GDP) on public funded health care system, which is not only lower than most of the developed world but also the lowest among BRICS countries (MOHFW, 2015; Planning Commission, 2013). Illness events and impoverishment are interlinked; illness causes financial loss via treatment costs and limited participation in income-generating activities, and poverty itself predisposes to poor health; thus resulting in illness – poverty vicious cycle (Gwatkin, 2007; Wagstaff, 2002).

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In India, health care costs and the resultant impoverishment situations are worsening each year. India's health-care indicators are among the worst among developing countries (Planning Commission, 2013). Previous studies have identified mechanisms by which households finance their health care costs (Jayakrishnan, 2016; Jain, 2016; Quintussi, 2015; Bhojani, 2012; NSS 2004; Joe, 2014; Kruk, 2009; Ladusingh, 2016; Van Doorslaer, 2005). Health insurance is one of the few mechanisms of social health protection (Planning Commission, 2013); but in India, it's overall coverage was estimated to be approximately 25% in the year 2010 and was expected to reach almost 50% (more than 630 million) by 2015 (Forgia, 2012). The other major mechanisms include tax based health system, loan or borrowing, selling off property, etc. (Joe W, 2014; Kruk, 2009; Xu, 2007). It has been estimated that 70% of healthcare expenses in India are incurred by people from their pocket (Golechha, 2015). There are still gaps in our understanding of the strategies adopted by households, especially rural, in order to cope with financial costs of illnesses.

Moreover, for designing better health systems, it is important to understand whether certain socio-demographic characteristics within rural population make individuals more vulnerable to catastrophic payments. Identification of such groups with high incidence of catastrophic health payments will guide us in determining groups which are most in need of protection against impoverishment. The present study was done to find out the ways of financing of a rural community of Delhi, India during illness events and assessing its association with their socio-demographic characteristics. Objectives of the study were to: a) determine the extent and determinants of health insurance coverage; b) identify the various ways of financing medical care costs during illness episodes; and c) examine the effects of health insurance as well as socio-demographic factors on ways of financing medical care among rural population of south-west Delhi. The present article describes the findings of the latter two objectives.

MATERIALS AND METHODS

The study was carried out in Najafgarh, which is one of the field practice areas of Department of Community Medicine, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India. The area comes under the jurisdiction of South-west district of Delhi, and has a population of about 0.9 million with a literacy rate of 83% (Government of NCT of Delhi, 2011).

It has a total of 16 villages out of which, five villages were randomly selected for the purpose of the present study. The population data of these villages was obtained from the records available at Rural Health Training Centre (RHTC), Najafgarh (Table 01). Since the primary objective of the study was to determine the extent and determinants of health insurance coverage in the study area, the sample size was calculated taking the overall prevalence of health insurance in Indian population at approximately 30% based on a previous study by World Bank (Forgia GL, 2012). The required sample size of study participants was calculated using the formula $4PQ/d^2$ where P = prevalence, Q = (1- P) and d = absolute error. Here, absolute error was taken as 5%.

Considering a non-response rate of 10%, the sample size came out to be 370. The study subjects in the present study were head of households (HoH) living in the study area for 1 or more years. This was done so that status of health insurance of entire family could be investigated. The proportion of households (HH) taken in the study from each village was calculated by probability proportional to size (PPS) according to the calculated sample size of 370. The HH from each village were selected by systematic random sampling. Since the total number of HH in the five villages was 4278, the sampling interval came out to be 11. The first HH in each study village was selected randomly from the HH numbered 1 to 11.

Table 1. Selection of study households from the five study villages

Sl. No.	Name of village	Population of village	Number of HH in village	Proportion of HH to be included in the study (%)	Number of HH selected from village (n)
1.	Mitraon	6427	1168	27.3	101
2.	Surakpur	656	110	2.7	10
3.	Dichaon	7634	1272	29.7	110
4.	Rewla Khanpur	1423	224	5.1	19
5.	Chhawla	8273	1504	35.2	130
	Total	24413	4278	100.0	370

Table 2. Socio-demographic profile of study subjects (N = 370)

Sl. No.	Socio-demographic characteristic of study subject	Number (%)
1.	Age group	
	18 – 29 years	21 (05.7)
	30 – 44 years	159 (43.0)
	45 – 60 years	159 (43.0)
	More than 60 years	31 (08.3)
2.	Sex	
	Male	354 (95.7)
	Female	16 (04.3)
3.	Marital status	
	Married	252 (92.7)
	Widowed/ unmarried	27 (07.3)
4.	Religion	
	Hindu	353 (95.4)
	Others	17 (04.6)
5.	Type of family	
	Nuclear	218 (58.9)
	Joint or extended	152 (41.1)
6.	Number of family members	
	5 or less members	256 (69.2)
	More than 5 members	114 (30.8)
7.	Education of study subject	
	Primary school or less	76 (20.6)
	Middle school or more	294 (79.4)
8.	Occupation of study subject	
	Organized sector	81 (21.9)
	Unorganized sector	289 (78.1)
9.	Socio-economic class (BG Prasad scale income update May 2014)*	
	Class I (≥ 5571 Rupees)	224 (60.5)
	Class II (2786 – 5570 Rupees)	121 (32.7)
	Class III (1671 – 2785 Rupees)	21 (05.7)
	Class IV (836 – 1670 Rupees)	04 (01.1)
10.	Insurance status	
	Insured	96 (25.9)
	Not insured	274 (74.1)

* Per capita monthly income

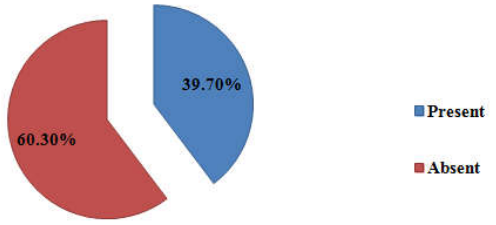

Figure 1. Distribution of study subjects according to history of illness in family (N = 370)

In case the selected HH was found to be locked, a maximum of three visits were made within a period of one week to contact the HoH, and only then it was excluded. The minimum number of HH selected in a study village (Surakpur) was 10, while the maximum from a study village (Chhawla) was 130 (Table 1).

socio-economic scale (May 2014 update) (Dudala, 2014). Data was collected by the primary investigator through personal interview of the HoH during house visit. The ethical clearance for conducting the study was taken from the Institutional Ethics Committee of VMMC and Safdarjung Hospital, New Delhi. Informed written consent was taken from each study subject. The study was conducted from November 2013 to October 2015. Data was analysed using licensed version of Statistical Package for Social Sciences (SPSS) version 21 (IBM, Chicago, Illinois, USA). All the variables were analysed using descriptive statistics to calculate frequencies, mean, range and standard deviation. Chi-square and Fisher's exact test were applied to compare proportions.

RESULTS

A total of 370 heads of households (HoH) participated in the study.

Table 3. Ways of financing medical care by study subjects with history of illness in family (n = 147)

Sl. No.	Ways of financing medical care	Number (%)
1.	Health insurance scheme	34 (23.1)
2.	Out of pocket expenditure*	113 (76.9)
	Utilisation of savings	113 (100)
	Borrowing money on interest	57 (50.4)
	Borrowing money with no interest	16 (14.2)
	Sale of household property	05 (04.4)
	Donations or charity received	02 (01.8)

* Multiple responses

Table 4. Association of socio-demographic characteristics of study subjects with their way of financing medical care during illness in family (n = 147)

Sl. No.	Socio-demographic characteristic of study subject	Way of financing medical care during illness in family		p-value
		Health insurance	Out of pocket expenditure	
1.	Age group			1.000^
	18 – 29 years	02 (22.2)	07 (77.8)	
	30 – 44 years	09 (14.8)	52 (85.2)	
	45 – 60 years	16 (27.1)	43 (72.9)	
	More than 60 years	07 (38.9)	11 (61.1)	
2.	Sex			1.000^
	Male	33 (23.1)	110 (76.9)	
	Female	01 (25.0)	03 (75.0)	
3.	Marital status			0.353^
	Married	34 (24.3)	106 (75.7)	
	Widowed/ unmarried	00 (00)	07 (100)	
4.	Religion			1.000^
	Hindu	33 (23.6)	107 (76.4)	
	Others	01 (14.3)	06 (85.7)	
5.	Type of family			0.430
	Nuclear	12 (19.4)	50 (80.6)	
	Joint or extended	22 (25.9)	63 (74.1)	
6.	Education			0.001*
	Primary school or less	01 (02.9)	33 (97.1)	
	Middle school or more	33 (29.2)	80 (70.8)	
7.	Occupation			0.000*
	Organized sector	19 (73.1)	07 (26.9)	
	Unorganized sector	15 (12.4)	106 (87.6)	
8.	Socio-economic status			0.039*^
	High (Class 1 and 2)	34 (25.4)	100 (74.6)	
	Low (Class 3 and 4)	00 (00)	13 (100)	

^ Fisher's exact test; * p-value is significant

Pre-designed, pre-tested, and semi-structured questionnaire in the locally spoken Hindi language was used for collecting data by personal interview method. The questionnaire included questions on socio-demographic characteristics of the study subjects, their health insurance status, history of illness in family – chronic disease, hospitalization for illness of any duration within past 1 year, treatment for illness lasting 1 week and more within past 1 year, and ways of financing health careduring self-reported illness events. The socio-economic status of the study subjects was assessed using BG Prasad

The response rate was 100%. The mean age of the study subjects was 45 years (SD 11.23; range 22 – 82 years) with 86% study subjects each belonging to the age group of 30 – 60 years. The large majority (95.7%) of study subjects were males (95.7%), Hindu (95.4%), married (92.7%) and belonged to nuclear families (58.9%). The study subjects were mostly educated beyond primary school (79.4%) and employed in the unorganised sector (78.1%). The mean number of family members in the present study was 4.8 (S.D. 1.98; range 1 – 12) and 69.2% study subjects had 5 or less members in their

family. Majority (60.5%) of the study subjects belonged to higher socio-economic class I according to the modified B.G. Prasad scale (May 2014 update). Out of the 370 study subjects, only 96 (25.9%) were insured for health (Table 2). Out of the 370 study subjects, a total of 147 (39.7%) gave history of illness in family – either chronic disease or hospitalization for any duration / treatment for any illness lasting 1 week and more within the past one year (Figure 1). Among these 147 study subjects who gave history of illness in family, a total of 34 (23.1%) were insured for health (either through public or private health insurance schemes) and met the medical expenses through their health insurance scheme while the remaining 113 (76.9%) had to do out-of-pocket expenditure (OOP) to meet the medical expenses. Out of these study subjects who did OOP, a total of 73 (64.6%) had to borrow money while 5 subjects (4.4%) had to sell household property (movable or immovable) to meet the necessary medical expenses (Table 3). Among these 147 study subjects who had to finance medical care for illness in the family, it was seen that financing by health insurance was associated with employment of study subject in organised sector (p value < 0.001), education of study subject beyond primary school (p value = 0.001) and higher socio-economic status (class 1 and 2 of modified BG Prasad scale) of their family (p value = 0.039). Sex, age, marital status, religion and type of family were not associated with health insurance as way of financing medical care for illness in family of study subjects. (Table 4)

DISCUSSION

In the present study among rural population of Delhi, a total of 370 heads of households were interviewed. Among these, only 96 (25.9%) were insured for health. This is similar to the health insurance coverage reported in studies among other Indian rural communities (Madhukumar, 2012; Forgia, 2012). Among the 370 study subjects, about 147 (39.7%) gave history of history of chronic disease/ hospitalization for any duration/ treatment for any illness lasting 1 week or more in the family in the past one year. Among these, only 34 (23.1%) were insured for health and met the medical expenses by their health insurance scheme while the remaining 113 (76.9%) had to do out-of-pocket expenditure. This is similar to the findings of Jayakrishanan *et al*. (2016), Jain *et al* (2016), Quintussi *et al* (2015) and Bhojani *et al* (2012). All these findings suggest that in the absence of wide health insurance coverage, OOP remains the most common way of healthcare financing by people. Among the 113 study subjects who did OOP for medical expenses, 73 (64.6%) were indebted while five (4.4%) had to sell household property. This finding too is comparable to those reported by Jayakrishanan *et al* (2016), Jain *et al* (2016), Quintussi *et al* (2015), NSSO 60th round (2004), Joe W (2014), Kruk *et al* (2009) and Ladusingh (2016). The fact that rural population continually gets indebted in order to meet healthcare expenditure is highlighted.

The fact that medical expenses were more commonly taken care of by health insurance schemes in case of study subjects who were educated, employed in organised sector and belonged to high socio-economic status only makes it more clear that the poor and disadvantaged are left to fend for themselves in case of illness. The finding is similar to those of Jain *et al* (2016) and Quintussi *et al* (2015). This finding indirectly hints that health insurance itself is availed more commonly by the educated and those with secure income, either because they have awareness about or resources to pay premium for health insurance, or both. To conclude, the coverage of health insurance among rural population is still low, and majority people still resort to OOP to meet their medical expenses leading to indebtness. There is need to build and widen the social security net for this population. The existing public and private health insurance schemes need to be brought to rural population's knowledge, and microfinancing strategies need to be developed so that they can meet their healthcare expenses more efficiently and with less burden on household income.

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