VALUE IN HEALTH 15 (2012) 593–603

Available online at www.sciencedirect.com

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journal homepage: www.elsevier.com/locate/jval

ORIGINAL RESEARCH
Economic Evaluation

Heterogeneous Effects of Health Insurance on Out-of-Pocket Expenditure on Medicines in Mexico

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ABSTRACT

Objective: Given the importance of health insurance for financing medicines and recent policy changes designed to reduce health-related out-of-pocket expenditure (OOPE) in Mexico, our study examined and analyzed the effect of health insurance on the probability and amount of OOPE for medicines and the proportion spent from household available expenditure (AE) funds. **Methods:** We conducted a cross-sectional analysis by using the Mexican National Household Survey of Income and Expenditures for 2008. Households were grouped according to household medical insurance type (Social Security, Seguro Popular, mixed, or no affiliation). OOPE for medicines and health costs, and the probability of occurrence, were estimated with linear regression models; subsequently, the proportion of health expenditures from AE was calculated. The Heckman selection procedure was used to correct for self-selection of health expenditure; a propensity score matching procedure and an alternative procedure using instrumental variables were used to correct for heterogeneity between households with and without Seguro Popular. **Results:** OOPE in medicines account for 66% of the total health expenditures and 5% of the AE. Households with health insurance had a lower probability of OOPE for medicines than their comparison groups. There was heterogeneity in the health insurance effect on the proportion of OOPE for medicines out of the AE, with a reduction of 1.7% for households with Social Security, 1.4% for mixed affiliation, but no difference between Seguro Popular and matched households without insurance. **Conclusion:** Medicines were the most prevalent component of health expenditures in Mexico. We recommend improving access to health services and strengthening access to medicines to reduce high OOPE.

Keywords: health insurance, medicines, Mexico, out-of-pocket expenditure, Seguro Popular.

Introduction

Medicines are essential for treating many diseases and for preventing health complications, disability, and mortality. Many low- and middle-income countries, however, struggle to achieve equitable, timely, and sustainable access to essential medicines. In low- and middle-income countries, health-related out-of-pocket expenditure (OOPE) for medicines represent between 26% and 63% of total OOPE [1]. Although the variation in the values for OOPE reported in the literature might be due to study design, the literature shows in general that medicines represent one of the most significant components of health OOPE. In 2003, Brazilian households spent 41% of health expenditures on medicines [2]; in India, 75% of household health OOPE were spent on medicines [3]; in Bangladesh, the figure was 70% [4]; in Burkina Faso, OOPE rose to more than 80% [5]; and in Vietnam, the total was 88% [6]. The largest inequities were reported for income groups in which the most disadvantaged in terms of income spend proportionally more on medicines [1,7].

In 2006, Mexico had the highest OOPE for pharmaceuticals (88%) among all Organisation for Economic Co-operation and Development (OECD) countries [8]. What are the reasons for such a high percentage of out-of-pocket expenditure? Plausible causes are 1) insufficient insurance coverage, which means that a considerable part of the population still lacks insurance; 2) insurance plans that only partly cover medicines; 3) insufficient availability of medicines at the point of care due to unreliable supply systems; and 4) personal preferences to use fee-for-service providers instead of services provided by public health organizations or prepaid insurance plans. Previous studies of health expenditures in Mexico have focused on catastrophic household expenditure on health and its components [9–11]; all these studies concluded that medicines are the first or second most important component, together with ambulatory care, of catastrophic health care expenditure. Knaul et al. [11] found that medicines are the most significant component of health expenditure for low-income households, amounting to approximately 50% of catastrophic health expenditure for households in the first quintile, whereas for the richest quintile they make up less than 20%.

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doi:10.1016/j.jval.2012.01.006

Policies to reduce out-of-pocket expenditure

The 2001-2006 and 2007-2012 Mexican governments have implemented a series of policies that aim to reduce OOPE on health and medicines in particular. The principal policy to address access to health care and reduce household expenditure on health has been the creation of Seguro Popular (SP), which provides a basic package of around 250 health interventions including the provision of about 300 medicines free of charge at the point of care [12,13]. Other relevant policy changes have aimed to improve the availability of medicines at Ministry of Health facilities. For many decades these facilities have suffered from frequent medicines stock-outs because of a mix of underfunding, logistical failures, and lack of skilled personnel [14,15]. A presidential initiative was launched in 2003 to improve the logistics in distribution systems in each of the 31 federal states and the capital district [16]. In 2007, the newly incoming government signed agreements with the pharmaceutical industry and the Social Security institutions to ensure fair public procurement prices and functioning distribution systems [17]. The government organized several high-level meetings among all public health sector providers to kick-start an initiative to provide a comprehensive package of interventions to improve the availability of medicines in public institutions, including the establishment of an emergency plan in case of shortages of medicines, exchange of experiences with other institutions within and outside Mexico, and regular evaluations [17,18].

Given the importance of health insurance for financing medicines and the recent policy changes to promote the reduction of OOPE, the aim of our study was to analyze the causal effect of health insurance on the probability of incurring OOPE for medicines and the proportion of household available expenditure (AE) required.

Health insurance in Mexico

The Mexican health system is divided according to employment in the formal sector and informal or agricultural sectors [19]. Formal sector employees are enrolled (by mandate) in Social Security; the most important is the Mexican Institute of Social Security (Instituto Mexicano del Seguro Social), which provides services to private sector workers. In 2010, the Mexican Institute of Social Security enrollments represented 48.8% of the total population of 112 million. This was followed by the Social Security Institute for Government Employees, which provides health services to federal government and state employees, covering 10% of the population [20]. Social insurance (including the Mexican Institute of Social Security and Social Security Institute for Government Employees) provides a broad package of prepaid interventions, services, and medicines included in the institutional formulary; medicines prescribed by physicians working for the Social Security are dispensed at the point of care free of charge to the user. The System of Social Protection System in Health, or SP, a voluntary system of public insurance for the poor without access to Social Security, was implemented in 2004; in 2010, just over 43 million people were enrolled, 92% of whom were located in the first two income deciles [21]. Finally, in 2010, only 3% of the population had prepaid private health insurance; most of those were already covered by one of the Social Security plans. People older than 65 years do not automatically become covered by Social Security. Enrollment into Social Security depends on the employment (or former employment in case of pensioners).

Although in 2011 virtually all of the Mexican population was covered by some type of public insurance, it is relevant to note that the package of services and medicines provided as well as the quality varies significantly among different insurance types. An important issue is the availability of medicines included in the formularies of each insurance type and which should be provided without charge: between 78% and 89% of Social Security users receive their prescriptions free of charge, whereas in SP only 60% of users receive free prescriptions [22].

Methods

Data and sampling

By using the National Household Survey of Income and Expenditures (NHIES) 2008, we conducted a cross-sectional observational and causal analysis. The NHIES is the largest survey on income and expenditure in Mexico and represents the national level as well as rural and urban strata [23]. It includes detailed information on all types of income and expenditures for households in addition to individual socioeconomic and demographic characteristics for all household members. For the present study, the household was the unit of observation. In total, the database included 29,468 observations, out of which 28,260 were eligible for analysis (households with missing, incorrect, or incomplete information were not included).

Out of 28,260 households included in our analysis, 23.6% of households reported having no health insurance, 31.1% of households had Social Security, 34.0% had mixed affiliations, and 11.3% had SP (Table 1). Although there were only small differences with regard to mean age and proportion of females versus males among households according to insurance status, there were marked differences in socioeconomic characteristics and local development conditions: 71% of the heads of households with Social Security had a secondary or higher level education, only 4% reported no schooling, and 5% spoke an indigenous language. In contrast, only 32% of the heads of households with SP reported a secondary or higher level education, 15% received no schooling, and 18% spoke an indigenous language. Households with Social Security were characterized by the highest percentage of members older than 60 years (18%), while those with SP had the highest percentage of children younger than 5 years (12%). Although only around 18% of households with Social Security belonged to the socioeconomic status 1 and 2, 74% of households with SP belonged to these socioeconomic status groups. Around 31% of SP households were also beneficiaries of Progresa/Oportunidades and 68% were living in rural and 34% in highly deprived areas (vs. 17% and 4% with Social Security, respectively).

Exposure variables

Households were stratified according to the four types of members' medical insurance: 1) Social Security, 2) SP, 3) mixed affiliation (household members have either different insurance types or only some members of the household were insured), and 4) no insurance affiliation.

Outcome variables

We identified three outcome variables: the probability of OOPE for medicines, total OOPE on medicines, and the proportion of total medicines OOPE out of AE. All expenditures in Mexican pesos were converted into US dollars as of 2008 (exchange rate 11.8 Mexican pesos = 1 USD) [24]. The total OOPE on medicines was calculated by taking the sum of all expenditures reported by households in the last 3 months of 2008 for the purchase of medicines, regardless of whether obtained with a medical prescription; this was multiplied by 4 to obtain the annual OOPE on medicines (data in the survey are reported as quarterly expenditure).

The AE was calculated by using the methodology suggested by Xu et al. [25]: taking the average value of household food expenditures adjusted for household size for the range of 45% to 55%. The