

論文の内容の要旨

論文題目 Determinants of Out-of-pocket Health Expenditure in China:
Analysis Using China Health and Nutrition Survey Data

和訳 中国における医療費個人支出の決定要因：
China Health and Nutrition Survey のデータ分析

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Introduction

Out-of-pocket health expenditure has become the primary source of health financing in China. The average out-of-pocket payment by an individual to get health care was 369 Renminbi (7 Renminbi = US\$ 1) in 2006, in real terms, it increased more than 34 times what it was in 1978. During the same period, the share of out-of-pocket health expenditure within the total health expenditure increased from 20 percent to 49 percent with a peak at 60 percent in 2001, leading China to be one of the countries with the highest out-of-pocket payment share in Asia. For households, medical issue has become a larger concern than any other issue in China.

The role of individual finances in the funding of health care underscores the importance of understanding the determinants of individuals' decisions on whether to utilize health care and, to some extent, how much to pay for health care in China. Furthermore, these estimates are useful to provide important contextual and baseline information for planning the health care and health financing reforms, and for measuring the impacts of implemented and proposed policy changes on financial access to health care, the efficiency of resource allocations, and the equity of paying for health care.

However, the process of determining the amount of health expenditure has not been well examined in China. Existing studies have just presented the trend of out-of-pocket health expenditure, or focused primarily on the impacts of health insurance scheme or health project on individual's out-of-pocket spending. To fill this gap, we conducted this study. The objectives of this study are to present a detailed analysis of the determinants of

out-of-pocket health expenditure, and to improve the understanding of the contributing factors to out-of-pocket health expenditure in China.

Methods

Data is derived from a dataset from the 2004 China Health and Nutrition Survey, an ongoing international collaborative project between the University of North Carolina and the Chinese Center for Disease Control and Prevention, which covers 4,400 households from nine provinces in China. A sub-sample of adults aged eighteen or older was included in this study. We define out-of-pocket health expenditure as the expenditures paid by the individuals themselves when they obtained all kinds of health care services, including the payments for consultations, examinations, medicines, and additional payments related to the treatment, and are net of all kinds of health insurance premium and any reimbursement that the individuals have received or expect to receive from their health insurance programs.

We used Andersen's Behavioral Model to select explanatory variables. Out-of-pocket health expenditure is treated as a function of predisposing, enabling, and need factors. Based on the survey data, age, sex, ethnicity, and household head characteristics are classified as predisposing factors; rural-urban status, geographic region, education, per capita household income, and health insurance status are classified as enabling factors; and perceived severity of illness, self-reported health status, presence of physician-diagnosed chronic diseases, and overweight are classified as need factors.

The analysis of individuals' health expenditure decisions, which is based on a sample that excludes individuals who did not report payment for health care, is problematic. Traditional Ordinary Least Square regression models are inadequate. Individuals in developing countries generally do not seek health care unless they perceive themselves as ill or injured. If there are unobserved factors that are correlated with perception of illness and the amount they spent on health care, the coefficients in the expenditure equation will be biased. In this paper, we use a full maximum likelihood procedure of Heckman selection model to control for potential sample selection bias.

We trimmed outliers, the top one percent of cases, in the out-of-pocket health expenditure distribution. The natural log of out-of-pocket health expenditure was used to reduce the effects of the skewed nature of the health expenditure variable. For per capita household income, zeros and negative values were replaced by 1 so that they could stay in the dataset after log transformation. SAS 9.1 was used to clear the original dataset, and STATA 10.0 was used to conduct the econometric analysis.

Results

A total of 9,860 individuals are included in the analysis. The mean age of the sampled population is 47.6 years (SD 15.5). Overall, 24.6 percent of them reported to have experienced an illness or injury within the four weeks prior to the survey. The most common symptoms reported are fever, sore throat or cough (35.4 percent), joint or muscle pain (26.5 percent), headache or dizziness (24.3 percent), and diarrhea or stomachache (15.5 percent).

Among those who reported illness, 80.7 percent utilized health care. Self-medication and going direct to

hospitals (bypassing primary care providers) are found to be very extensive among the sampled individuals who sought care. 36.1 percent of the individuals chose self-medication firstly, and 23.5 percent reported going straight to a county or higher level hospital as the most commonly reported source of health care. Among those who sought care, 82.3 percent reported the amount of direct payment for health care. The median out-of-pocket health expenditure is 55 Renminbi.

In the base model, self-reported health status and perceived severity of illness are the most important factors for the amount of out-of-pocket health expenditure, with the coefficients of 3.345 ($P<0.01$) and 2.024 ($P<0.01$) for poor health status and quite serious illness, respectively. People spend more as they grow older, especially as they exceed age 65, with the coefficient of 1.172 ($P<0.01$). People who are overweight, have chronic disease, reside in urban area, live in middle or eastern region, live in a household with a head having middle school or higher education pay more for health care. Individuals belonging to minority groups spend less. Sex and education are not significant.

Income elasticity is positive at 0.18. The aggregate income effect shows that people with higher income spend significantly more on health care than those with lower income. However, in the model with disaggregated income effects, only those in the highest income quintile spend significantly more than those in the lowest income quintile. No significant differences are found among those in the lower four income quintiles.

Health insurance significantly increases individual's out-of-pocket health spending. This effect does not differ among people with different income levels since the interaction term between insurance and income is insignificant. The disaggregated insurance effects show that the coefficients of insurance programs are positive, except for commercial insurance, and significant for labor insurance, with the coefficient of 0.616 ($P<0.05$).

Discussion

Our results are consistent with the common perception that the important contributors to the decision concerning how much to pay for health care depend on the severity of the illness and self-reported health status. Several studies have identified self-reported health status as an important predictor of the health expenditure. In addition, individuals aged 65 and over and individuals with chronic diseases reported significantly higher out-of-pocket health expenditures. Meeting the long term health care needs of the growing elderly population and growing chronic disease patients poses special challenges to the current Chinese health care system.

The estimated income elasticity of 0.18 is comparable with the estimates using data prior to 1960 in developed countries, when health insurance was less prevalent and most payment was made out-of-pocket. Our estimate of income elasticity is higher than the estimates from the studies using recent data in developed countries where health care is heavily subsidized; and is smaller than the estimates from the studies carried out in some developing countries where the population almost uncovered by health insurance. It is reasonable because the importance of the ability to pay to determine health expenditure depends on how much the individual's budget constraint is removed by health insurances and other subsidy policies.

Our result that income is positively related to out-of-pocket health expenditure is consistent with the studies on other developing countries in Asia. This finding seems to be fair considering the vertical equity in health care financing. However, the interpretation should be cautious. On one hand, the disaggregated model suggests that

except for the richest, the poor are spending out-of-pocket as much on health care as everyone else. On the other hand, in the absence of effective risk-pooling mechanisms as the situation in China, the poor are highly possible to impede the utilization of needed health care. If so, the health payments being in accordance with the ability to pay cannot be interpreted as “equity”. Unfortunately, our data does not allow us to identify this phenomenon.

Urban residents pay more for health care than rural residents even after controlling for the effects of health need variables and income. The possible explanation is that urban residents are more convenient to access to the high-cost health providers which are usually in urban area. It is also possible that rural and urban residents may have different health care utilization preferences. Urban residents may be more likely to pay for the expensive services which may be unnecessary for them, while rural residents may tend to decline the expensive services and to choose cheap alternatives.

People living in the eastern and middle regions pay more than those living in the west. The possible explanation is that region variable acts as an indicator of regional variation in the prices of providing health care because mainly local governments decide the physicians’ salaries and the price of health care services in China. It is also possible that most of the health care subsidy from the central government has gone to the western region, so it is likely that the health expenditures of the individuals who accessed and received services in the west could be effectively subsidized.

Contrary to the expectation that health insurance would provide financial relief, the coefficient of health insurance is significantly positive. This finding that health insurance raises rather than reduces out-of-pocket health spending is consistent with a recent study in China. The possible explanation is that those with higher risk are more likely to enroll into an insurance program than those with lower risk (adverse selection). It is also possible that insured people may have less price consciousness when it comes to medical expenses and a greater willingness to incur those expenses than would a person who is responsible for the entire medical bill (moral hazard).

Conclusion

Our results make clear that need, predisposing and enabling factors work together to determine the amount of out-of-pocket health expenditure. It may cause bias to parameter estimates if not controlling for the health need variables. The estimated income elasticity of 0.18 indicates that health care behaves as a “necessity” in China. Appropriate medical relief policies focusing on the individuals with high financial burden need to be considered. In addition, it is necessary for analysts and decision-makers to continuously monitor and rigorously evaluate the impacts of ongoing health insurance reforms in China.