Extent of Household Catastrophic Health Expenditure among Urban Dwellers in Mandalay City

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Self-payments (out-of-pocket payments OOP) are the principal means of financing health care throughout Myanmar. It leaves households exposed to the risk of unforeseen expenditures that absorb a large share of the household budget. The OOP expenditures may be considered as catastrophic in the sense that they absorb a large fraction of household resources. Catastrophic impact of health care costs among households in selected area of Mandalay City is measured by indices such as incidence, intensity and mean positive gap and explored the opinions of people paying for health care by conducting focus group discussion. As expected, households' catastrophic impacts are considerably high in Mandalay. The incidence of catastrophic health care payment is 8%, 4% and 1.3% for the defined catastrophic thresholds of 10, 20 and 30 percent, respectively. The intensities are 1.62, 1.09 and 0.8 percents for the same thresholds. Mean Positive Gaps are 20.2, 27.3 and 61.5 percents for the three defined threshold levels. Because of heavy out-of-pocket health care expenditure, most of the households' income absorbed with repeated borrowing and lending mechanisms can push these households into impoverishment. Although they pay heavily, Myanmar people do not blame anyone but their destiny because they know nothing about social protection mechanisms.

Keywords: Health care cost, Household expenditure, Catastrophic health, Out-of-Pocket (OOP) payment, Health financing

INTRODUCTION

Many people believe "health is wealth" and that being healthy is a kind of great blessing. Almost all people all over the world want to be healthy. The World Health Organization (WHO) has stated that health is a basic human right and worldwide social goal and that it is essential to the satisfaction of basic human needs and quality of life and also defined that health is a state of complete physical, mental and social wellbeing and not merely an absence of disease or infirmity.[1]

Today and every day, the lives of vast number of people lie in the hands of health systems. From (womb to tomb) the safe delivery of a healthy baby to the care with dignity of the frail elderly, health systems have a vital and continuing responsibility to people throughout the lifespan. They are crucial to the healthy development of individuals, families and societies everywhere.[1] Therefore, fairness is fundamental and particularly so when applied to health, which is itself basic to our well-being.[2] There are many possible interpretations of equity.[3] Equity can be explained in terms of equal resources/equal use of services, equal health, equal access/utilization according to need or equal treatment according to capacity

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to benefit and the *fair inning*: Williams (1997) defined "everyone should be entitled to some normal span of health" that means the healthcare resources to be distributed fairly, every person should receive sufficient healthcare to provide them with the opportunity to live in good health for a normal life expectancy. In 1986, Musgrove mentioned that measurement of equity in Health or in otherwise Health Equity Analysis can be either equality of health care access or financial measures of equity.[3] Financial measures of equity in health or in otherwise fair financing in health systems means that the risks each household faces due to the costs of the health system are distributed according to ability to pay rather than to the risk of illness. A fairly financed health system ensures financial protection for everyone.[3] A health system, in which individuals or households are sometimes forced into poverty through their purchase of needed care, or forced to do without it because of the cost, is unfair. However, this situation characterizes poorer countries and some middle- and high income ones, in which at least part of the population is inadequately protected from financial risks.

Choices for financing health services have an impact on how fairly the burden of payment is distributed. Can the rich and healthy subsidize the poor and sick? Illness can bring a difficult choice between diverting resources towards medical care and foregoing treatment with the risk of long-term deterioration in health and earnings capacity. Responding to medical needs can absorb a large share of the household budget, which may be considered catastrophic in view of the required sacrifice of current consumption and/or the long-term consequences for household welfare of borrowing or depleting assets to pay for health care.[4]

Like many developing countries, the health care system in Myanmar is a public-private mix in both financing and delivery. The public health system has gradually developed and expanded in all the states and divisions of the country. In contrary, the rapid growth of private sector medical care concentrates in the large cities but notable absence in most townships and rural areas of the country. The major sources of finance for health care services are the government, private households, social security system, community contributions and external aids where private household out-of-pocket expenditure is the vast majority (81.5% of total health care expenditure) since there is no public or private health insurance systems.[5]

This study expects to find out the proportion of the household financial contribution for health, the extent of catastrophic health expenditures among urban dwellers and the opinions of the community regarding the high out-of-pocket health expenditures.

MATERIALS AND METHODS

A community-based, cross-sectional analytic study using a mixed method (among 150 household members, and with three FDG sessions) was conducted in randomly selected Yanmyolon Ward, Chanayethar-zan Township, Mandalay City, Myanmar.

In order to explore the extent of household catastrophic health care payments, household health care costs survey was conducted by the principal investigator and a research team of well-trained data collectors from October 2012 to May 2013. Two sets of survey questions were used. The formal questionnaires (based on recall method) and two weeks household diaries were used for assigned households. Pilot study was done prior to actual data collection. Among those data, households' monthly average income data and out-of-pocket health care payment data were selected to identify households' catastrophic health care expenditure. Three defined catastrophic health care payment were calculated. Regarding the opinions and perception of households health care payments, focus group discussions were done and analyzed accordingly.

Statistical analysis

Data were checked for error, incompleteness and consistency. Data entry was done by Epi data 4.0 and range and consistency check

was carried out before analysis. Data analysis was performed with SPSS software version 20.0. The results were described in three sections: Socio-demographic, economic and catastrophic health care payments of the households, and theme analysis from Focus Group Discussion.

The sample involved the data from 150 households from Yanmyolone ward of Chanayetharzan Township of Mandalay City. The heads of each household were target persons for interview. However, when the household heads were not available, any adult family members could be the respondents.

Ethical consideration

The proposal was approved by the Ethics Committee of Myanmar (Department of Medical Research, Upper Myanmar). Participants had a right to agree or refuse to participate in this study. Getting voluntary informed consents were obtained to participate in this study. Each participant was informed of the purpose of the study by researchers and that the data was kept in a completely confidential and anonymous manner.

RESULTS

Socio-demographic, economic and health characteristics

The age of the respondents was classified into three age groups. Age of the respondent ranges from 25 to 86 years and the mean age was 42.18 years. The majority of respondents (65.3%) were aged between 30-60 years. Regarding gender, 86% of the respondents were male and male respondents were dominants in this study because the survey was conducted on family member who have strong power in a family. The majority of the respondents (70.6%) completed the primary school level while 20.7% of respondents can read and write and illiterate accounted for 8.7% only**.** Majority of respondents (52%) were self-employer, followed by employed for wages (22.7%), government staffs (13.3%). The respondents who were unemployed (able to work) were 0.7%, unemployed but unable to work 5.3%, homemaker 3.3%, retired 1.4% and volunteer worker 1.3%. Mean household size was 5.02 ranging from 2-13 household members per household. Small family size was three and above family members in a household and large family size classified by four and above household members. The majority of household (67.3%) had large family size and only one-third of household (32.7%) had small family size.

Household income

Households' average monthly income was estimated by combination of individual household members' income by recall method as well as two weeks household diary method. In order to avoid underestimation, both formal and informal income of each and every household member was investigated. Formal income was calculated based on regular income of each household member in a family and informal income included the money getting from lottery, gambling and so on (inheritance as well). However, asking only income of household members in money term, exclusion of non-monetary part of income, and possible existence of recall bias and lack of attention can still underestimate the household income.

The median monthly household income was 1,764,000 kyats. Minimum monthly income was only 60,000 kyats which was net income of laundry without any family members. Maximum income was 144,000,000 kyats which was earned by head of household who own jade shop and other eight household members also worked individually and informal income from inheritance was 140,000,000 kyats. That inheritance money received one time in lump sum at the time of data collection and that amount was excluded in calculation of monthly income level (monthly family formal income was only 4,000,000 kyats).

Most of the households (60.1%) earned ≤2,000,000 kyats per months. (Table 1). Monthly family income was computed based

Table 1. Monthly family income

Monthly family income (kyats)	Frequency	Percent
≤2,000,000	89	60.1
2,000,001-4,000,000	21	14.2
>4,000,000	38	25.7
Total	148	100.0

on summing income of all household members. But the type of occupation is only working status of respondent during study period. The monthly family income was 2,400,000 kyats in family who was self-employed. It was followed by 1,560,000 kyats in family with employed for wages. Non-paid mean voluntary workers who had not monetary income from job but the amount of income (480,000 kyats) was got from other family members. And also the same in unemployed (able or unable to work) were the occupation of respondents.

Health care access

Health care access defined in this study was the presence of well-functioning hospitals, dispensaries, health centers, and other health providers including general practitioners in the area of the respondents. The respondents were assumed that they could go easily to health center when they were ill. They measured the assessment of health care by transportation. Actually, the measurement of health care was assessed by five criteria: accessibility, acceptability, affordability, availability and equity of health care. Nearly 80% of the respondents expressed that they had adequate health care access. Fourteen percent stated that they did not access health care from any health care centers and 9.3% answered they did not know what is the health care assessment and not willing to respond that question.

Debt mechanism

Among total 150 households, only 28 households reported that they had burden for health care cost. Those households were solved their financial problems by their own ways such as borrowing money from money lenders who were not relatives and by selling properties such as gold rings and gold necklaces (See in Fig-1).

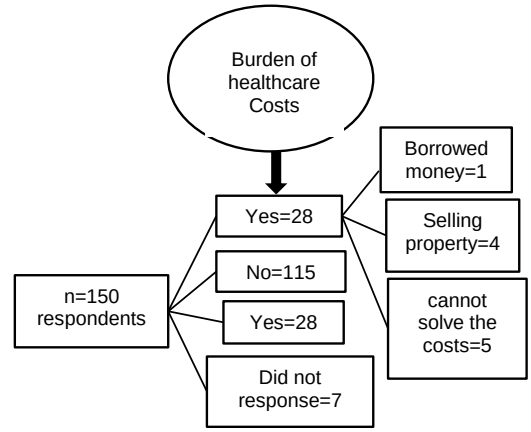

Fig. 1. Mechanisms to solve the financial burdens of healthcare costs

Among borrowers, the median of debt was 55,000 kyats while mean borrowed money was 103,417 kyats with standard deviation (SD) of 116,053 kyats within the range of 2,000 kyats to 500,000 kyats. Mean interest rate (IR) was 12.19 kyats per 100 kyats with SD of 7.29 kyats. The minimum IR was 5% and the maximum IR was 20% (Table 2).

Table 2. Descriptive statistics of debt amount of money (n=28)

Statistics	Kyats
Mean	103416.67
Std. error of mean	23689.333
Median	55000.00
Mode	10000
Std. deviation	116053.555
Variance	13468427536.232
Skewness	2.011
Std. error of skewness	.472
Kurtosis	4.996
Std. srror of kurtosis	.918
Range	498000
Minimum	2000
Maximum	500000
Sum	2482000

Extent of household catastrophic health expenditures

Incidence

Incidence or head count of catastrophic health care payment has been defined as percentage of households spending more than certain threshold of percentage share of OOP to total monthly household income.[6] Eight percent of households spent more than 10% of their income on health care payments. Proportions of household spending for health more than

20% and 30% of total income were 4% and 1.3%, respectively (Table 3).

Table 3. Overall incidence of catastrophic health-care payments

Households	Threshold level		
	10%	20%	30%
Frequency	12	6	2
Sample size	150	150	150
Percent	8.0	4.0	1.3

Intensity

Intensity or catastrophic gap is the average excess of the sample which payment as a proportion of income exceeds the catastrophic threshold.[6] The intensities were 1.6%, 1.1% and 0.8% at the threshold percent of 10, 20 and 30, respectively. On average the households exceeding 10 per cent catastrophic threshold spent 1.6% in excess of 10% of their income. It described that they generally spent 11.6% of their income for health care payment. The same is true for 20% and 30% thresholds where catastrophic households used up 21.1% and 30.8% of their income for health care, respectively. These intensities were calculated for total sample size (150 households).

Mean Positive Gap

Mean Positive Gap (MPG) or Mean Positive Overshoot (MPO) reflects the mean out-of-pocket payments for health care in excess of the threshold over all households exceeding the threshold.[6]

In this study, MPG at 10%, 20% and 30% threshold levels were 20.3%, 27.3% and 61.5%, respectively. It described that households which exceed 10% threshold level actually paid 30.3% of their income for health and those exceed 20% threshold spent 47.3% of their income where households exceeding 30% threshold spent 91.5% of their monthly income for paying health care alone.

Theme analysis from Focus Group Discussion

Theme one: *"The health problems and burdens of health care costs".* All participants experienced one or more health problems in their households. The health problems encountered were surgical cases, infectious diseases, chronic non-communicable diseases such as diabetes, hypertension and cancer. Acute appendicitis cases and some surgical cases informed the costs of operation were not affordable. The non-communicable diseases were the most common illness among the participants. The overall major obstacles were financial hardships, expensive costs of treatments and doctor fees, transportation difficulties, lack of health insurance and social protection mechanisms. Most of the household members were employed with minimal wages. The participants had experiences of accessing health care from both private and public sectors.

"My mother is a diabetic. Last year, she was admitted to Mandalay General Hospital for serious complications of diabetes mellitus for about 2 weeks. Now she is under medical care at home and I'm responsible for taking care of my mother. I'm a government staff so I can't take care of my mother for full time." (a 45-year-old male, government staff, household family income is 850,000 kyats)

"*Healthcare costs definitely create a burden for our family since our income is not enough for paying the costs of healthcare, but we have saving money and used that money to pay for healthcare*" (two-third of participants said like that)

When they were ill, most of them decided to use services from public hospitals because they did not have enough money to seek the health cares from private services. So, they expected to cover the costs of treatment by free medical supplies at the government expenses of health. In case of financial hardships, they borrowed money and solved the problems by themselves or sometimes received some supports from community-based organizations.

"*We can't afford for paying health problems, we have to borrow money for health care cost and the interest rate is at least 10%, not only for health problem, but also for food and others*" (most of the participants)

"If one household member is ill, it is the great problem for entire family in order to get money for paying healthcare. Financial burden depends on the destiny of household because that is due to bad luck and no one can help that matters." (most of the participants)

Theme two: "Opinions and recommendations to reduce the burden of healthcare costs". Obviously, the only way to solve these burdens was to provide some health insurance schemes on the long way to get universal health coverage. The ever-growing medical demands of the Myanmar nations, the lack in medical insurance policy, and the wrong concepts of free medical services made the present situation of health care utilization in Myanmar worrying. The policy makers might aware this upcoming health problems and should invest more money in health sector. To meet these challenges, the government had actively adjusted its development strategies and had been building up a medical service and healthcare system suitable for health system strengthening.

"*I think government should subsidize healthcare cost for patients*" (a 38-year old male) and "*What is health insurance? We had never heard of it and so, I don't know how to suggest*" (one-third of participant complained)

All participants strongly suggested that increasing salary for government staff and microloan programs may solve the high out-of-pocket expenditures for healthcare. Regarding pre-paid mechanism (premium) for health insurance, all of them had never heard of it. After some explanations, they agreed that affordable pre-payment system was much better than catastrophic post-payments. However, limited knowledge on health insurance system was noticeable arose to give opinions.

DISCUSSION

Approximately 30 percent of the households did not report expenditures for health. But the other households those participated in this study had health expenditure in last month that was entirely out-of-pocket payments. All these expenditures referred to costs of treatment for one or more of their household members. It included costs of hospitalization, surgical operations, consu-ltations, drug and transportation. Some households had been reportedly suffered disease-specific morbidity and mortality in one of their family members but they could not treat it and out-of-pocket health care expenditure was nil. But it was not clear that whether they could not afford to pay for health care.

They did not find out the way of solution for health problem because they think it was their bad fortune and also they had lack of knowledge on social protection mechanisms. The initial assumption in this study revealed that the incidence of catastrophic health care payments in Myanmar could be more than other South East Asia countries because of no health insurance system. When compared to SEA countries in 10% threshold level, the incidences at 10% threshold level were more than that of Sri Lanka (2.98%), Thailand (3.52%) and Hong Kong Special Administrative Region (SAR) (5.86%) but less than those of India (10.84%), Vietnam (15.11%) and Bangladesh (15.57%).[7]

One of the main reasons for decreased reduction rate of incidence from lower to higher threshold level was the presence of outliers. Outlier households exceeded all catastrophic threshold levels. Moreover, significant proportion of outliers involved in every defined catastrophic threshold level. The 30% threshold level was set to be the highest threshold level for the incidence of catas-trophic health care payment in this study. According to household income and expen-diture survey conducted by the Central Statistical Organization (CSO) in 2001, 71.91% of household expenditure was for food and beverages and only 28.09% was for non-food.[8] So, households those exceeded 30% catastrophic threshold level generally mean that they could not save their income and all of their income were used up for health care and food only.

Some households in this study, although one of their family members was suffering severe disease, they could not treat him or her. Actually, this condition was worse than households with catastrophic health care payments because they had no capacity to pay for health care. In addition, health care access was one of the factors that can determine the incidence of catastrophic health care payment. Households without adequate and proper health care access might not pay for health care although they can afford and have willingness and ability to pay for health care.

The presence of these outliers might be due to underestimation of household family income. Estimation of household family income in this study had some limitations. Asking only income of household members in money term, exclusion of non-monetary part of income, and possible existence of recall bias could underestimate the household income. Since income was the denominator for calculation of household out-of-pocket share for health care, under-estimation of income might develop outliers. In addition, out-of-pocket health care payment within one year (numerator for OOP share for health care) could also be erroneous because of recall bias. Another possibility was that if a household can afford for health care as much as 20 times of their income, apart from dissolving their properties and borrowing, they might have other source of unreported earnings.

Conclusion

By using the data from survey on household health care cost, health care access, knowledge and opinion of community on health insurance was very limited in this study area of Mandalay city. The alternative way to solve the financial burdens of health care costs by social protection mechanisms, pre-paid payments by health insurances system were strongly recommended. However, the knowledge and opinions on health insurance among participants were lack of information related with social protection mechanisms for handling the financial risks of health care and they strongly considered that out-of-pocket payments was an only one mechanism for health care expenditures.

Competing interests

The authors declare that they have no competing interests.

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