Catastrophic expenditure for health care in Myanmar

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Abstract

Protecting households from the catastrophic health care expenditure is important for every health system because it can prevent some people from seeking care and result in impoverishment. Therefore, this cross-sectional study was done in 2014 to determine the magnitude of the catastrophic health care expenditure and its relationship with income, expenditure, residence, and receiving an in-patient care. Altogether 437 households from both urban and rural areas of 1 State and 5 Regions including Nay-Pyi-Taw territory were included in the study. Two thresholds that cover the 10% of total expenditure and 40% of non-food expenditure were used to estimate the catastrophic health care expenditure for one year period in randomly selected households. The estimates of catastrophic health care expenditure were 37.1% and 32.9% for thresholds of 10% of total annual expenditure and 40% of annual non-food expenditure, respectively. The catastrophic health care expenditure was significantly related to both annual household income ($p = 0.012$) and expenditure ($p = 0.009$). The estimate of catastrophic expenditure for health care was highest in households of lowest income (quintile) group (42.3%) whereas this estimate was lowest in households with highest income (21.2%), ($p = 0.008$). The similar trend was detected in the expenditure quintile groups ($p = 0.013$). The catastrophic expenditure for health care was significantly higher among households residing in the rural area compared to those of urban area ($p = 0.001$). Similarly, households experiencing hospitalization of any of its members was more likely to have the catastrophic expenditure than those who did not ($p = 0.001$). This study highlighted the urgent need to promote health, strengthen the strategic approach to universal health care coverage and also to seek ways to improve household income, especially for the rural poor. The establishment of nationwide health insurance system should also be considered.

Introduction

The catastrophic health care expenditure can be defined as the out-of-pocket (OOP) payment for health care that exceeds some estimated proportion of household's capacity to pay, or of household income.[1] It can push households into poverty.[2] Globally more than 150 million individuals or about 44 million households face the catastrophic health care expenditure, and more than 100 million individuals or approximately 25 million households are thus pushed into poverty every year.[3,4] The catastrophic health care expenditure can occur in both rich and poor countries regardless

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of the amount of payment for health care, however, more than 90% of the individuals affected live in low-income countries.[5] Protecting households from the catastrophic expenditure for health care should be given priority by health systems worldwide, especially in low-income countries, to prevent some people from seeking such care and result in impoverishment. In reality, out-of-pocket payments are the principal means of financing health care in many countries including Asian countries.[3,6-8] Myanmar is no exception. To date, there is no standard threshold in determining the catastrophic expenditure for health care.[9] Different thresholds are being used in different settings. Some use 10% of household income (or expenditure)[9-12] and others use 40% of a household's non-subsistence income (or non-food expenditure).[3-5,13-15] Therefore, the present study was conducted in 2014

- to determine the estimates of the catastrophic expenditure for health care for one year period and
- to determine the relationship between the catastrophic health care expenditure and annual household income/expenditure, residence whether urban or rural, and the experience of hospitalization of any household members within past one year

Materials and Method

This study was a part of the larger study (n = 1346) concerned with the "perception and acceptance of community on health insurance". The cross-sectional study design and multi-stage random sampling procedure were used. At the first stage 1 State and 5 Regions were selected randomly. Then, townships from the State and Regions chosen at the first stage were randomly selected. Finally households from both rural and urban areas of the selected townships were chosen using systematic random sampling procedure. Sample size calculation was based on estimated proportion of catastrophic health care expenditure 10%[12], confidence level 95% and precision 3%. Epi Info version 7 software was used in sample size calculation. Altogether 437 households were recruited after getting an informed consent from heads of the household to take part in the study and to give the exact information on the annual income. These households were from Shan State, Sagaing Region, Magway Region, Bago Region, Ayeyarwaddy Region and Mandalay Region including Nay-Pyi-Taw Territory. The necessary data were collected by face-to-face interviews with heads of the household. The sufficient time for responses was allowed as well as privacy was observed for accurate and detailed information on income and expenditure of the previous year. After checking the survey forms for consistency and completeness, data entry and validation was done by using EPI-data version 3.1. STATA version 11.0 was used in data analysis. Chi-square test was applied to assess the association and trend. Two-sided p-value of 0.05 was considered as criterion for statistical significance. The reported annual income and expenditure were classified into low and high groups, based on the median values. Two thresholds (i.e. 10% of annual household income[9,10] and 40% of annual non-food expenditure[14,15]) were used in determination of catastrophic health care expenditure. In this study the catastrophic health care expenditure was said to be present if house-

hold's expenditure for health care was higher than the threshold. However, in assessing the factors related to catastrophic health care expenditure 40% of annual non-food expenditure of a household was used as a threshold because it was commonly used in many studies.[3-5,13-15]

Results

The eligible households were from Shan State (n = 101), Sagaing Region (n = 38), Magway Region (n = 60), Bago Region (n = 66), Ayeyarwaddy Region (n = 60) and Mandalay Region (n = 46) including Nay-Pyi-Taw Territory (n = 66). There were variations in sample size in State and Regions because only those respondents who were willing to disclose information on income and expenditure of their households could be recruited. The reported annual income and expenditure of the households included in the study are shown in Table 1.

Table (1). The reported annual income and expenditure of the households (n = 437)

	Median	Minimum	Maximum	Mean	Sd*
Income (n = 435)[x]	1460000	80000	3600000	2008000	1779100
Expenditure					
- Total	1300000	90000	60000000	1719500	2988700
- Food	840000	32000	5000000	938500	638700
- Health	100000	2000	4000000	194800	307400

Sd* = Standard Deviation; [x] Two households failed to respond about their annual income.

The estimate of catastrophic health care expenditure for one year period based on different thresholds is shown in Table 2.

Table (2). The estimates of catastrophic health care expenditure (n = 437)

Thresholds	Catastrophic Health Care Expenditure		Total
	Present	Absent	
10% of Total Expenditure	162 (37.1%)	275 (62.9%)	437 (100%)
40% of Non-food Expenditure	144 (32.9%)	293 (67.1%)	437 (100%)

The threshold of 40% of non-food expenditure was used for further analyses. Based on this threshold, the catastrophic health care expenditure was significantly greater in households with low income and expenditure compared to the group with high income and expenditure (Table 3).

Table (3). The estimate of catastrophic health care expenditure according to the reported annual household income and expenditure (n = 437)

	Catastrophic Health Care Expenditure		Total	P-value
	Present	Absent		
Income (n = 435)*				0.012
- Low	78 (39.0%)	122 (61.0%)	200 (100%)	
- High	65 (27.7%)	170 (72.3%)	235 (100%)	
Expenditure (n = 437)				0.009
- Low	81 (39.1%)	126 (60.9%)	207 (100%)	
- High	63 (27.4%)	167 (72.6%)	230 (100%)	

* Two households failed to respond about their annual income.

The catastrophic health care expenditure (%) was found to have the significant decreasing trend among the quintile groups of both annual income (p = 0.008) and expenditure (p = 0.013). See figure 1.

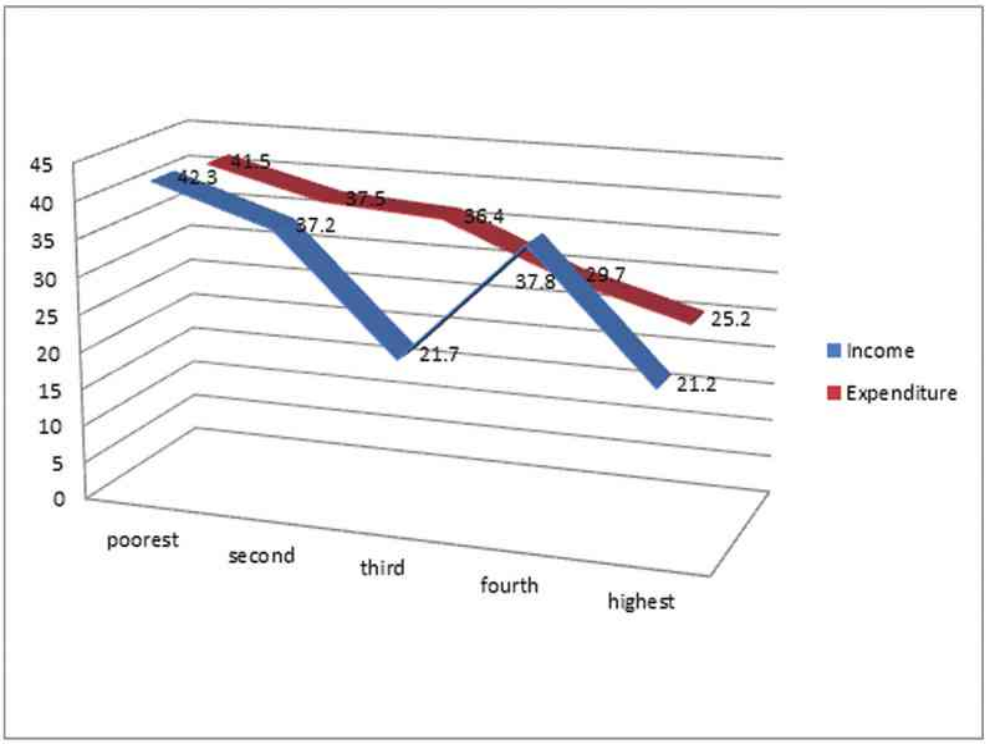

Figure (1). The catastrophic health care expenditure (%) by quintile groups of income (n = 435) and expenditure (n = 437)

The estimate of catastrophic health care expenditure was significantly higher among households residing in rural areas, and in households in which any of the family members was hospitalized in previous one year (Table 4).

Table (4). The estimate of catastrophic health care expenditure according to residence and hospitalization

	Catastrophic Health Care Expenditure		Total	P-value
	Present	Absent		
Residence				0.001
- Rural (n = 211)	88 (41.7%)	123 (58.3%)	211 (100%)	
- Urban (n = 226)	56 (24.8%)	170 (75.2%)	226 (100%)	
Hospitalization				0.001
- Present (n = 141)	73 (51.8%)	68 (48.2%)	141 (100%)	
- Absent (n = 296)	71 (24.0%)	225 (76.0%)	296 (100%)	

Discussion

The estimate of catastrophic expenditure for health care detected in the present study (37.1% for threshold accounting for 10% of total annual household expenditure and 32.9% for threshold accounting for 40% of annual non-food expenditure) was higher than those found in previous studies done in Myanmar. WHO pointed out that "lack of prepayment mechanisms for risk pooling, low household capacity to pay and the availability of health services requiring out-of-pocket payment" are essential determinants of catastrophic health care payment.[4] An Indian study also reported that socio-economic status is a significant risk factor of catastrophic health care payment.[1] Separate studies done in Upper Myanmar during 2005[11] and Lower Myanmar during 2010[12] revealed that the incidence was 8.1% and 9.4%, respectively. Previous studies used 10% of household income as threshold unlike this study. Besides, the present study based on the health care expenditure for the period of one year in estimating the catastrophic health care payment. The use of different threshold, site and time of study and the duration of period in estimating the catastrophic health care payment could explain this difference. Similarly the estimate of the catastrophic health expenditure found in the present study was higher than those studies conducted in Thailand (4%[9] and about 5%[10]), India[14] (30% for having in-patient care), Vietnam[13] (10.5%), Brazil[3] (10%), Nigeria[15] (15%) and Kenya[5] (11.4%). This may be due to differences in health and socio-economic status between study population (or) presence of health insurance or pre-payment system in the country (or) the use of different threshold (or) the data collection method.

There was a significant association between the reported annual household income or expenditure and the catastrophic health care expenditure in this study. As might be expected, the catastrophic health care expenditure was highest among the poorest households (i.e. lowest income or expenditure quintile) whereas this was lowest among the richest quintiles. This means that the higher the income or expenditure, the lesser the magnitude of catastrophic payment for health care. This finding was supported by similar studies done in India[1], Thailand[9], Kenya[5] and Nigeria[15].

The households experiencing hospitalization of any of its members or residing in rural areas were more likely to suffer from the catastrophic health care expenditure compared to their counterparts. This finding was consistent with those of studies conducted in India[14], Thailand[10] and Kenya[5].

Conclusion

The estimate of the catastrophic health care expenditure found in the present study is high. Therefore, there is an urgent need in Myanmar to establish the nationwide health insurance or prepayment mechanism for health care. Alternatively the household income as well as health status needs to be improved, especially for rural poor. The strategic approach to improve the universal health care coverage should also be strengthened for financial risk protection in vulnerable households.

Limitations

The present study has some limitations which should be considered while interpreting the results. Information on income and expenditure relied on the report of the heads of household. Another limitation of the study is that the sample may not be representative of all heads of household in the community, as only those respondents who were willing to disclose information on income and expenditure of their households could be recruited. The heads of the household who did not give consent to disclose their monetary information could not be recruited because of ethical issues. Uneven distribution of the sample size among State and Regions included in the study may limit the generalizability of the results of the study. The study could have been strengthened further by increasing sample size.

References

1. Pal R. Measuring incidence of catastrophic out-of-pocket health expenditure: with application to India. *International Journal of Health Care Finance and Economics*; (2012) **12 (1)**: 63-85.

2. WHO. Out-of-pocket health payments and catastrophic expenditures. Available at: http://www.who.int/health financing/catastrophic/en/ (accessed on 23rd May, 2014)

3. Xu K, Evans DB, Carrin G, Anguilar-Rivera AM, Musgrove P & Evans T. Protecting households from catastrophic health spending. Health Affairs; (2007) **26 (4)**: 972-983.

4. Xu K, Evans DB, Carrin G & Anguilar-Rivera AM (2005). Designing health financing systems to reduce catastrophic health expenditure. Technical briefs for policy makers (2). Geneva, WHO

5. Chuma J & Maina T. Catastrophic health care spending and impoverishment in Kenya. BMC Health Services Research; (2012) **12** (413). Available at: http://www.biomedcentral.com/1472-6963/12/413 (accessed on 23rd May, 2014)

6. Van-Doorslaer E, O'Donnell O, Rannan-Eliya RP, Somanathan A, Adhikari SR, Garg C, Harbianto D, Herrin A, Huq M, Ibragimova S, Karan A, Lee T, Leung G, Lu J, Ng C, Pande B, Racelis R, Tao S, Tin K, Tisayaticom K, Trisnantoro L, Visasvid C & Zhao Y. Catastrophic

payments for health care in Asia. Health Economics; (2007) **21**: 1159-1184.

7. O'Donnell O, van-Doorslaer E, Rannan-Eliya RP, Somanathan A, Adhikari SR & Akkazieva B (2005). Who pays for health care in Asia? EQUITAP Working Paper (1). Available at: http://www.equitap.org (accessed on 23rd May, 2014)

8. Than-Sein (2002). A policy brief of health care financing reforms in WHO South-East Asia Region. New Delhi: WHO Regional Office for South-East Asia

9. Setboonsarng S & Lavado R (2009). Does organic agriculture lead to better health among poor farmers? An investigation of health expenditure among organic and conventional farmers in Thailand. ADBI Working Paper 129. Tokyo: Asian Development Bank Institute

10. Limwattananon S, Tangcharoensathienb V & Prakongsai P. Catastrophic and poverty impacts of health payments: results from national household surveys in Thailand. *Bulletin of the World Health Organization*; (2007) **85 (8)**: 600-606.

11. Thant-Sin-Htoo (2005). Catastrophic health care payment in Myanmar: a case study in Upper Myanmar. Available at: http://www.researchgate.net/publication/27807468 (accessed on 30th May, 2014)

12. Thant-Zaw-Lwin, Sillabutra J & Kongsin S (2010). Household catastrophic health expenditures in selected townships of Lower Myanmar. Available at: http://www.researchgate.net/publication/228246872 (accessed on 30th May, 2014)

13. Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J & Murray CJ. Household catastrophic health expenditure: a multi country analysis. *Lancet* (2003); **362 (9378)**: 111-117.

14. Mondal S, Kanjilal B, Peters DH & Lucas H (2010). Catastrophic out-of-pocket payment for health care and its impact on households: Experience from West Bengal, India. Available at: http://www.futurehealthsystems.org (accessed on 30th June, 2014)

15. Onoka CA, Onwujekwe OE, Hanson K & Uzochukwu B (2010). Measuring catastrophic health care expenditures in Nigeria: Implications for financial risk protection. Consortium for Research on Equitable Health Systems (CREHS) Research brief. Available at: http://www.crehs.lshtm.ac.uk (accessed on 30th June, 2014)