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HEALTH CARE EXPENDITURE OF HOUSEHOLDS IN MAGWAY, MYANMAR

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ABSTRACT

Myanmar has a high proportion of out-of-pocket (OOP) health care expenditures with limited cost-sharing mechanisms. In Myanmar, there were limited data on the frequency of catastrophic health expenditure (CHE) due to OOP payments, as well as on the factors associated with CHE. This study aimed to investigate health care expenditure, the frequency of CHE, and the factors influencing CHE among households in Magway, Myanmar. A cross-sectional household survey was conducted in 2012 for 700 households (350 in urban areas and 350 in rural areas) in Magway. CHE was defined as a condition wherein the total amount of household health care expenditure was 40% or more of non-food expenditure in the past year. Multiple logistic regression analysis was applied to estimate odds ratios (ORs) and 95% confident intervals (CIs) of CHE. In the previous year, 28.3% of 350 urban households and 51.4% of 350 rural households utilized outpatient services. Households with at least one member admitted to a medical facility were 10.0% and 12.9%, respectively. Those with CHE were 25.2% in the urban areas and 22.7% in the rural areas. The adjusted OR of CHE was 7.79 (95% CI 3.73–16.26) for hospitalization and 1.08 (95% CI 0.36–3.23) for outpatient care, relative to no services used. These findings indicated that nearly one fourth of households in Magway faced CHE due to inpatient care. A safety-net mechanism to protect households from CHE in Myanmar seems essential.

Key Words: Out of pocket expenditure, Catastrophic health expenditure, Magway, Myanmar

Abbreviation:
OOP: Out-of-pocket, CHE: Catastrophic health expenditure, OR: Odds ratio,
CI: Confidence interval

INTRODUCTION

Health care in Asian countries where a prepayment system is not established is mostly financed by out-of-pocket (OOP) payments.[1, 2] In those countries, households are exposed to the risk of unforeseen medical expenditures,[3] having the highest incidence of catastrophic payments, especially for emergency health care.[4] Health care expenditure is catastrophic when OOP payments for health care exceed a certain proportion of the household's income, leading to loss of

employment and food insecurity.[5]

Globally, a survey of 89 countries revealed that almost 150 million people face financial catastrophe due to high OOP expenditure,[6] and the level of private OOP spending as a percentage of private expenditure on health is 50.2% of total health expenditures, and 84.4% in the Southeast Asian region.[7] According to the WHO, an estimated 80 million people living in the Southeast Asian region faced catastrophic health expenses (CHE), and 50 million people were impoverished due to OOP payments relating to poor health status and use of health care services.[8] Responding to medical needs can absorb a larger share of the household budget, which is considered catastrophic in view of the required sacrifice of current consumption and/ or the long term consequences for a household's welfare resulting from borrowing or depleting of assets to pay for health care.[9]

In Myanmar, the country is coming into a new era for building a modern and developed democratic nation, on the verge of developing a new system. In implementing the social objectives laid down by the government, the Ministry of Health is taking the responsibility for providing comprehensive health services to improve the health status of the population.[10] In the Myanmar health care system, there is a well designed health care structure within the National Health Policy and Plan. However, on undertaking an in-depth examination, a significant service gap has been observed, and in spite of rising infrastructure coverage, functional and operational coverage of health care service delivery is questionable.[11]

Government expenditure on health care in Myanmar was merely 2% of GDP in 2011 and per capita expenditure on health was 1447.7 kyats in 2010–11.[10] Public expenditure on health accounts for 10% of total expenditure on health, and 82% to 85% of this expenditure was OOP.[11] Social security expenditure, a form of pre-payment mechanism, was almost non-existent,[10] and one fourth of the population in Myanmar is below the poverty line.[12] Recognizing high OOP expenditure and financial burden on poor and vulnerable households, the Myanmar government committed to strengthening efficient, fair and sustainable health financing systems, so that all people have access to health services and do not suffer from financial hardship.[10]

Thus, a comprehensive study on the incidence of CHE in Myanmar is necessary to answer questions regarding the introduction of safety-net mechanisms to protect the poor. This study was conducted to find out the proportion of the household financial contribution for health in urban and rural areas of Magway, the frequency of CHE, and the factors influencing CHE in Central Myanmar. This study would give valuable input to the baseline data for decision makers about health care costs incurred by Myanmar households and offer guidance for the allocation of limited resources.

MATERIALS AND METHODS

This was a cross-sectional study conducted in 2 wards in urban areas and 2 villages in rural areas of Magway. Subjects were 700 household members (350 in urban areas and 350 in rural areas) aged 18 years or older in the areas, whose family members were 3,066 in total. The subjects were randomly sampled with two stages. In the first stage, 2 wards and 2 villages were selected by random number table from among available wards and villages in urban and rural areas of Magway. In the second stage, households in each area were selected through systematic selection of alternate households. Data were collected from May to June in 2012.

House-to-house data collection was done by using pre-tested, structured questionnaires in both urban and rural areas. The questionnaire included four main components: 1) personal charac-teristics of respondents (age, gender, education level, occupation, marital status and religion of

household heads), 2) their illness episodes in the past one year, 3) their expenditure for illness and/or inpatient service and 4) their expenditures for food and non-food items. In the section of personal characteristics of respondents, education level was categorized into illiterate (no formal education), low (monastery education or grade 1 to 4), medium (grade 5 to 8), high (grade 9 to 10 or graduate). Illness episodes were defined as one of the household members being diagnosed as ill by a health care professional, experienced discomfort, or was unable to do usual activities within a one year period. Health expenditure included payments for self-prescribed medication, outpatient care, and inpatient care payment. Self-prescribed medication was defined as the household where household members used non-prescribed drugs or other approaches to cure their illness. Outpatient care included services and medicine administered by a hospital, health center, and private health facility. Inpatient care was defined as procedures and/or treatments requiring overnight stay in either government hospital or private hospital.

Annual household expenditure per capita was estimated based on their recall for regular items of one month and for non-regular items of one year, which were categorized as food and non-food expenses. OOP payment was defined as private payment for health expenditure. CHE was defined as a condition when the total amount of health care expenditure exceeded 40% of household non-food expenditure in the past 12 months prior to the interview.[4] To validate the questionnaires, a pilot study was conducted before this one.

The unit of data collection and analysis was a household. Households were disaggregated into quintiles based on their annual expenditure per capita. The differences in mean expenditure between urban and rural areas were examined by a Mann-Whitney U test. Logistic regression analysis was performed to estimate adjusted odds ratios (ORs) and 95% confidence intervals (CIs). The independent variables included in the logistic model were head of household's age, sex, education, household size, residence, utilization of inpatient and outpatient services, in accordance with a previous study in China.[13] The dependent variable was CHE with two levels (no or yes). A two-tailed p value less than 0.05 was considered to be significant. Data entry was done by Epi-data software of version 3.1. The data were analyzed using Stata software version 11.

The study was approved by University of Community Health (Magway). Informed consent was acquired before enrollment for this questionnaire study.

RESULTS

Socio-demographic characteristics of head of households

Table 1 shows the socio-demographic characteristics of the household heads. Approximately four fifths of the heads were younger than 65 years both in urban and rural areas (80.3% and 83.1%, respectively). Almost two thirds of the heads in the rural areas attained low education levels, including illiterate and/or elementary schooling. About one third of these heads in the rural areas worked in the agricultural sector (34.4%), while one fourth of the heads in the urban areas were not in regular employment. Burmese was the predominant ethnicity among the study population, and majority of them were Buddhists. The lowest quintile of annual household expenditure per capita was less than US$20 and the highest was US$1,953. On average, each urban household had 4.5 members and those in rural areas had 4.3 members.

Household's expenditure for food and non-food category

The average annual expenditure for each household in both areas was US$1,915 per year. It was found that annual household expenditure in the urban areas (US$2,236) was higher than that in the rural areas (US$1,594) (p<0.001), as shown in Table 2. The average annual food

Table 1 Socio-demographic characteristics of heads of households

Characteristic	Total		Urban		Rural	
	N	(%)	N	(%)	N	(%)
Total	700	(100)	350	(100)	350	(100)
Age (years)						
< 65	572	(81.7)	281	(80.3)	291	(83.1)
≥ 65	128	(18.3)	69	(19.7)	59	(16.9)
Gender						
Male	583	(83.3)	283	(80.9)	300	(85.7)
Female	117	(16.7)	67	(19.1)	50	(14.3)
Education						
Illiterate	20	(2.9)	7	(2.0)	13	(3.7)
Low education level	263	(37.6)	56	(16.0)	207	(59.1)
Medium education level	295	(42.1)	178	(50.9)	117	(33.4)
High education level	120	(17.1)	107	(30.6)	13	(3.7)
Occupation						
Agricultural sector	148	(21.1)	30	(8.8)	118	(34.4)
Irregularly paid job	128	(18.3)	45	(13.3)	83	(24.2)
Skilled job	90	(12.9)	39	(11.5)	51	(14.9)
Self-employed business	124	(17.7)	103	(30.4)	21	(6.1)
Government staff	54	(7.7)	39	(11.5)	15	(4.4)
Dependent	138	(19.7)	83	(24.5)	55	(16.0)
Marital status						
Single	26	(3.7)	14	(4.0)	12	(3.4)
Married	564	(80.6)	275	(78.6)	289	(82.6)
Widow/widower	104	(14.9)	55	(15.7)	49	(14.0)
Divorced/Separated	6	(0.9)	6	(1.7)	0	(0)
Size of family						
≤ 4 family members	402	(57.4)	204	(58.3)	198	(56.6)
> 4 family members	298	(42.6)	146	(41.7)	152	(43.4)
Annual household expenditure per capita (quintiles) US$						
Quintile 1 (20–260)[a]	140	(20.0)	53	(15.1)	87	(24.9)
Quintile 2 (261–334)[a]	140	(20.0)	58	(16.6)	82	(23.4)
Quintile 3 (335–429)[a]	140	(20.0)	60	(17.1)	80	(22.9)
Quintile 4 (430–573)[a]	140	(20.0)	82	(23.4)	58	(16.6)
Quintile 5 (573–1,953)[a]	140	(20.0)	97	(27.7)	43	(12.3)

[a] Based on a currency exchange rate of 855 kyats (Myanmar currency) to US$1

Table 2 Average household expenditure per capita in US$ and expenditure shares (%)

Expenditure	Urban (N=350)			Rural (N=350)			p^a value
	Mean	±SD	(Range)	Mean	±SD	(Range)	p^a value
Total household expenditure (US$)	2,236	±1,877	(210–14,831)	1,594	±1425	(110–21,834)	<0.001
Food expenditure (US$)	1,185	±909	(204–11,008)	980	±438	(152–3,394)	<0.001
Percentage of total expenditure (%)	53.0			61.5			
Non-food expenditure (US$)	1,051	±1,476	(63–13,299)	614	±1,186	(9–18,875)	<0.001
Percentage of total expenditure (%)	47.0			38.5			
Health expenditure (US$)	115	±792	(0–11,813)	43	±120	(0–942)	<0.001
Percentage of total expenditure (%)	5.1			2.7			
Percentage of non-food expenditure (%)	10.9			7.0			

SD: standard deviation, US$: United States dollars based on a currency exchange rate of 855 kyats to 1 US$

^a p value of a Mann-Whitney U test

expenditure per household was US$1,083. The mean food expenditure per household was 53.0% of the total consumption expenditure in the urban areas and 61.5% in the rural areas.

OOP payment for minor illness or inpatient service

The rate of utilization of outpatient services during the last year was 39.9% (n=279) overall; 28.3% (n=99) in the urban areas and 51.4% (n=180) in the rural areas. Of all households, 11.4% (n=80) had episodes of inpatient service in the last year; the rural households had frequent inpatient service episodes (12.9%) (n=45) compared to urban households (10.0%) (n=35).

Health expenditures

Health expenditure included self-prescribed medication for minor ailments, outpatient services and inpatient services. Mean health expenditures was US$310 in the previous year. The first and the third health expenditure quintiles were US$22 and US$309, respectively. Table 3 shows that the mean of health expenditures per year was US$419 in the urban areas and US$79 in the rural areas (p<0.001). The mean of the expenditure for inpatient services per year was US$807 in 35 households in urban areas and US$216 in 45 households in rural areas. It was found that only one household each from urban and rural areas had self-prescribed medications, spending US$8 and US$2 respectively. The health expenditure percentage for the total consumption expenditure was 18.7% in the urban areas and 5.0% in the rural areas.

OOP and CHE

Table 4 shows the households above the given threshold for the total expenditure and non-food expenditure. The households with CHE, defined as 40% of non-food expenditure, was 25.2% in the urban areas and 22.7% in the rural areas.

Determinants of CHE

As shown in Table 5, inpatient services had the greatest impact on CHE (OR =7.79, 95% CI 3.73–16.26) compared to households with no inpatient services utilization, while outpatient services did not find any impact on CHE compared to those with no outpatient service utiliza-

Table 3 Inpatient and outpatient health expenditure of households with illness

Expenditure	Urban				Rural				pᵃ value
	N	Mean	±SD	(Range)	N	Mean	±SD	(Range)	
Health expenditure (US$)	107	419	±1,473	(3–11,812)	194	80	±154	(1–942)	<0.001
Quintile 1 (20–260)	20	39	±41	(6–140)	43	36	±97	(1–585)	
Quintile 2 (261–334)	15	31	±33	(3–117)	45	43	±78	(1–363)	
Quintile 3 (335–429)	14	62	±66	(6–185)	47	34	±71	(1–386)	
Quintile 4 (430–573)	22	130	±155	(6–189)	32	101	±165	(1–646)	
Quintile 5 (573–1,953)	36	990	±2,310	(8–1,1813)	27	256	±257	(2–942)	
Self-prescribed medication(US$)ᵃ	1	8			1	2			
Outpatient services (US$)ᵃ	99	163	±549	(3–4,912)	180	31	±82	(1–591)	<0.001
Inpatient services (US$)ᵃ	35	807	±23,556	(4–11,813)	45	216	±182	(18–942)	0.892

SD: standard deviation, US$: United States dollars based on a currency exchange rate of 855 kyats to 1 US$

ᵃ p value from Mann-Whitney U test

Table 4 Household above the given threshold for non-food expenditure

Threshold	Non-food expenditure		
	Total (n=301)	Urban (n=107)	Rural (n=194)
5%	247 (82.1%)	93 (86.9%)	154 (79.4%)
10%	208 (69.1%)	79 (73.8%)	129 (66.5%)
15%	165 (54.8%)	69 (64.5%)	96 (49.5%)
25%	114 (37.9%)	50 (46.7%)	64 (33.0%)
40% ᵃ	71 (23.6%)	27 (25.2%)	44 (22.7%)

ᵃ Catastrophic health expenditure

tion (OR =1.08, 95% CI 0.36–3.23) after adjusting for all variables listed in Table 5. The OR of a family size of four or less for CHE was 0.34 (95% CI 0.17–0.68) relative to the family size more than four. Concerning education levels, household heads with middle education level were most likely to have CHE (OR =3.62, 95% CI 1.08–12.15) after adjusting for all variables, although the crude OR was below unity, possibly due to confounding variables.

DISCUSSION

In the study, we found that OOP expenditure caused financial catastrophe to 25.2% of studied households in urban areas and 22.7% in the rural areas. The study showed no disparity in health care utilization for outpatient services between the poor and the rich, while there was a great disparity between them in health care payments for inpatient services. Very few studies have been conducted in Myanmar. Most studies have been conducted in Bangladesh,[14] in China,[15] in Thailand,[16] and in Vietnam.[17] These studies demonstrated that poor households faced CHE more frequently in seeking healthcare, while richer households received more treatment than the

Table 5 Odds ratio (OR) and 95% confidence interval (CI) of catastrophic health expenditure

Variable	Model 1		Model 2	
	OR[a]	95% CI	OR[b]	95% CI
Age group of household head				
< 65 year	1	Reference	1	Reference
≥ 65 year	1.42	0.82–2.45	1.84	0.93–3.66
Gender of household head				
Male	1	Reference	1	Reference
Female	0.89	0.46–1.72	0.71	0.30–1.69
Education level of household head				
Illiterate	1.49	0.52–4.24	0.35	0.02–4.20
Low education level	0.87	0.33–2.28	1.54	0.51–4.63
Medium education level	0.15	0.02–1.47	3.62*	1.08–12.15
High education level	1	Reference	1	Reference
Size of family				
≤ 4 family members	0.78	0.47–1.30	0.34*	0.17–0.68
> 4 family members	1	Reference	1	Reference
Residence				
Urban	1	Reference	1	Reference
Rural	0.44*	0.23–0.82	0.48	0.21–1.13
Outpatient services				
No	1	Reference	1	Reference
Yes	0.29*	0.11–0.71	1.08	0.36–3.23
Inpatient services				
No	1	Reference	1	Reference
Yes	7.43*	4.18–13.20	7.79*	3.73–16.26

[a] Model 1: Crude OR for age and gender, and age-gender-adjusted OR for the other variables
[b] Model 2: OR adjusted for all listed variables and annual household expenditure per capita
* $p < 0.05$

poor.[18] In this study, the better-off households were more likely to utilize both outpatient and inpatient services, and these findings were consistent with the above studies. It was obvious that the poor were more unlikely to seek health care because they could not afford to seek treatments or to take time off work for outpatient services.[1, 19] Thus, the majority of poor households chose not to seek health care rather than being further impoverished due to high health care costs.[9]

The study showed that the sampled households, none of whom were in any form of a financial protection scheme, spent about 18.7% of their total household expenditure on healthcare in the urban areas and 5.0% in the rural areas, making up 25.2% and 22.7% of households that experienced financial catastrophe at the 40% threshold level for non-food expenditure. It was demonstrated that health expenditure associated with an illness episode increased as household non-food expenditure increased, which is similar to a published paper in India,[20] and at the same

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time, the risk of CHE increased with rising household consumption expenditure.

This study found a significant association between household size and CHE. Households with four family members or more were faced with CHE more often than households with fewer than four members. This finding was consistent with previous studies done in Iran[21] and China,[22] in which households with less than five people are more likely to face CHE. Households receiving inpatient services were 7.79 times more likely to experience CHE after adjusting for all variables listed in Table 5. With regard to education levels, heads of households with a medium level of education level faced a 3.62 times higher chance of CHE compared to those with a high education level, while the chance of those with a low education level and illiterate was not significantly different from that of those with a higher education levels. It was highlighted that illiterates and heads of household with a low level of education did not utilize outpatient and inpatient health services because of poverty, and thus were less likely to face CHE. Those households were so poor that they had only one meal for the whole day and were living in debt. When they suffered from illness, they could not seek any kind of health care because of financial barriers. These findings were contrary with results of other studies in this field, particularly with the studies carried out in developing countries.[13, 18, 23]

However, this study had several limitations. First, the expenditures were self-reported and highly probable to error, although sampling procedures in this study were designed to avoid biases in the results. Secondly, although the technique to measure CHE utilized in this study was one of the most common methods in calculating CHE practiced in different countries, households which ignored using health services due to unaffordability, households which reduced their food expenses to provide health expenditures and also the opportunity costs (travel costs, the loss of income, etc) due to using health services were not taken into account. Finally, the study was carried out in two urban areas and two rural areas of Magway, so there might be unknown factors limiting generalization to the other states and divisions of Myanmar.

In this study, one fourth of households in the study area were facing CHE due to direct OOP health care payments and lack of financial pooling to overcome the risks. Without proper financial protection, families in these economically vulnerable groups are pushed into a vicious cycle of poverty in Magway. Thus, it is crucial for individuals to be protected against health care related impoverishment. Financial protection mechanisms for health care must be given top priority to enable everyone to have accessible and affordable health care in Myanmar. To reduce the problem of increasing OOP payments and CHE in Myanmar, implementation of compulsory health insurance for basic workers especially for farmers, manual workers, dependents, and self-employed persons is recommended.

CONCLUSIONS

The study indicated that OOP and CHE affect almost one quarter of households and this burden impeded on poor and vulnerable households of Magway in Myanmar. Lack of financial protection against these risks drives the households into poverty as they struggle to pay for health care. Thus, more systematic researches in CHE of household and coping strategies to overcome these expenses at the national level will contribute in the steering the development of health financing policies in Myanmar. It is essential for the country to focus on addressing the financial access barriers facing poor and vulnerable groups and on developing effective safety-net mechanisms.

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COMPETING INTERESTS

The authors have declared that no competing interests exist.

AUTHOR'S CONTRIBUTION

Inn Kynn Khaing and Myo Oo designed the study and research methods. Inn Kynn Khaing and Malik Amonov conducted data cleaning, data editing and analysis and Malik Amonov helped in drafting results and discussion. Nobuyuki Hamajima offered an expert advice during data analysis and editing of the manuscript. All authors contributed to manuscript revisions and approved the final draft.

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