

# Borrowing And Selling To Pay For Health Care In Low- And Middle-Income Countries

One in four households in forty developing countries resort to “hardship financing” to pay for health care.

by **Margaret E. Kruk, Emily Goldmann, and Sandro Galea**

**ABSTRACT:** Many families around the world make sizable out-of-pocket payments for health care. We calculated the frequency of borrowing money or selling assets to buy health services in forty low- and middle-income countries and estimated how various factors are associated with these coping strategies. The data represented a combined population of 3.66 billion, or 58 percent of the world’s population. On average, 25.9 percent of households borrowed money or sold items to pay for health care. The risk was higher among the poorest households and in countries with less health insurance. Health systems in developing countries are failing to protect families from the financial risks of seeking health care. [*Health Affairs* 28, no. 4 (2009): 1056–1066; 10.1377/hlthaff.28.4.1056]

**F**INANCIAL PROTECTION FROM THE COSTS of illness is a major function of health care systems.<sup>1</sup> This is most often accomplished by pooling risk through public or private insurance. Households’ direct out-of-pocket payments for health care, on the other hand, do not bring the benefits of pooling. User fees for health care have been found to reduce use of essential health care services in low- and middle-income countries.<sup>2</sup> This is of concern because out-of-pocket payments account for 70 percent of health financing in low-income countries, compared to 14.9 percent in high-income countries—consistent with the low availability of prepayment (that is, tax-based social health insurance or voluntary insurance) in low-income countries.<sup>3</sup>

■ **Willingness versus ability to pay.** Payments for health care can also adversely affect households’ economies. Health economists have traditionally taken the view that any payments made for health services are affordable, because purchasers are best able to judge how to allocate their own resources. Others have found that such payments can cause economic hardship.<sup>4</sup> *Willingness* to pay might not be synonymous

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with *ability* to pay when such payment disrupts households' usual consumption patterns or depletes their assets, putting them at risk of poverty.<sup>5</sup>

■ **Measures of economic hardship.** A frequently used measure of economic hardship associated with health payments is “catastrophic” medical spending—defined as spending over some threshold of household consumption (for example, say, 40 percent). One estimate suggests that 150 million households worldwide devote more than 40 percent of their nonfood spending to health care.<sup>6</sup> Because catastrophic spending thresholds lack an empirical basis, some analysts prefer to examine health spending that drives families below the poverty level.<sup>7</sup> However, both measures generally omit indirect health care costs (for example, transportation, loss of work), which can be a substantial proportion of health spending.<sup>8</sup> More importantly, because many analysts do not consider the source of the funds, they fail to distinguish between families for whom such expenses were more or less affordable.<sup>9</sup>

An alternative approach is to assess sources of household financing for health care purchases. Households can pay for care from their current budgets or savings, or by borrowing money or selling assets. Although paying from the current budget is preferred if there is a sufficient cash surplus, medical bills are unpredictable and difficult to factor into regular household spending. For example, in a study in Indonesia, where few households had health insurance, Paul Gertler and Jon Gruber found that serious illness reduced household consumption by 38 percent, which suggests that those households were not able to fully insure themselves through informal means.<sup>10</sup>

■ **Long-term implications of borrowing.** Although savings can reduce the economic shock of medical bills, savings rates are low in developing countries.<sup>11</sup> As a result, households often resort to borrowing money from family, friends, or moneylenders or to selling their assets.<sup>12</sup>

In some cases, these coping strategies may represent a reasonable trade-off over time (that is, investing today for improved health and earning potential in the future). However, they can increase the economic vulnerability of families in the long term, particularly for large medical expenses.<sup>13</sup> For example, loans from moneylenders in developing countries often carry usurious interest rates.<sup>14</sup> In a panel study in China, Adam Wagstaff and colleagues found that many households were still carrying accrued medical debt when they took on new debt.<sup>15</sup>

■ **Why an analysis of hardship financing?** Analyzing the extent of borrowing and selling to pay for health care, which we call “hardship financing,” can address some of the limitations of catastrophic spending measures. First, it can distinguish between high but ultimately affordable payments (such as those by a wealthy family buying cosmetic surgery out of discretionary income) and proportionally lower but less affordable spending (such as that by a poor family paying for treatment of a bone fracture through selling livestock). It can also capture indirect health spending (for example, a loan may offset income loss or travel costs) and may be more easily recalled than exact amounts spent on health care. However, much of the available data

to date on borrowing or selling to pay for health care have come from relatively small surveys, making inference difficult.<sup>16</sup>

In this study we analyzed cross-national data from the first set of comparable national surveys in this area to calculate the extent of hardship financing to afford health care in low- and middle-income countries. We also estimated the association between household- and national-level health, income, and policy factors and the probability that households will incur hardship financing. Lastly, we disaggregated the data on hardship financing to examine how such financing is distributed between rich and poor people.

## Study Data And Methods

■ **Survey design and administration.** The World Health Survey (WHS) is a set of nationally representative, standardized household surveys designed to assess health status, health care financing, health care use, and levels of satisfaction with countries' health systems. It was implemented in seventy countries between 2002 and 2004.<sup>17</sup> Households were sampled based on a stratified multistage cluster design; some of the smaller countries used a single-stage random sample. One adult was selected per household at random using the Kish table method.<sup>18</sup> The surveys were administered in person. Ethics clearance was obtained from ethics review committees at each site. Standard informed consent was obtained from all respondents.

The criteria for selection of countries for this analysis were availability of appropriate household weights to approximate the national population, availability of information on household financing, and availability of all country-level data used as predictors in regression analysis. For comparability, we included only those countries classified by the World Bank as low- or middle-income.<sup>19</sup>

■ **Study variables.** The WHS included a module on household spending for health and other goods and services. The question used for the dependent variable in the analysis was: "In the last 12 months, which of the following financial sources did your household use to pay for any health expenditures?" The possible responses were current income of any household members, savings, payment or reimbursement from a health insurance plan, sold items (for example, furniture, animals, jewelry, furniture), borrowed from family or friends, or borrowed from someone else. A household was classified as having hardship financing if it reported borrowing from a family or friend or from outside the household, or selling of household items to pay for health care.

The independent variables were (1) household size; (2) total household spending in the past four weeks (in thousands of purchasing power parities, or PPPs); (3) total household spending on health in the past four weeks (in thousands of PPPs); (4) self-rated health of the household member randomly chosen for the interview; (5) household wealth quintile (described below); (6) national out-of-pocket spending—that is, the proportion of national financing of health care that

households paid directly to health care providers and suppliers of drugs and other therapies, including copayments and deductibles (the inverse of prepayment for health care through government and private health insurance); (7) gross national income (GNI) per capita in PPPs; (8) adult female literacy rate; and (9) region dummy variables that indicate the region in which a household is located, based on World Health Organization (WHO) classification.<sup>20</sup>

Data on household size, total household spending, household health spending, and self-rated health and information for constructing household income quintiles were available in the WHS. GNI per capita and adult female literacy were taken from the World Development Indicators database, and information on out-of-pocket financing was obtained from the WHO.<sup>21</sup> Data for the independent variables were matched to the year the survey was conducted where possible. Where this was not possible, the closest available figure within three years of the survey was used.

■ **Statistical analysis.** The mean frequencies and confidence intervals for borrowing and selling were calculated for each country. Means were calculated for geographic regions, following the WHO regional classification. Logistic multivariable regression models were then used to evaluate the association between household hardship financing and household- and national-level variables described above. The country-level independent variables were log-transformed to normalize their distributions.

To estimate the distribution of hardship financing among wealth groups, principal component analysis was used to calculate an asset index for each household, using responses about possession of household assets (eleven to twenty items such as radios, bicycles, and so forth). Households in each country were ranked by asset index and divided into quintiles (the poorest group was designated as quintile 1 and the richest group as quintile 5). All analyses were conducted using Taylor Series linearization with SAS-Callable SUDAAN software to account for clustering and weighting.

## Study Findings

Of the seventy WHS countries, seventeen were excluded because they did not administer the health care financing module. Two countries were dropped because they lacked sampling weights. Of the remaining fifty-one countries, Ukraine was eliminated because 95 percent of its households were missing variables necessary for analysis, and five other countries were excluded because one or more country-level variables such as female literacy rates or PPP conversion rates to international dollars for income comparisons were not available. Lastly, five high-income countries (Australia, Czech Republic, Estonia, Spain, and United Arab Emirates) were excluded. This left a final sample of forty countries, containing data from 131,120 households. The sample countries had a total 2003 population of 3.66 billion—approximately 58 percent of the world's population.<sup>22</sup> Eighteen

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countries were classified by the World Bank as low-income, twelve as lower-middle-income, and ten as upper-middle-income.<sup>23</sup> The overall response rate was 87.6 percent.<sup>24</sup>

The overall mean prevalence levels of borrowing and selling in the sample countries were 21.9 percent (range 4.7–42.4 percent) and 9.9 percent (range 0.2–56.0 percent), respectively.<sup>25</sup> The difference between average prevalence of borrowing and selling across the entire sample was significant ( $p < 0.01$ ). However, in African countries the mean prevalence of selling was similar to that of borrowing (21.4 percent borrowing versus 18.3 percent selling,  $p = 0.42$ ). The mean prevalence of any hardship financing in the full sample was 25.9 percent (range 5.4–68.7 percent).

■ **Households most likely to use hardship financing.** In the pooled analysis, containing 131,120 households, larger households, those that spend more on health care, those in the poorest 40 percent, and those reporting poor self-rated health were significantly more likely than the others to resort to hardship financing (Exhibit 1). Additionally, hardship financing rose with a higher percentage of national out-of-pocket health spending and higher per capita GNI and fell with higher female literacy rates.

The poorest wealth quintile had a higher prevalence of hardship financing than the richest quintile, especially in upper-middle-income countries (Exhibit 2).<sup>26</sup>

## Discussion

We found that one in four families across forty developing countries resorted to borrowing or selling assets, or both, to afford health care, which suggests that current health care financing strategies in low- and middle-income countries fail to protect many households from potential economic hardship. National studies confirm high rates of borrowing and selling to cope with financial shocks due to medical bills in the developing world.<sup>27</sup>

■ **High out-of-pocket spending and health status.** At the household level, as expected, high out-of-pocket health expenses and self-reported poor health were strongly associated with hardship financing. These associations are consistent with findings from national studies of risk factors for health-related financial catastrophe.<sup>28</sup>

■ **Out-of-pocket health spending and wealth disparities.** We also found that household poverty was associated with a substantial increase in the probability of hardship financing. The literature is mixed on the extent and direction of wealth disparities in out-of-pocket health care spending. Several national studies support our observation that poorer households face a larger economic burden from health

**EXHIBIT 1**  
**Results From Multivariate Analysis Of Predictors Of Hardship Financing In Forty Countries**

Independent variable	Coefficient	p value
Household level		
Household size	0.03	<0.01
All household spending (1,000 PPPs)	-0.09	0.26
Out-of-pocket household health spending (1,000 PPPs)	1.11	<0.01
Household income		
Richest quintiles	Ref	
Poorest quintiles	0.44	<0.01
Self-rated health		
Good	Ref	
Poor	0.48	<0.01
Country level		
Out-of-pocket health spending (percent of total)	0.53	<0.01
Female literacy (percent)	-0.37	<0.01
GNI per capita (PPPs)	0.24	<0.01
Region dummy variables		
Europe	Ref	
Africa	0.87	<0.01
Eastern Mediterranean	0.45	0.02
The Americas	-0.19	0.08
Southeast Asia	0.61	<0.01
Western Pacific	0.31	0.01

**SOURCES:** All household-level data come from the World Health Surveys, various years. Gross national income (GNI) per capita was taken from the World Development Indicators database; data on out-of-pocket financing were obtained from the World Health Organization (WHO). Adult female literacy rates were obtained from the World Development Indicators database and the 2007/2008 Human Development Report of the United Nations Educational, Scientific, and Cultural Organization (UNESCO).

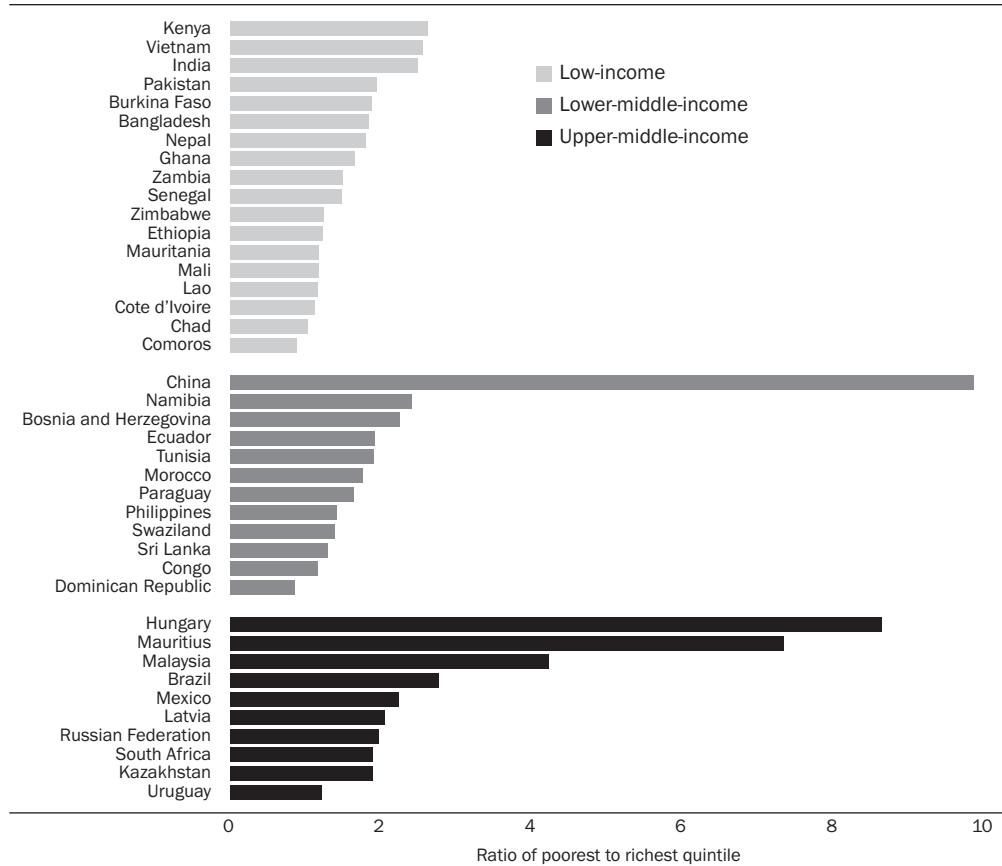
**NOTES:** Countries = 40; households = 131,120. "Poor" self-rated health includes responses "moderate," "bad," and "very bad"; "good" self-rated health includes responses "good" and "very good." The richest income group represents the top 60 percent (quintiles 3, 4, and 5); the poorest group represents the bottom 40 percent (quintiles 1 and 2). PPP is purchasing power parity.

payments than wealthier households.<sup>29</sup> For example, David Peters and colleagues found that although poor households in India were half as likely as wealthier households to have a hospitalized member, they were more likely than wealthier households to borrow and sell assets to pay for their hospital costs.<sup>30</sup> However, Eddy van Doorslaer and colleagues found that in twelve of fourteen Asian countries, the better-off spent a larger fraction of their household budgets on health care than the poor did.<sup>31</sup> These findings might not be contradictory, because budget surpluses allow the rich to keep nonhealth spending relatively stable during a health-related financial shock without resorting to borrowing or selling.<sup>32</sup>

■ **Hardship financing and national health care financing.** At the country level, a higher proportion of out-of-pocket financing for health (rather than government or private insurance) and higher GNI per capita were associated with greater hardship financing. Other research has documented that limited availability of pre-



**EXHIBIT 2**  
**Hardship Financing For Health Care: Ratio Of Poorest To Richest Quintile, In Forty Countries, Grouped By Country Income Level**



**SOURCE:** Authors' analysis of data from the World Health Surveys, various years.

**NOTES:** The ratio of hardship financing of poorest to richest quintile compares the past-year prevalence of hardship spending (borrowing money or selling items to pay for health care) among families in the poorest quintile to that of families in the richest quintile. The possession of household assets was used to derive a measure of household wealth.

payment was associated with more catastrophic health spending.<sup>33</sup> Countries with higher incomes also have more health workers, hospital beds, and medicines and thus provide more health services than is the case in lower-income countries. On the other hand, people living in countries with higher female literacy had lower risk of borrowing or selling, independent of health financing or country wealth, than people in countries with lower female literacy. Literate women have better knowledge of disease prevention and may use the health system earlier in the course of an illness, which may reduce both the risk of serious illness and large, unpredictable medical expenses.<sup>34</sup> Female education also promotes higher household savings.<sup>35</sup>

■ **Geographic differences in hardship financing.** Living in Africa or Southeast Asia as compared to living in Europe was associated with greater rates of borrowing or selling to pay for health care. Nearly one-third of households in Africa and South-

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east Asia reported hardship financing. Given that many countries in those regions are expanding coverage of health services to meet the health Millennium Development Goals, these rates may rise if there is no concomitant reform in health care financing.

■ **Selling versus borrowing.** In terms of specific sources of hardship financing, selling items was less common than borrowing in most countries, except for several in Africa. This may be attributable to the relative availability of formal or informal credit markets, perhaps combined with an aversion to depleting existing assets.<sup>36</sup> African households may face greater constraints on accessing credit because of limited financial resources in social networks, low availability of formal credit, or the lack of household assets to offer as collateral.<sup>37</sup>

■ **Disparities between the rich and the poor in hardship financing.** We found that the poor had higher levels of hardship financing than the rich in the majority of countries. However, the poor-to-rich ratios were generally lower in low-income countries and higher in upper-middle-income countries. This may be attributable to greater supply of health services in richer countries that encourage demand, combined with the higher availability of credit or household assets for sale that permit borrowing and selling even for the poor. The highest wealth disparity in hardship financing was in China, where the poorest households had nearly ten times the prevalence of borrowing or selling items to pay for health care compared to the richest households. This is consistent with documented systematic poor-rich inequalities in access to health insurance in China.<sup>38</sup>

■ **Study limitations.** This study had several important limitations. Neither borrowing nor selling was quantified in the WHS; thus, some borrowing or selling might have involved relatively small amounts of money, while other such transactions might have come at more substantial cost. If the amounts borrowed were trivial or items sold of low value, the economic impact on families would be limited. These cross-sectional data did not permit us to assess whether some of the loans or asset sales reported here may result in higher future earnings (through better health and productivity) for the households and thus do not represent an economic loss over time. However, as noted earlier, longitudinal research suggests that borrowing and selling often result in substantial economic hardship even years later. Finally, as with all analyses of health spending, our analysis excludes people who did not obtain health care because they could not afford it. These households suffer from a double burden: ill health and economic hardship due to loss of income resulting from untreated illness.<sup>39</sup>

■ **Policy fixes.** This study, along with previous research, found that prepayment mechanisms that reduce (or, for the poor, eliminate) charges at the point of care can



mitigate the economic risk that out-of-pocket payments pose for families.<sup>40</sup> Tax-based health financing and social insurance—two of the most common financing models used in industrialized countries—are increasingly being introduced in the developing world. For example, Mexico's health care reform program Seguro Popular, which, among other initiatives, expanded tax-based financing for medications, ambulatory care, and high-cost essential services and reduced catastrophic and impoverishing health spending while increasing the use of a range of health services and improving the equity of public health financing.<sup>41</sup> Ghana recently introduced national health insurance, financed through a mix of individual premiums, payroll taxes, and savings from debt relief; early indications suggest gains in health service coverage and financial protection.<sup>42</sup> Financing reforms that increase the share of prepayment in national health financing should be implemented alongside increased spending on health services, to avoid increasing the economic burden of care seeking on families, particularly the poorest in developing countries. Such financing reform can promote both health and the reduction of poverty.

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