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Vietnam Healthcare Expenditure

Abstract. Household health expenditure is important in shaping human capital for developing countries, including Vietnam. This study aims to examine the factors affecting household health expenditure in Vietnam. The study used a combination of descriptive and multivariate regression analysis based on the Vietnam Household Living Standards Survey (VHLSS) 2016. As a result of the regression analysis, demographic factors such as gender, ethnicity, age, education level, and region are the most important determinants of healthcare spending in Vietnam. This result is similar to other studies conducted in Vietnam and other countries. For developing countries including Vietnam, the determinants of personal health expenditure raise several issues that need to be addressed by health planners. Some policy implications are suggested, including (i) improving the health care system in rural areas, (ii) strengthening the existing social safety net for the elderly, and (iii) developing health insurance covering the entire population.

Keywords: healthcare, insurance, medical expenditure, Vietnam, VHLSS 2016.

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Ву Хунг Фьонг, Чан Тхи Тхюу Линь

Расходы на здравоохранение во Вьетнаме

Аннотация. Расходы домохозяйств на здравоохранение играют важную роль в формировании человеческого капитала развивающихся стран, включая Вьетнам. Целью данного исследования является изучение факторов, влияющих на расходы вьетнамских домохозяйств на здравоохранение. В исследовании использовалась комбинация описательного и многомерного регрессионного анализа на основе Обследования уровня жизни домохозяйств во Вьетнаме (VHLSS) 2016 г. В результате регрессионного анализа были выявлены демографические факторы, такие как пол, этническая принадлежность, возраст. Ключевыми факторами, определяющими расходы на здравоохранение во Вьетнаме, являются уровень образования и регион. Этот результат аналогичен другим исследованиям, проведённым во Вьетнаме и других странах. Для развивающихся стран, включая Вьетнам, определяющие факторы личных расходов на здравоохранение поднимают несколько проблем, которые необходимо решить специалистам по

планированию здравоохранения. Предлагаются некоторые меры, в том числе (i) улучшение системы здравоохранения в сельской местности, (ii) усиление существующей системы социальной защиты пожилых людей и (iii) развитие медицинского страхования, охватывающего все население.

Ключевые слова: здравоохранение, страхование, медицинские расходы, Вьетнам, VHLSS 2016.

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Introduction

Health is one of the most important contributors to the quality of human capital. Improving the health of the population requires timely access to quality preventive and curative health services. In recent years, as the economy has developed and the poverty rate has steadily declined, the demand for quality health care has increased throughout the country. However, despite the rapid increase in the provision of both public and private healthcare services, access to timely, quality, and affordable care remains limited, especially in rural areas [Ministry of Health 2018]. Health care has improved in both public and private services, but there is still inequality between providers, with high demand for better hospitals. There is also a tendency for people to go directly to the hospital to see a doctor, which contributes to high demand, rather than seeking care in the community.

According to the World Bank [2017], Vietnam is ranked 62nd out of 145 countries in the health rankings. The World Bank report also notes that while Vietnam's health spending represents a higher percentage of gross domestic product (GDP) than many countries in the region, access to quality, affordable care remains problematic. The World Bank calls this a paradox and attributes it to three factors: (i) excessive and inappropriate utilization induced by fee-for-service as the dominant provider payment mechanism; (ii) a disproportionate focus on tertiary care provided by central and provincial hospitals; and (iii) excessive spending on pharmaceuticals. Therefore, appropriate policies are needed to influence the health expenditure of the Vietnamese population based on the identification of the determinants of this expenditure. Using the Vietnam Household Living Standards Survey 2016 and descriptive and multivariate regression, this study identifies the determinants of healthcare expenditure in Vietnam. Pharmaceuticals are a major concern, especially over-the-counter sales as opposed to prescription sales. The overuse of antibiotics is alarming and will lead to increased health

problems in the future. Also, the perceived disparity in country of origin between Vietnam, India, China vs. USA and Europe with a price and trust factor. Also, the use of traditional medical practices and medicines is an important factor in health care.

Literature review

Numerous studies have been conducted in many countries, particularly in developing countries, on health care utilization and expenditures.

Mocan et al. [2000] examine the determinants of health care needs in urban China and find that health care needs are significantly influenced by income, health status, employment status and family size. Lahga [2001] finds that in addition to health status, age and income, health insurance is an important determinant of health care needs in Tunisia. Okunadee et al. [2010] examined the determinants of household health expenditure in Thailand, using wealth variables instead of income as the main factors. Using longitudinal data, the authors formulated a “property index” as a separate variable to examine trends in the use of household assets to address health-related problems when cash flow is exhausted. The study used 98,632 household observations from the Thai Socio-Economic Survey (biennial data cycle in the period 1994–2000), which showed that income group and household size variables were the two most important determinants. In addition, average age and wealth were also important factors. Kynn et al. [2015] conducted a study on catastrophic health expenditure (the case when a patient's out-of-pocket health expenditure exceeds 40 % of the household's affordability) and the frequency of catastrophic health expenditure among households in Magway, Myanmar. The proportion of people with catastrophic health expenditure in urban and rural areas was 25.2 % and 22.7 %, respectively. Research results show that nearly a quarter of households in Magway face catastrophic health expenditure due to hospitalization.

Trivedi & Hall [2002] examined patterns of health care utilization in Vietnam. The authors also estimated health expenditures for individuals and households. In this study, they focused on analyzing the choice of provider types. They also showed the model for positive medical expenditures for individuals and households separately. Econometric models are estimated for both probability of use and frequency of contact for all major categories of care and for both individual and household medical expenditures. The econometric results show different responses to income changes at different income levels. Another study of health care expenditures in Vietnam by Do et al. [2001] found that demographic and geographic factors, income and insurance, and health status were the determinants of patient expenditures. Aparnaa et al. [2014] conducted a study on health expenditure patterns, including total health expenditure and the composition of health expenditure in Vietnam between 1992 and 2012. The study mainly used data from the National Health Accounts and the Vietnam Living Standards Survey. The results show that per capita health expenditure in Vietnam increased from USD14 in 1995 to USD86 in 2012. Total health expenditure as a percentage of GDP also increased from 5.2 % in 1995 to 6.9 % in 2012. Public health expenditure as a percentage of government expenditure increased from 7.4 % in 1995 to nearly 10 % in 2012. Health insurance

coverage increased from 10 % in 1995 to 68.5 % in 2012. However, out-of-pocket spending remains high, at 57.4 % in 2012, and the percentage of households with catastrophic spending was 4.2 % in 2012.

Xu et al. [2018] provide evidence on the impact of the new health reform on catastrophic health expenditure by comparing the occurrence and inequality of catastrophic health expenditure (CHE) among households with chronically ill patients before and after the reform. The study used a subset of data from the 2008 and 2013 National Health Survey conducted in Shaanxi Province. The study suggests that the implementation of the new healthcare reform may not have been effective in reducing the occurrence of CHE among households with chronic disease patients.

Hoang et al [2013] examined the catastrophic and poverty impacts of household out-of-pocket health expenditures in Vietnam over time and identified associated socioeconomic indicators. The data used in this research were obtained from a nationally representative household survey, the Vietnam Living Standard Survey 2002–2010. The results showed that there were problems with health care financing in Vietnam — many households experienced catastrophic health expenditures and/or were pushed into poverty due to health care payments.

Nguyen Viet Cuong [2012] measures the impact of voluntary health insurance on health care utilization and out-of-pocket spending using the 2004 and 2006 Vietnam Household Living Standard Surveys. It is found that voluntary health insurance helps insured individuals to increase their annual number of outpatient and inpatient visits by about 45 % and 70 %, respectively. However, the effect of voluntary health insurance on out-of-pocket spending for health services is not statistically significant.

Vu Duy Kien et al. [2016] found that households living in slum areas, with individuals aged 60 years or older, and belonging to the poorest socioeconomic group were significantly associated with increased catastrophic health expenditures, while only households living in slum areas and belonging to the poor or poorest socioeconomic groups were significantly associated with increased impoverishment due to health expenditures.

Based on a two-level (household and community) logistic regression to identify factors associated with catastrophic health expenditures, Sepehri & Vu [2019] concluded that the presence of severe injuries among household members was strongly associated with catastrophic health expenditures. To protect households from the financial consequences of severe injuries, efforts should be directed toward injury prevention and strengthening the quality of primary and trauma care at lower-level public health facilities, as well as expanding the breadth and depth of insurance coverage.

In summary, previous studies indicate that health care expenditures are influenced by factors such as gender, age, education level, income, insurance status, and region. However, much of the existing research in Vietnam focuses on specific issues such as the choice of provider types or household health expenditures. The determinants of health expenditure at the individual level remain unexplored in Vietnam. Therefore, research on the factors that influence personal health care in Vietnam is essential. If the family member who controls family finances is different from the person who controls family health matters, there is a high potential for a mismatch in priorities.

Research methodology

Data

The study used the 2016 VHLSS with a total of 35,788 observations. The VHLSS is a large nationally representative sample with complete income/expenditure information for 9,399 households. The health section of the survey collected detailed information on households' health-seeking behavior, type of health facility used, and type of health insurance. The survey also collected information on several socioeconomic variables, such as education, gender, marital status, age, and total household expenditure. Respondents were asked whether they had been seriously ill/injured in the past 12 months. After merging the datasets, there were 31,293 observations.

Study variables

The study selects the logarithm of personal health expenditures as the dependent variable. Health care expenditures in this study include total spending on inpatient and outpatient care, average purchases of home remedies and medical equipment, and health insurance premiums. Out-of-pocket health expenditures are likely to be influenced by a variety of factors, including illness, use of medical services, age, household size, average spending, education level, region, gender, and ethnicity.

Statistical analysis

The study employs both descriptive and multivariate regression analysis to examine the key determinants of personal health expenditures.

The definition and description of variables used in this study are provided in Table 1. Stata 14 software was used to conduct regression.

Table 1. Definition and description of variables

Variables	Definition
Illness	Dummy variable for illness (yes ill = 1; no disease = 0)
Medical care utilization	Dummy variable about using healthcare services (used =1; not used =0)
Age	The age of the individual is in years
Square age	Square the age of an individual
Household size	Number of household members (calculated by number of people)
Average spending	Average expenditure/person/household (unit VND 1,000)
<i>The educational level of the household head</i>	
Edu1	A dummy variable (=1 if ever in school or an elementary degree; =0 otherwise)
Edu2	Dummy variable (=1 if having a junior high school diploma; =0 otherwise)
Edu3	Dummy variable (=1 if having a high school diploma; =0 otherwise)
Edu4	Dummy variable (=1 if having a postsecondary education diploma; =0 otherwise)
<i>Region</i>	
Region1	Dummy variable (=1 if Northern Midlands and Mountains; =0 otherwise)

Variables	Definition
Region2	Dummy variable (=1 if North Central and Central Coast; =0 otherwise)
Region3	Dummy variable (=1 if Central Highlands; =0 otherwise)
Region4	Dummy variable (=1 if the Southeast; =0 otherwise)
Region5	Dummy variable (=1 if the Mekong River Delta; =0 otherwise)
Region6	Dummy variable (=1 if the Red River Delta; =0 otherwise)
Ethnic	Dummy variable (Kinh = 1; ethnic minorities = 0)
Gender	Dummy variable (male = 1; female = 0)
Living area	Dummy variable (urban = 1; rural = 0)
Health Insurance	Dummy variable (with insurance = 1; uninsured = 0)

Results

Descriptive analysis

Figure 1 illustrates average personal health expenditures by location, gender, ethnicity, and health insurance status.

Disparities in personal health expenditures are more pronounced for geographic location, ethnicity, and health insurance status than for gender. Regarding rural and urban areas, the calculation results show that the health expenditure of urban residents is about 34 % higher than that of rural residents. Urban residents have higher incomes, so they spend more on health care. In addition, access to health services is much easier in

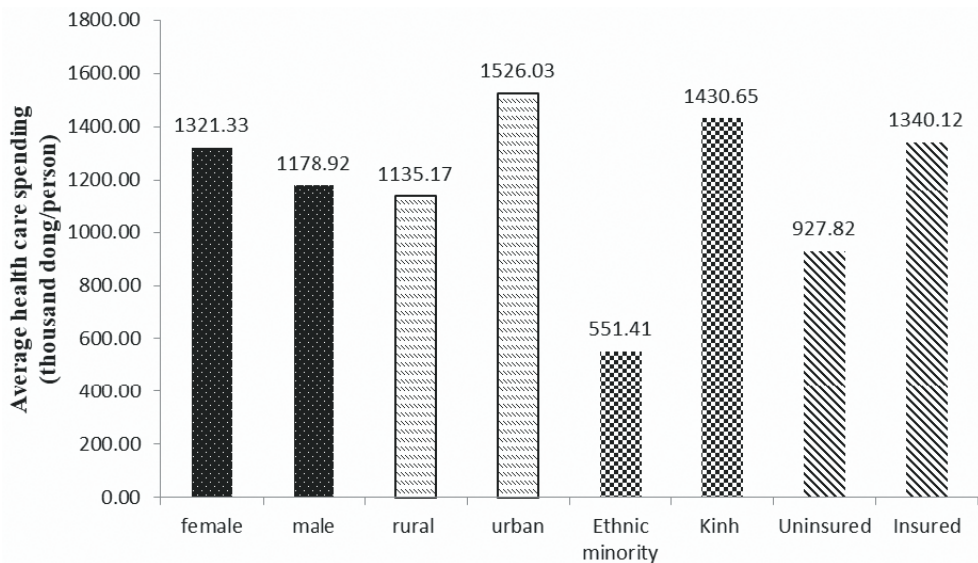


Fig 1. Spending on healthcare by demographic factors.
Source: compilations by authors based on VHLSS 2016

urban areas than in rural areas, so people in urban areas consume more health services than their rural counterparts. Better access to information on protection and health care also makes it easier for urban residents to use health services.

Figure 1 also shows a large variation in personal health expenditure by ethnicity. Specifically, health spending by the ethnic majority Kinh is almost 2.6 times higher than that of the ethnic minorities. This is easily explained by the fact that the Kinh often live in urban areas with better access to health services. Meanwhile, health networks in rural areas, especially in remote areas where ethnic minorities mainly live, are scarce. Another factor is that the ability of ethnic minorities to pay for health care is limited due to low incomes. In addition, cultural traditions and awareness of modern health services are limited, resulting in lower spending on health services. Health insurance status is an important determinant of healthcare expenditure. Health insurance was introduced in Vietnam in 1993. There are two types of health insurance: (i) compulsory insurance, which applies to all public sector and large private enterprises (more than 10 employees), and (ii) voluntary insurance, which applies to the rest of the population. Health insurance often reduces payments for health services but can increase the use of health services. Patients also use their insurance benefits by seeking care in private clinics or even in the private wards of public hospitals [Sepehri et al. 2019]. This may be the reason why the health insurance expenditures of insured people in VHLSS 2016 are higher than those of the uninsured. This is due to several factors. These include affordability, income means testing for 'free' health care, but also social factors such as minorities relying more on traditional health care rather than urban dwellers having easy access to 'western' health care through local hospitals.

Health expenditure by the education level of household head

Educational attainment is related to awareness and understanding, and thus influences health behaviors and health spending. Highly educated people are often more concerned about their health and therefore tend to spend more on health care. The level of education of the head of the household influences the perception of health care by the members of the household, which is also a factor that influences the level of individual health expenditure. The average personal health expenditure is higher for a household head with a member with a higher level of education (Table 2). The difference in personal health expenditure is particularly pronounced between households headed by a member with no formal education and those with a post-secondary education.

Table 2. Healthcare spending by the education level of the household head, thousand Vietnamese dong

Household Head's Education Level	Average healthcare spending
Never been to school	549,69
Elementary degree	1,092.60
Secondary school degree	1,317.82
High school degree	1,684.17
Post high school	1,712.50

Source: Compilations by the authors based on VHLSS 2016

Healthcare spending by region

Healthcare spending varies by region because each region has different geographic, demographic, and customary characteristics. These factors have important implications for health-related decisions. It is easy to see that in areas with favorable socioeconomic conditions, health spending is higher than in other regions (Table 3). Specifically, in the country's two largest cities, Hanoi and Ho Chi Minh City, health spending is the highest in the country, about 2.5 times higher than in the Northern Midland and Mountain regions. For the remaining regions, there is less regional disparity in health spending. This fact can be explained by the fact that the two big cities have better health care utilization conditions than other regions, with large medical centers and highly qualified personnel. In addition, because these are the socioeconomic and cultural centers of the country, people have better access to information and perceptions of health care than in other regions.

Table 3. Healthcare Spending by Region in Vietnam (Unit: Thousand Vietnamese Dongs)

Region	Average healthcare spending
Hanoi — Ho Chi Minh City	1,735.03
Northern Midlands and Mountains	771,68
North Central and Central Coast	1,145.43
Highlands	1,086.35
Southeast	1,335.30
Mekong Delta	1,390.08
Red River Delta	1,595.13

Source: compilations by the authors based on VHLSS 2016.

Regression result

The estimated parameters of the age and squared variables are positive and statistically significant at the 1 % level, indicating that personal health expenditures increase with age. The estimated coefficients of household size are negative and statistically significant, indicating that personal health expenditures are lower for households with more members. The regression results are detailed in Table 4 below.

This may be due to an increase in the number of household members, which increases non-health expenditures such as food and education, forcing households to reduce health expenditures due to budget constraints. Personal health expenditure is positively associated with household economic status, as measured by total household consumption expenditure per capita. As for the education level variable, the estimated coefficient of the post-secondary variable is surprisingly negative and statistically significant at the 1 % level, indicating that individuals with post-secondary education are likely to spend less on health care than those with formal education. The estimated coefficients for the remaining levels of education are all positive and statistically significant at the 1 % and 5 % levels. The finding that post-secondary education is negatively associated with personal health care expenditures is contrary to conventional expectations of health care demand, since one would expect health care expenditures to

Table 4. The OLS model estimation results identify the determinants of Vietnamese healthcare spending

Variables	Coefficient (Standard Deviation)	P-value
Dependent variable: Log healthcare spending		
Independent variable:		
Age (years)	0.003759 (0,0011507)	0.000
age-squared	0.0000372 (0,0000144)	0.010
Family size	-0.0471468 (0,0048697)	0.000
Log spending per capita	0.5765042 (0,0107844)	0.000
<i>The educational level of the household head:</i>		
1. Edu1	0.085215 (0,0338622)	0.012
2. Edu2	0.091417 (0,0356883)	0.010
3. Edu3	0.0237912 (0,0390741)	0.543
4. Edu4	-0.139460 (0,0441027)	0.002
<i>Region:</i>		
1. Region1	-0.2762615 (0,0322933)	0.000
2. Region2	-0.1834738 (0,0291539)	0.000
3. Region3	-0.0928912 (0,0363728)	0.011
4. Region4	0.0491156 (0,0344499)	0.154
5. Region5	0.005072 (0,0296881)	0.864
6. Region 6	-0.0202871 (0,0307508)	0.509
Ill (yes = 1)	1.731132 (0,0266131)	0.000
Ethnic group (Kinh = 1)	0.56994 (0,0239317)	0.000
Gender (male = 1)	-0.1503949 (0,0141188)	0.000
Living area (urban = 1)	0.0034835 (0,0166933)	0.835
Health insurance (yes = 1)	0.5930181 (0,0183021)	0.000
_cons	-0.3218949 (0,1098953)	0.003

Note: The sample includes 31,290 observations.

The omitted region is Hanoi and Ho Chi Minh City.

The Omitted education level is “never been to school”.

Source: calculation of the authors based on VHLSS 2016.

increase as individuals become more educated. However, this finding is consistent with the Grossman model, which suggests that individuals with more education may be more efficient in producing health than those with fewer years of education [Grossman 1972]. Thus, a person with a higher level of education is more likely to have more information and knowledge about prevention and health care, making the individual more efficient in producing more healthy days.

Regarding the regional variables, the estimated coefficients of the Southeast, Mekong Delta, and Red River Delta regions are not statistically significant, while the estimated coefficients of all other regions are statistically significant at the 1 % and 5 % levels, and all have negative signs. Thus, on average, residents of the Northern Midland and Mountains, North Central, and Central Coast or Central Highlands spend less on

health care than residents of Hanoi and Ho Chi Minh City. The results of this quantitative analysis are fully consistent with the analysis and arguments in the descriptive statistics section.

The remaining variables also have their expected signs. The disease variable is positive and statistically significant at 1 %, indicating that a person with a disease spends on average 173 % more than a healthy person. Similarly, Kinh spend about 57 % more on health than ethnic minorities. Men spend on average 15 % less than women. A person with health insurance spends about 59 % more on health care than the uninsured.

Discussion

The above regression results raise several issues of concern:

First, health expenditure increases with age. Although Vietnam is a middle-income country with an increasingly aging population, the burden of health care expenditure on individuals and households will be problematic. Vietnam is one of the fastest aging countries in the world, so the development of a health care system for the elderly is an urgent issue. The elderly have very different and specific health care and medical examination and treatment needs than the younger population, so the health sector also needs to prepare and plan in time to invest in human and material resources.

Second, increasing the level of education and awareness about health care will help people reduce the burden of health care spending. Taking care of one's health at a young age and having a long-term health care plan to minimize hospital treatment is extremely important. Education in schools plays an important role, where health care knowledge should be included in formal curricula at all levels.

Third, differences in health spending by region show that building grassroots health systems helps people in localities, especially in rural and remote areas, to have better access to health services. This helps to reduce the burden of health expenditure on disadvantaged groups.

Fourth, the social security system, especially the health insurance system, plays an important role. The universal health insurance system plays an important role in helping people, especially the elderly, to have access to quality medical services without facing financial burdens.

Conclusion

Access to timely, quality and affordable health services is one of the most important determinants of individual health. However, for developing countries, including Vietnam, the determinants of personal health expenditure raise several issues that need to be addressed by health planners. The results of this study reveal large disparities in personal health expenditure. These disparities are particularly pronounced for rural versus urban residents, and even more pronounced for ethnic minorities versus the ethnic majority. Rather than protecting individuals from the financial burden of illness, the health insurance system in Vietnam tends to increase personal health expenditures.

The policy implications are threefold. *First*, access to services is improved due to the low spending on health care for ethnic minorities and people living in rural areas compared to the Kinh and urban areas. Special attention needs to be paid to rural health care, especially in remote areas. To increase the chances of medical examination and treatment for people in disadvantaged areas, a network of mobile health workers should be established, based on a team of highly qualified health workers in a large medical center. Financial support policies such as salaries and allowances should be considered to enable this network to operate regularly.

Second, Vietnam is a country with an increasingly rapidly aging population. According to a report by the Ministry of Health, Vietnam has entered an aging period since 2012, with the number of people aged 60 and above accounting for 10.2 % of the total population and expected to reach 20.1 % by 2038 [Ministry of Health 2018]. Therefore, in order to meet the higher demand for health care among the elderly in Vietnam, efforts should be made to strengthen the existing social safety net. The establishment of specialized care and treatment for the elderly should be invested not only in central hospitals, but also in the form of socialization in lower-level health facilities to reduce the burden on the state budget and increase access to quality health services for the elderly in all localities. Retirement villages with health care services tailored to the needs of the elderly. The younger generation is moving to the cities, so over time the care of the elderly will fall to the state rather than to children caring for their parents.

Third, insurance plays an important role in reducing the burden of paying for health care. Therefore, an insurance network, especially health insurance that covers the entire population, is the goal to strive for. According to experts from the World Bank, universal healthcare coverage in a universal health insurance system is an important policy goal for many countries around the world, but it poses many challenges [Aparnaa et al. 2014]. To achieve this goal, Vietnam needs to pay attention to the following issues:

(i) Improve health insurance laws to identify mandatory and voluntary participants, appropriate contribution levels, and beneficiaries based on factors such as education level, region, ethnicity, and subsidy mechanisms [Nguyen Thi Minh et al. 2012].

(ii) Simplify the administrative procedures associated with issuing health insurance cards and avoid annoying people.

(iii) It is necessary to identify the responsibilities of the authorities in fulfilling the government's budget commitment to increase the level of 100 % health insurance subsidies for the poor and near poor.

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