Patient Choice of Healthcare Facilities in the Central Region of Vietnam

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Abstract

   A series of recent policy changes in Vietnam, including the introduction of social health insurance programs, has likely altered patients' demand for healthcare services. However, few studies have quantified the changes in patients' demand and scrutinized their healthcare-seeking behavior. This study explores the patterns of patient health facility choice with a sample of 816 episodes of illness of 712 individuals collected in the central region of Vietnam in 2014. One important finding of this study is that 16.7 percent of individuals who reported an episode of illness chose self-treatment even after the introduction of various health insurance schemes. A multinomial probit regression analysis confirmed that some individual and household characteristics are predictors of the patterns of choosing health facilities. After controlling for the influence of these factors, enrolling in a health insurance scheme is negatively associated with the likelihood of patients choosing self-treatment and positively associated with patients visiting their designated health facility. It seems that the introduction of various types of health insurance schemes, on average, reduced self-treatment and strengthened the link between patients and their designated health facility, although it is highly likely that some problems occurred due to asymmetric information.

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Introduction

　　Universal health coverage (UHC) is a major goal of health reforms in many low and middle income countries. The aim of UHC is "to ensure that all people obtain the health services they need without suffering financial hardship when paying for them" (World Health Organization [WHO], 2014). Vietnam is currently making huge efforts to achieve UHC as a national strategy. The government has made a strong commitment towards UHC (Government of Vietnam [GoV], 2013) and put a high priority on support for providing primary healthcare services in the grassroots network for securing equitable access to health facilities (GoV, 2015).

　　Since the start of the "Doi Moi" economic and political reforms in 1986, the Vietnamese economy has shifted from being a centrally planned economy to a market-based economy. The "Doi Moi" renovation has brought enormous economic benefits to the nation, and has made significant improvements in the socioeconomic profile of its population such as the significant reduction in the poverty head count ratio and continuous improvements in education and health status. GDP growth since the early 1990s has been very rapid and its economic growth has been incredibly stable and inclusive (WB and GoV, 2016).

　　Despite the fact that the recent economic growth in Vietnam has been very fast, stable, and equitable to date, Vietnam faces the challenge of further promoting equity and social inclusion, whilst maintaining its economic momentum in a sustainable way. Agenda on equity and inclusive development are multifaceted, yet with the expectation of an unprecedented pace of demographic change, particularly the aging of society, achieving UHC in a sustainable manner requires further health financing reforms and is one of the most challenging policy issues.

　　A series of health sector reforms, in parallel with the "Doi Moi" renovation, has been implemented. Earlier health sector reforms involved the introduction of user fees, the liberalization of the healthcare market, the legalization of the pharmaceutical industry (Tien et al., 2011), and the deregulation of retail drug sales (Thuan et al., 2008). These health sector reforms have led to continued increases in

health service utilization and per capita health expenditure including out-of-pocket (OOP) payments. However, high OOP payments and a particularly heavy financial burden on the poor have become major concerns for society. To ease such financial burden on poor households for healthcare services, the government of Vietnam has introduced a series of policy measures. One of the most eminent policy reforms was the introduction of various social health insurance schemes since 1992 (Ekman at al., 2008; GoV, 2013). The Law on Social Health Insurance was passed in 2009 and established a nationwide social health insurance program. This social health insurance has played an important role in the attempt to achieve UHC (Matsushima and Yamada, 2014; Somanathan et al., 2014).

The recent dramatic changes in policies in the health sector in Vietnam have likely altered patients' demand for healthcare services and utilization. However, few studies have quantified these changes in patients' demand and scrutinized their healthcare-seeking behavior. In particular, it is still unclear what types of health facility people have access to and are more likely to select when they get sick, and furthermore what kinds of socioeconomic factors are associated with their choice of health facility. Investigation into patient's health-seeking behavior, namely health facility choice, will provide valuable insight to consider effective and efficient policy interventions, which can be justified from the perspective of achieving equity as well as solving problems arising from market failure, to improve access to health facilities.

Earlier studies found that the costs and quality of healthcare are the main predictors of patient choice of health service providers in addition to types and severity of illness (Akin 1995, 1999; Mwabu 1993). Ensor and Cooper (2004) emphasize demand-side barriers that can prevent patients from receiving treatment for aliments particularly in low- and middle-income countries. Hence, patient choice of healthcare services is highly likely to rely on a variety of characteristics of potential providers (e.g., area of expertise, drug availability, and price and quality of medical services), as well as of the attributes of the patients themselves (e.g., age, gender, nature of illness, and economic and social status). Moreover, household wealth level is highly likely to be correlated with patient's choice of health facility. In Vietnam, a large share of households incurred OOP payments for health and the amount of the OOP payments has remained high, which may deter the poor from using healthcare

services at appropriate health facilities. In addition, patients from households with high education may make distinct choices regarding healthcare facilities because they may better assimilate and use information. This study furthermore explores the association between patient's enrollment status of health insurance and the choice of health facilities to understand how the introduction of health insurance schemes has influenced the healthcare-seeking behavior of patients.

Khe et al. (2002) and Thuan et al. (2008) conducted two studies in Northern Vietnam. These studies examined the relationship between socioeconomic factors and patient's pattern of health facility choice in a northern part of Vietnam. Both studies found that self-treatment and private healthcare services were commonly used by the better-off and the worse-off, whereas their studies also showed that financial hardship prevented the worse-off patients from utilizing healthcare services more frequently. Nonetheless, the study by Khe et al. (2002) was conducted before introducing a nationwide health insurance scheme and the study by Thuan et al. (2008) did not take the effect of health insurance schemes into account. Therefore, one of the major contributions of this study to the literature is to explore patient's pattern of health facility choice after implementation of the national social health insurance policy in the central region of Vietnam.
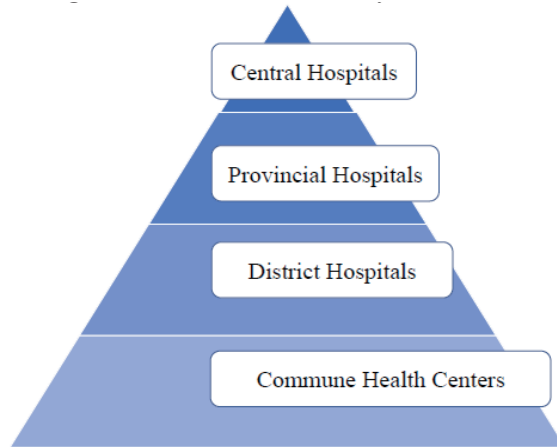
This paper is organized as follows. The first section begins with an overview of the health system in Vietnam and the following section explains our research methodology including the data sources used in this study. Then, the third section presents the estimation results of associated factors with patient health facility choice and a discussion of the empirical findings. The final section presents our conclusions.

Overview of Health System in Vietnam

In Vietnam, healthcare services are provided by both public and private providers. The public sector mainly provides hospital care, whereas the smaller ambulatory care and sales of pharmaceuticals are mainly delivered by the private sector. The public healthcare facilities are divided into four levels (Fig. 1): commune health centers (CHCs), district hospitals, provincial hospitals, and central hospitals. There are about 13,680 health facilities and 80 percent of them are CHCs (Ministry of Health, 2013). CHCs are designated to provide a variety of services, such as

preventive medicine, vaccination, reproductive health services and diagnosis and treatment of common health problems for the population. However, they do not often provide such services due to the lack of health personnel, limited availability of drugs, and poor quality of medical equipment (GoV, 2015). As a consequence, people tend to contact health facilities at higher -levels even with higher costs. This leads to overcrowding at provincial and central hospitals, which has been a major concern for the Vietnamese health system in terms of efficiency in resource allocation.

Figure 1: Structure of health system in Vietnam

Created by authors.

Since 1992, public health insurance has been introduced by the government. Health insurance in Vietnam is based on individual enrollment and there are compulsory and voluntary groups. As this health insurance is individual enrollment-based, responsible ministries classify each individual into defined categories, which determine the premiums for health insurance. For many groups, enrollment for health insurance is subsidized by the government. The services covered by public health insurance are relatively broad, including inpatient and outpatient services at all levels of healthcare. Even though there is a benefit ceiling for technologically advanced and expensive medical treatment, the public health insurance covers from 80 percent to 100 percent of the treatment fees. With respect to the coverage, the enrollment rate has been increasing gradually, and in 2014, the coverage rate reached 71 percent (GoV, 2015). In other words, 30 percent of the population is still facing huge payments for healthcare.

There is a referral system in Vietnam, which is related to reimbursement mechanisms of health insurance. The largest share of people who are enrolled in the public health insurance register the CHCs located in their community as the first point of contact. Patients are referred to higher-level hospitals when they need to receive more advanced healthcare services. If patients are not referred from lower

-level facilities and directly visit hospitals at a higher-level, they need to pay a higher co-payment. Therefore, CHC plays a key role as a gatekeeper in order to ensure the efficiency of the health referral system in Vietnam.

Data

Household Survey

The data utilized for this study come from an original household survey conducted in three provinces (Thua Thien Hue, Quang Tri, and Khanh Hoa) in the central region of Vietnam in 2014. The structured questionnaires were prepared before the field survey. The study was ethically approved by the Scientific and Ethical Committee, Hue University of Medicine and Pharmacy. Prior to the interviews, consents on the conduct of the study were obtained from local authorities and respondents of the households. The household survey interviewed the respondents to collect information about the socio-demographic characteristics of the households and also detailed information about episodes of illness and the use of healthcare services of each family member over the past 3 months.

The sampling procedure was as follows: Firstly, we chose three districts in Thua Thien Hue, three districts in Quang Tri, and two districts in Khanh Hoa to grasp diverse economic and agro-climate conditions in central Vietnam. Our sampled districts included both lowland and highland areas and also both urban and rural areas. Hence, our sampled districts can be regarded as a good representative sample of the region. In each sampled district, from four to ten communes were randomly selected. Then, 15 households in each commune were randomly selected, which, with some drop outs, ended up with a total number of 760 households including 3,578 individuals.

This data set includes detailed information of 719 individuals who have experienced illness/disease/injury over the past 3 months from 512 households. Some individuals experienced more than one illness/disease/injury and thus there were 825 episodes of illness in total. For each episode of illness, the symptoms of the patient's illness/disease/injury were asked and coded by using the International Classification of Primary Care 2nd Edition (ICPC2). In addition to the type of illness/disease/injury, the number of days during which patients were unable to perform

their activities of daily living were also asked. Of the 825 episodes of illness, 9 cases were excluded from the study because of missing information. Therefore, the total number of our study observations was 816 episodes of illness from 712 individuals from 506 households.

Descriptive Analysis

By using the data described above, Fig. 2 depicts the prevalence of reported symptoms by age groups. There are some differences in the frequency of symptoms among age groups. For children under 6 years old, symptoms associated with respiratory diseases were dominant, while symptoms related to cardiovascular diseases were mostly reported by the elderly over 60. Among working age adults (aged 16-59), respiratory and digestive symptoms were slightly more frequently reported than the other symptoms.
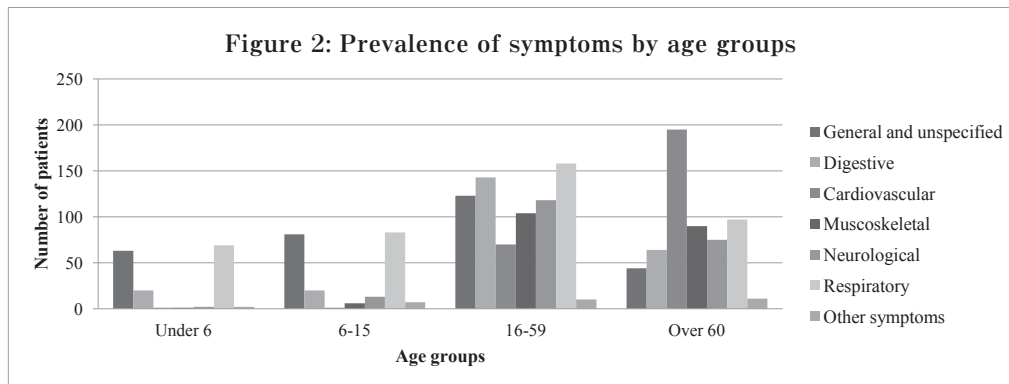

Figure 2: Prevalence of symptoms by age groups

Table 1 explores the patterns of healthcare-seeking behavior of patients by gender. Because the whole process of healthcare-seeking behavior under the incumbent health service delivery system, namely the referral system, is very complicated, this study focuses on the patterns of patient choice of the first point of contact. Overall, 84.3 percent of patients visited at least one health facility, whereas 16.7 percent chose self-treatment, of which 39 percent did nothing and 58.8 percent purchased drugs from a pharmacy. There were only 2 females who chose a traditional medical practitioner. The proportion of male patients who went to a medical facility was 82.7 percent, while the figure for female patients was 83.9 percent. Male patients visited higher-level public hospitals such as provincial and central hospitals more

than female patients. In contrast, female patients chose CHCs slightly more than male patients. There appears to be gender differences in choosing the first contact point when they get sick.

Table 1: Health facility choice by gender						
Health facility choice	Male	%	Female	%	Total	%
Self-treatment	68	17.3	68	16.1	136	16.7
Commune health centers	124	31.5	156	37.0	280	34.3
District hospitals	41	10.4	38	9.0	79	9.7
Provincial/central hospitals	53	13.5	41	9.7	94	11.5
Regional general clinics	42	10.7	51	12.1	93	11.4
Private health facilities	39	9.9	43	10.2	82	10.0
Other health facilities[i]	27	6.9	25	5.9	52	6.4
Total	394	100	422	100	816	100

Table 2 compares the patterns of health facility choice by wealth level. While patients from better-off households tend to choose higher-level public hospitals and private clinics/hospitals, those who live in worse-off households tend to choose CHCs. These tendencies suggest that visiting higher-level public hospitals and private medical facilities is much costlier than seeking healthcare services within the same commune in which patients reside.

Table 2: Health facility choice by wealth level						
Health facility choice	Better-off	%	Worse-off	%	Total	%
Self-treatment	80	19.5	56	13.8	136	16.7
Commune health centers	83	20.2	197	48.5	280	34.3
District hospitals	29	7.1	50	12.3	79	9.7
Provincial/central hospitals	54	13.2	40	9.9	94	11.5
Regional general clinics	69	16.8	24	5.9	93	11.4
Private health facilities	57	13.9	25	6.2	82	10.0
Other health facilities	38	9.3	14	3.4	52	6.4
Total	410	100	406	100	816	100

Do the patterns of patient health facility choice differ depending on health insurance status, i.e., whether the patient is enrolled in any type of health insurance? Table 3 shows the patterns of health facility choice by health insurance status. In order to examine whether there is a statistically significant difference in the choice of health facilities by health insurance status, a *t*-test was conducted. The differences are striking. Firstly, patients without any health insurance were more likely to choose self-treatment. Because receiving healthcare services without health insurance was

more expensive, those who were not enrolled in any health insurance scheme were less likely to go to health facilities except pharmacies. Secondly, the insured were more likely to choose CHCs and regional general clinics (RGCs). The coverage rate of health insurance was 79.4 percent. Among the insured, 51.4 percent had health insurance whose designated first point of contact was a CHC and 21.2 percent had health insurance whose designated first contact point was a RGC. To make the best use of reimbursement for healthcare, they needed to visit the health facility they registered with as the first contact place. Visiting the designated first point of contact was least costly and thus the insured tended to choose such a health facility, although some patients bypassed the first contact place by bearing additional costs. Thirdly, the insured were less likely to visit private health clinics/hospitals, which probably reflects the fact that healthcare services provided at private medical facilities were not covered by health insurance in most cases [ii].

Table 3: t-test results on health faiclity choice and health insurance status								
Health facility choice	With health insurance			Without health insurance				
	obs	mean	s.d.	obs	mean	s.d.	diff.	s.d.
Self-treatment	97	0.132	0.013	39	0.470	0.055	-0.338***	0.042
Commune health centers	269	0.367	0.018	11	0.133	0.037	0.234***	0.054
District hospitals	69	0.094	0.011	10	0.120	0.036	-0.026	0.034
Provincial/central hospitals	87	0.119	0.012	7	0.084	0.031	0.034	0.037
Regional general clinics	92	0.126	0.012	1	0.012	0.012	0.113***	0.037
Private health facilities	70	0.095	0.011	12	0.145	0.039	-0.049	0.035
Other health facilities	49	0.067	0.009	3	0.036	0.021	0.031	0.028
Note: t-test results are shown; * indicates significance at 10%; ** significant at 5%; *** significant at 1%.								

These two-way cross tabulations, however, do not conclusively establish the relationship between socioeconomic variables and the healthcare-seeking behavior of the patients because other factors such as household education level as well are simultaneously likely to influence the choice of medical providers. A multivariate regression method is therefore employed to explore, the associations of socioeconomic factors with the patterns of health facility choice of the patients.

Multivariate Regression Model
Regression model

For multivariate regression analysis, a multinomial probit regression model was employed and examined the associations between socioeconomic variables and

the patterns of healthcare-seeking behavior. The multinomial probit regression model did not assume the covariance of error terms, and therefore did not suffer from the problem of the Independence of Irrelevant Alternatives (IIA). The analysis of health facility choice was conducted with 816 episodes of illness of 712 patients over the past 3 months. The calculation was executed by using STATA (Stata Corporation, College Station, TX, USA) software version 14.0.

Dependent variable

The dependent variable was a categorical variable indicating the choice of health facilities classified into seven groups: self-treatment, commune health centers (CHCs), district hospitals, provincial/central hospitals, regional general clinics (RGCs), private clinics/hospitals, and other health facilities including other state-run hospitals and other medical establishments. The self-treatment choice included those who purchased medicines at pharmacies without any formal medical examination and prescription or chose traditional medicines. The public facilities at lower-levels (CHCs/RGCs) usually offered healthcare services at the lowest price, whereas the health services at upper-level facilities as well as private health facilities were costlier. Also, in terms of healthcare quality, health facilities at higher-level provided better medical services because they had better health personnel, equipment, and so forth than the facilities at lower-levels.

Independent variables

The following variables were used as independent variables in the multinomial probit regression analysis: gender, age, marital status, symptoms, number of days the respondent was unable to perform the activities of daily living due to illness/disease/injury, health insurance status, household size, wealth, and education. We examined the characteristics of these independent variables below.

Individual characteristics

A dummy variable for females was used to investigate the difference in patterns of health facility choice by gender. Age was categorized into four groups: children under 6; school age children (6-15 years old); working age adults (16-59 years old); and elderly (over 60). The group in working adults was used as the

reference group. The likelihood of being ill as well as the types of illness suffered are different from the age cohort. For instance, children younger than 6 and the elderly over 60 years old were more susceptible to disease than the other age groups. Marital status was categorized into three groups: single, married, and widow/widower/divorced/separated.

Illness episodes

Symptoms were categorized into seven major groups: general and unspecified, digestive, cardiovascular, musculoskeletal, neurological, respiratory, and other symptoms. To capture the severity of sickness, it was measured as the number of days the individual was unable to perform the activities of daily living due to illness/disease/injury from which the respondent suffered. These characteristics of illness would generate demand for healthcare services. Based on the demand, people make a decision about health facilities.

Health insurance status

The variable representing health insurance status was measured as a binary variable indicating whether the patient has a health insurance card. Although the type of health insurance the patient enrolls and the first point of contact each health insurance card indicates vary substantially, this study only considers the health insurance status of enrolling in at least one health insurance scheme regardless of its type and first contact point.

Household characteristics

Household size was the number of persons currently living together. Wealth was a composite index created based on a household's ownership of various types of assets, ranging from 0 to 5, where 5 indicated the wealthiest household. This variable was used as a proxy for income, which is an important predictor of one's healthcare-seeking behavior. Education was measured by the highest years of school attained by household members aged over 18. The level of education can be used to grasp the ability to acquire and use information about health facilities including available healthcare services at the facility. The amount of information regarding such health

services might affect the choice of health facility.

Summary Statistics

　　　　Table 4 provides summary statistics of the independent variables. The average age of our sample was 46.7 years old and 51.7 percent of the patients who have experienced at least one illness episode were female. The mean wealth level was 1.68. The average highest years of schooling attained by adult household members was 11.6 years. 89.8 percent of the patients had health insurance and this figure was significantly higher than the average of the whole sample, which was 80.0 percent. This finding suggests that those whose likelihood of being ill was high were more likely to purchase health insurance than healthier individuals, which may imply the presence of the adverse selection problem.

Table 4: Summary statistics of independent variables					
Variable	Obs	Mean	Std. Dev.	Min	Max
Individual characteristics					
Health insurance status					
Having health insurance (=1)	816	0.898	0.302	0	1
Gender and age					
Female (=1)	816	0.517	0.500	0	1
Age	816	46.686	24.256	0	100
Marital status					
Single (=1)	816	0.219	0.414	0	1
Married (=1)	816	0.670	0.470	0	1
Widow/Widower/Divorced/Separated (=1)	816	0.110	0.313	0	1
Illness episodes					
Symptoms	816		Coded by using ICPC2		
Number of days missed due to illness/disease/injury	816	3.849	7.712	0	90
Household characteristics					
Household size	816	4.648	1.608	2	12
Wealth level	816	1.684	0.845	0	4.083
Highest education attained by adults (years of schooling)	816	11.592	4.000	0	16

Results

　　　　The estimation results of the multinomial probit regression are presented in Table 5. Because it is difficult to interpret the raw coefficients estimated from the multinomial probit regression model, some simulations were executed. In Table 5, coefficients on continuous variables indicate marginal changes in the probability of each outcome category evaluated at the mean values, and coefficients on dummy variables indicate marginal changes in the probability for each outcome category

when the value of the dummy variables changes from zero to one.

Table 5: Estimation results of multinomial probit regression

VARIABLES	Self-treatment	Commune Health Centers	District hospitals	Provincial/ Central hospitals	Regional general clinics	Private hospitals/clinics	Other health facilities
Individual characteristics							
Health insurance status							
Having health insurance (=1)	-0.227***	0.197***	-0.030	-0.021	0.148**	-0.077*	0.009
	(0.036)	(0.057)	(0.034)	(0.034)	(0.074)	(0.041)	(0.032)
Gender and age groups							
Female (=1)	-0.033	0.061**	-0.011	-0.018	-0.001	0.010	-0.008
	(0.027)	(0.028)	(0.019)	(0.018)	(0.017)	(0.019)	(0.016)
Children under 6 (=1)	-0.104	0.251***	-0.036	-0.033	-0.060	0.052	-0.069
	(0.078)	(0.084)	(0.044)	(0.065)	(0.075)	(0.046)	(0.064)
School age children (6-15)	-0.067	0.202**	-0.049	-0.107	0.018	0.031	-0.029
	(0.068)	(0.082)	(0.046)	(0.074)	(0.070)	(0.061)	(0.059)
Working age adults (16-59)				Reference group			
Elderly (60+)	-0.075***	0.020	0.017	0.082***	-0.014	-0.045	0.015
	(0.027)	(0.053)	(0.028)	(0.030)	(0.026)	(0.034)	(0.018)
Marital status							
Single (=1)				Reference group			
Married (=1)	0.033	0.088	-0.077**	-0.056	0.037	-0.015	-0.009
	(0.055)	(0.067)	(0.036)	(0.056)	(0.054)	(0.045)	(0.023)
Widow/Widower/Divorced/Separated (=1)	0.065	0.117*	-0.040	-0.126*	0.092	-0.084	-0.024
	(0.052)	(0.063)	(0.039)	(0.075)	(0.058)	(0.059)	(0.036)
Illness episodes							
General & Unspecified (=1)				Reference group			
Digestive (=1)	-0.096**	0.078*	0.045	0.021	-0.011	-0.005	-0.032
	(0.039)	(0.046)	(0.033)	(0.035)	(0.040)	(0.031)	(0.034)
Cardiovascular (=1)	-0.082	-0.053	0.006	0.115**	-0.012	0.045	-0.018
	(0.059)	(0.071)	(0.035)	(0.049)	(0.056)	(0.043)	(0.033)
Musculoskeletal (=1)	0.035	-0.082	0.062**	0.018	-0.080**	0.027	0.020
	(0.043)	(0.057)	(0.030)	(0.039)	(0.040)	(0.037)	(0.026)
Neurological (=1)	-0.032	0.057	-0.035	0.026	0.000	-0.031	0.014
	(0.040)	(0.051)	(0.036)	(0.031)	(0.029)	(0.033)	(0.025)
Respiratory (=1)	0.109***	-0.003	-0.042	-0.022	-0.012	-0.043	0.013
	(0.040)	(0.046)	(0.033)	(0.034)	(0.035)	(0.030)	(0.027)
Endocrinological (=1)	-0.180**	-0.117	0.023	0.100	0.106*	0.034	0.034
	(0.070)	(0.103)	(0.051)	(0.068)	(0.058)	(0.065)	(0.039)
Other symptoms	-0.114**	-0.058	0.032	0.112**	0.030	-0.048	0.047
	(0.055)	(0.079)	(0.031)	(0.044)	(0.048)	(0.040)	(0.029)
Number of days missed due to illness/disease/injury	-0.010**	0.002	0.006***	0.005***	-0.007**	0.000	0.003***
	(0.004)	(0.003)	(0.001)	(0.001)	(0.004)	(0.002)	(0.001)
Household characteristics							
Household size	0.006	-0.016	-0.009	0.002	0.003	0.009	0.006
	(0.008)	(0.015)	(0.007)	(0.008)	(0.008)	(0.007)	(0.005)
Wealth level	0.017	-0.178***	-0.051***	0.063***	0.042**	0.065***	0.042***
	(0.020)	(0.035)	(0.016)	(0.015)	(0.016)	(0.019)	(0.012)
Education (highest years of schooling attained by adult family memmbers)	0.000	0.001	0.008***	-0.003	-0.007*	-0.003	0.003
	(0.005)	(0.006)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)
Quang Tri province (=1)	-0.009	0.006	0.080**	0.040	-0.151**	0.094***	-0.061*
	(0.049)	(0.076)	(0.038)	(0.036)	(0.066)	(0.034)	(0.036)
Khanh Hoa province (=1)	0.018	-0.096	0.054	-0.088***	0.092**	0.049	-0.029
	(0.041)	(0.075)	(0.041)	(0.034)	(0.039)	(0.033)	(0.030)
Log pseudo likelihood				-1155.947			
Observations				816			

Note: Coefficients on continuous variables indicate marginal changes in the probability of each outcome category evaluated at the mean values, and coefficients on dummy variables indicate changes in the probability for each outcome category when the value of the dummy variables changes from zero to one.
Standard errors clustered by commune are in parentheses.
* indicates significance at 10%; ** indicates significance at 5%; *** indicates significance at 1%.

Firstly, there was a significant positive correlation between female patients and CHCs, suggesting that female patients were more likely to choose CHCs than male patients. As CHCs play the role of providing family planning and reproductive health services, women seemed to have more opportunities to visit CHCs than men in order to receive such services. Thus, women may have better knowledge about health services provided at CHCs and also have better trust in health workers at CHCs, which can positively affect the likelihood of visiting CHCs. Elderly people over

60 were less likely to choose self-treatment, but were more likely to visit higher-level public hospitals. Since for elderly people health problems tend to be more easily fatal without appropriate healthcare [iii], they were more likely to choose higher-level hospitals where they could receive more advanced and better treatment, which usually entailed higher costs. Furthermore, most of the elderly over 80 years old received health insurance that is registered at higher-levels from the government for free.

Compared to those who suffered from general and unspecified symptoms, individuals who suffered from symptoms related to cardiovascular diseases tended to choose provincial/central hospitals. Those who experienced musculoskeletal symptoms were more likely to visit district hospitals. Individuals who reported respiratory symptoms were more likely to choose self-treatment. Additionally, the number of days during which the patient was unable to perform the activities of daily living due to illness/disease/injury was significantly associated with the patterns of health facility choice. For severe illness/disease/injury, people were more likely to visit higher-level public hospitals and other health facilities directly, and were less likely to choose self-treatment and RGC.

There was a significant positive correlation between health insurance status and the likelihood of visiting CHC or RGC, while a negative association was found with self-treatment and private health facilities. The positive association between health insurance status and the likelihood of visiting CHCs and RGCs can be explained by the fact that the largest share of the individuals with health insurance registered at the CHC or RGC as the first point of contact.

With respect to household characteristics, a household's wealth is significantly related to a patient's health facility choice. The estimation results show that individuals from better-off households were more likely to choose provincial and central hospitals, RGCs, private hospitals/clinics, and other health facilities, but were less likely to visit CHCs and district hospitals. This tendency was consistent with that reported in other studies that there was a difference in the use of health facilities between rich and poor (Thuan et al., 2008). Since higher-level public hospitals and private medical facilities tend to have better health resources and provide a better quality of services compared with public health facilities at lower-levels, patients

from wealthier households were more likely to seek better healthcare services. The educational level of households had a positive association with district hospitals, suggesting that patients from better educated households tended to choose district hospitals.

Discussion

One of the most important findings of this study was that, even after the introduction of various health insurance schemes including ones with enormous subsidies, a non-negligible proportion (16.7 percent) of patients chose self-treatment and did not go to any medical facility and they were relatively wealthy people. This study, moreover, found a significant association between the likelihood of choosing self-treatment and not having any health insurance, which suggests that patients without health insurance were less likely to use healthcare services. Underutilization of healthcare services is closely related to failure in the achievement of universal health insurance coverage. Furthermore, this study revealed that the health insurance schemes in operation as of 2014 were likely to suffer from the adverse selection problem, which casts doubt on the sustainability of the health financing system and requires further reform. According to the Joint Annual Health Review (GoV, 2015), the enrollment rate for middle-income groups (self-employed agriculture/ non-farm activities/non-working/employees of small and medium enterprises) was still low. Coverage expansion to these groups is necessary to secure the financial sustainability of health insurance schemes.

Before health insurance was introduced, self-treatment was the most common practice in the 1990s (Khe et al., 2002). With the introduction of health insurance schemes, people became more likely to use healthcare services (in our study sample, about 85 percent of patients sought healthcare at health facilities). It appears that the introduction of various types of health insurance schemes, on average, reduced self-treatment [iv] and strengthened the link between patients and the health facilities at which their health insurance was registered. This study found a positive association between having health insurance and the likelihood of visiting CHCs/RGCs (significant at the 1 percent level and 5 percent level, respectively), which suggests that the majority visited the designated first contact point, although some patients went to

another health facility instead [v] . The high figure of using health services at CHCs shows that CHCs play an important role in the healthcare system, especially in early detection, treatment, reduction of costs for clients, and reduction in overcrowding at the upper-levels. Also, another significant finding of our study is that the percentage of patients using the healthcare services of the private clinics/hospitals was high. This reflects the increasing popularity of the private sector in the healthcare of the population nowadays in central Vietnam.

　　　　These tendencies may reveal that patients have some knowledge of what kinds of healthcare services are available as well as the quality of healthcare provided at each health facility so that they visit a particular health facility where the healthcare services they need are available or of better quality. According to the Joint Annual Health Review 2015 (GoV, 2015), however, more than half of patients who visited central hospitals can be treated at lower-level health facilities. Thus, some patients may misperceive the availability of health services and the quality of health services at each health facility, particularly at lower-levels, and this can lead to overcrowding at upper-level health facilities. In addition, this can impose a heavier financial burden on households because healthcare costs will not be covered by health insurance. That is, bypass behavior induced by asymmetric information between patients and health service providers is also a major cause of market failure. The investigation into the reasons why some insured individuals would bypass the first examination place requires further research.

Conclusion

　　　　This study examined the patterns of health facility choice in the central region of Vietnam. One important finding of this study is that 16.7 percent of individuals who report an episode of illness choose self-treatment even after the introduction of various health insurance schemes. Using a multinomial probit regression model, we identified several sociodemographic characteristics of patients that are statistically significantly associated with their healthcare-seeking behaviors. Female patients tend to use CHCs more than male patients. Elderly people are more likely to contact higher-level public hospitals. In addition, there are differences in the patterns of health facility choice by the symptoms the patients suffered from as well as the

severity of the symptoms. With respect to wealth, the better-off are more likely to contact private health facilities and other public health facilities at higher-levels. Patients from highly educated households are more likely to visit district hospitals. Also, there are some regional differences in the pattern of health facility choice.

After controlling for influences from the factors mentioned above, our estimation results revealed that enrolling in a health insurance scheme is negatively associated with the likelihood of patients choosing self-treatment and positively associated with patients visiting their designated health facility. It appears that the introduction of various types of health insurance schemes, on average, reduced self-treatment and strengthened the link between patients and their designated health facility, although it is highly likely that problems occurred due to asymmetric information. These findings enhance our understanding of current healthcare-seeking behavior in the central region of Vietnam and provide insights for policy makers.

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Notes

i　Other health facilities include other state-run hospitals and medical establishments.

ii　There are some exceptions. Those who enrolled in voluntary health insurance tend to have private health insurance whose first point of contact is a private medical facility. Additionally, the number of private medical facilities, which are formally registered and whose healthcare services are covered by public health insurance, has been increasing.

iii　For example, pneumonia is one of the leading causes of deaths in Vietnam. The elderly over 60 are more likely to suffer from pneumonia and it tends to be severer for them compared to other age groups. In addition, the elderly are more likely to have health insurance whose first point of contact is a higher-level public health facility such as a provincial or central hospital.

iv　Because this study only explores the association between the status of health insurance and the likelihood of choosing self-treatment with a limited number of control variables, the causal relationship is inconclusive. Our estimation results may suffer from a self-selection bias due to both observable and unobservable factors that constitute people's voluntary decision to enroll in health insurance (Wagstaff, 2010; Ngyuen, 2012).

v　In the sample used for this study, among those who have a health insurance card whose first point of contact is a CHC, 67.6 percent visited the CHC. Among those having a health insurance card whose first point of contact is a RGC, 55.2 percent visited the RGC. That is, a significant number of the insured bypassed the designated first contact place at either commune or district level and diverted to a higher-level or private health facility.