Factors Associated with Regional Disparity in Utilization of Healthcare Services among the Vietnamese Older People

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Abstract

This study examined regional differences in the utilization of healthcare services among older patients in Vietnam, using a national survey on older people. We applied logistic regression models with various predisposing factors (such as age, gender, and educational level), enabling factors (such as living arrangements and social participation) and health-needs factors (such as self-rated health and chronic conditions) associated with older people's utilization of healthcare services. We found that about 90% of older persons visited a health facility for health treatment, with older persons living in the Central region being more likely than their Northern counterparts in using healthcare services. Also, our studies showed that the predisposing factors and enabling factors widened the regional disparities, however the health-needs factors helped narrow the differences. In addition, chronic conditions were the most important predictors for older people in utilizing healthcare services, and receiving monetary support from children was the main driver for rural older people. By contrast, health insurance was not a predictor of health service access, and this could be elucidated apart by the fact that services paid by health insurance were limited. We discussed some policies to improve the utilization of healthcare services for older people, particularly we argued that social insurance mechanisms must be improved, and familial support to older people in rural areas should be further enabled.

Keywords

Aging; disparity; health status; healthcare; older people; Vietnam

Introduction

The world is experiencing an unprecedented increase in its aged population due to declining fertility rates and increasing life expectancies. As indicated by the United Nations (2019), the older population (defined as those aged 65 and over) will increase from 703 million in 2019 to about 1.5 billion in 2050 (or from 9% to 16% of the world's total population, respectively). Particularly, East and South-East Asia regions, home to the largest number of the world's older population (260 million), are experiencing a faster increase in aged population-in both rates and absolute number-than other regions (United Nations Department of Economic and Social Affairs – UNDESA, 2019). Among various challenges from an aging population, healthcare for older people has been a key concern in all countries since the aging trajectory is closely associated with risks of health deterioration, morbidity, disability, and cognitive functions (Sanderson & Serbov 2013; World Health Organization – WHO 2015). Non-communicable diseases are prevalent among older people and even among younger generations, and are expected to cause an increase in healthcare costs in the coming decades (WHO 2015; Institute of Health Metrics, 2018).

Vietnam will also experience a similar population aging trend and is expected to be one of the top ten countries in the world with the highest growth rates of the older population (General Statistics Office of Vietnam – GSO, 2016). It is expected that the number of older people in Vietnam will increase from about 11.8 million in 2018 to about 27 million in 2050 (or from 12.2% to 25% of the total population, respectively). In regard to health, Vietnam has been facing critical issues of epidemiological transition in terms of shifting in disease patterns, and this poses rapidly growing needs and expenditures on healthcare service (Tran, Barysheva, & Shpekht 2015). In addition, Giang, Pham and Pham (2016), Pham and Do (2009), and Ministry of Health and Vietnam and Health Partnership Group (MOH & HPG) (2018) indicated that costs of healthcare for older people had inflated swiftly due to heavier burdens from non-communicable diseases.

Vietnamese older persons made up a high proportion of the patients in most types of health facilities (MOH & HPG, 2018). They were also mainly dependent on public health systems and outpatient services, which accounted for 53% and 46% of health check-up cases, respectively (MOH & HPG, 2018). In terms of accessibility and affordability in healthcare services, older persons in rural areas – where two-thirds of the older persons are residing – are more disadvantaged than their urban counterparts (Giang & Phi, 2017; MOH & HPG, 2018). Rural older persons were taken care of by their families, but they could no longer be dependent on their children due to rapid changes in migration and living arrangements (Pfau & Giang, 2010; UNFPA, 2011; Vietnam National Committee on Ageing – VNCA, 2018). Moreover, although the Vietnamese government has made significant efforts to place geriatric health care facilities throughout the country, such facilities are still not available in some provinces (MOH & HPG, 2018). At the same time, access to healthcare services is still limited due to a heavy reliance on out-of-pocket payments, which in turn increases the financial pressure of familial support and care of their members (Giang & Phi, 2017; VNCA, 2018). As a result, this poses a number of challenges for both health policy-makers and households in order to provide efficient care for older persons.

With an increasing number of older people, access and utilization of healthcare services among older people in Vietnam are of important issues. Several studies about healthcare utilization (see, e.g., Bang et al., 2017; Giang & Bui, 2013; Giang, Pham, & Pham, 2016; Pham et al., 2019; Tran et al., 2015;) were conducted in Vietnam. For example, using data from Vietnam Household Living Standard Survey (VHLSS) in 2004 and 2008, Giang and Bui (2013)

provided a descriptive analysis of how older people accessed health insurance and used healthcare services. They showed that the proportion of older people having health insurance increased over time, but they did not have equal utilization of healthcare services. The authors, however, did not explore the causes of such inequality. Giang, Pham and Pham (2016), using data from the Vietnam Social Security Agency, explored healthcare services paid by health insurance that older people used in 2014, and they found that older people had various non-communicable diseases, and cost components for drugs, technical services, and hospital fees were varied differently by age and gender. The authors, however, did not show what factors displayed underlying differences between urban and rural older people. Most recently, Pham et al. (2019) used cross-sectional data with 523 older persons in the Soc Son district (a rural area in Ha Noi) to explore factors associated with their utilization of healthcare services (such as gender, poverty status, and occupation), and found that, although women had poorer health and quality of life than did men, there were no gender differences in utilization of healthcare services.

All of the existing studies of the Vietnamese older people were limited to identify regional differences in utilization of health services among older people due to either lack of nationally representative data or shortage of health-related variables. As such, in order to provide more appropriate policy formulation and implementation in providing healthcare services to older people, this study filled the aforementioned research gap by using the first national survey on the Vietnamese older people. In particular, we applied Andersen (1995)'s behavioral model to frame factors influencing healthcare utilization of urban and rural older people in Vietnam.

Data, methods, and variables

Data

This study utilized the data from the Vietnam Aging Survey (VNAS), conducted in late 2011, which was the first nationally representative survey for people aged 50 and over. The VNAS utilized the sampling based on the information of the Population and Housing Census in 2009 to draw a multi-stage stratified random probability sample. Face-to-face interviews using a structured questionnaire were conducted with those people. The VNAS covered a wide range of individuals' information on socio-demographic characteristics, health insurance, healthcare utilization, and health conditions. The response rate of the survey was 96.3%, resulting in the final sample of 4,007 respondents.

In this study, we used only the sample of older persons (those aged 60 and over) with 2,789 people. Furthermore, to answer our research question, the sample was restricted to individuals who were sick or injured in the 12 months prior to the survey. Thus, we had the final sample of 1,011 older patients, of which 784 persons were living in rural areas, and 277 persons were living in urban areas.

The VNAS was approved by the Institutional Review Board in Biomedical Research of Institute of Social and Medical Studies (ISMS) via Decision No. 308/HDDD-ISMS dated 9 May 2011. All procedures performed in the VNAS were in accordance with the ethical standards of Middlesex University or national research committee, and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All the respondents or their representatives agreed to join the survey with their signed consent forms.

Methods

In this study, we followed Andersen's (1995) behavioral model for healthcare utilization. The model examines the utilization of healthcare services using individual and contextual determinants (Andersen et al., 2013). The model has been applied to a wide range of healthcare services in numerous studies (Babitsch, Gohl, & von Lengerke, 2012). The model considers three groups of determinants: predisposing factors, enabling factors, and health-needs factors. Predisposing factors demonstrate the use or not use of health care services, even though these conditions are not directly responsible for the use. Enabling factors that facilitate the use of healthcare services. Health-needs factors show that service providers recognize as requiring treatments (Andersen et al., 2013). We defined and measured these determinants in the next section.

To pursue research objectives, we first presented descriptive statistics of the sample by living regions (i.e., Northern, Central and Southern regions) with t-tests to compare the average values of the group variables, and chi-square tests for the categorical variables. The chi-square tests were also used to examine differences in the dependent and independent variables by health visit (i.e., "had at least a visit to any healthcare facility" vs. "had no visit"). Next, we utilized logistic regression models to estimate the factors associated with the utilization of healthcare services by older patients. The results were presented in odds ratios (OR) along with respective *p*-values.

Utilizing Andersen's behavioral model of health care utilization, nested models including Model 1(base model), Model 2, Model 3, and Model 4 respectively adjusted for predisposing factors, enabling factors, and health-needs factors. Due to the effects of filial norms on intergenerational relations in Asian countries, children were considered as the most important source of support for old-aged parents (Lin & Yi, 2013), and family support was a crucial factor contributing healthcare utilization of older people in both urban and rural areas (Guo et al., 2019; Quashie & Pothisiri, 2018). Therefore, for the Model 5, the interactions of urban-rural residence and receiving monetary support from children were estimated to examine whether receiving monetary support from children has a different effect on health care utilization depending on the urban-rural areas.

The logistic regression analyses consisted of five nested models, as follows.

Model 1: Controlling for living region and urban-rural residence;

Model 2: Model 1 was added with the predisposing factors;

Model 3: Model 2 was added with the enabling factors;

Model 4: Model 3 was added with health-needs factors.

Model 5: for the interactions of urban-rural residence and children's support variable.

Before performing our analysis, we used Variance Inflation Factor (VIF) to check for multicollinearity, and results showed that all VIF values were smaller than 4 as conventional value (O'Brien, 2007), indicating that explanatory variables were not be highly correlated with each other. Besides, we used the Hosmer-Lemeshow goodness-of-fit (GOF) test to check whether the fitted model adequately described the observed outcome in the data, and the results showed that $p = 0.57$, indicating that the model was correctly specified.

In all calculations, sample weights were used to make all results representative for respective groups of older people. The significance level was set at $p< 0.05$.

Variables: definitions and measures

Dependent variable

Information on the utilization of healthcare services by older patients was derived from the question to older respondent, "Did you receive any professional treatment for these illnesses or injuries over the last 12 months?". In this study, healthcare utilization was coded into a dummy variable indicating whether the older people received any treatment over the last 12 years (1 = yes, 0 = no).

If the answer was "Yes," an older patient's response for health services used could be i) central hospitals; ii) provincial hospitals; iii) district hospitals; iv) commune health centers (CHCs); v) private hospitals/clinics; and vi) other.

Other covariates

Predisposing factors included demographic characteristics and health behaviors. Demographic characteristics included age in three groups (60-69 years=0; 70-79 years=1; and 80 and above=2); gender (women=0; men=1); marital status (currently married=0; currently unmarried - single, divorced, separated, and widowed=1); educational levels (no schooling/uncompleted primary school=1; primary school=2; secondary school=3; and high school and above=4); employment status (currently not working=0; currently working=1). Measures of health behaviors were used as indicators of health attitudes: alcohol consumption (no alcohol consumption=0; alcohol consumption=1); and smoking status (no=0; yes=1).

Enabling factors included social health insurance, living arrangements, social participation, perceived sufficient income, household wealth, region, and children's support. Respondents' social health insurance was coded as a binary variable (no=0; yes=1); living arrangements were presented by four sub-categories (living alone=1; living with spouse only=2; living with spouse and children only=3; and living with others with or without spouse and children=4); social participation was defined by individuals' engagement in any local socio-political organization (no=0; yes=1); perceived sufficient income was divided into two sub-groups (insufficient=0; sufficient=1); households were ranked based on the list of household assets, and the wealth scores (with yes=1 and no=0) were transformed into three quintiles (poor=0; average=1; and rich=2); area of residence was measured by two sub-groups (urban=1; rural=0); and region of residence was measured by three sub-categories (Northern=0; Central=1; Southern=2); and received monetary support from children (with yes=1 and no=0).

Health-needs factors included self-rated health (good=0; poor=1); chronic conditions (no=0; one disease=1; two diseases=2; three or more=3), and difficulties with activities in daily living (ADLs) (no=0; at least one difficulty=1); psychological distress symptoms were assessed by the individual's feeling in the past week (such as poor appetite, feel sad/depressed, difficulty in sleeping, and feel lonely), in which each item provided three choices (not at all/ sometimes/ most of the time) and the first choice ("not at all") was coded a value of 0, while the latter two were coded a value of 1.

Results

Table 1 shows the description of the full sample of older patients (N=1,011) by their living regions. About 90% of older patients received professional treatments for their illnesses in the 12 months prior to the survey time. There were significant differences in three regions in the utilization of health care service among older patients (p=0.0089).

The results showed that marital status, educational levels, employment status, smoking status, living arrangements, social participation, household wealth, receiving children's monetary support, and psychological distress were significantly different among three regions. Specifically, older patients living in the Northern region were more likely to be currently married, higher education, currently not working, currently smoking, living with spouse only, poor household wealth, receiving monetary support from children, and having no symptom of psychological distress compared to their counterparts.

Table 1: Characteristics of older patients, by area of residence

Older people's Characteristics	Total (N= 1,011)	Northern (N= 438)	Central (N= 329)	Southern (N= 244)	*p*-value
% Health visits					
Yes	89.82	87.39	96.24	86.86	0.0089
Predisposing factors					
% Age					0.2660
60-69	38.38	39.57	38.73	36.70	
70-79	35.55	30.24	40.16	37.53	
80 and over	26.07	30.20	21.11	25.76	
Mean	72.56	72.56	72.78	72.45	
% Gender					0.0657
Women	60.73	52.31	66.69	65.11	
Men	39.27	47.69	33.31	34.89	
% Marital Status					0.0197
Currently married	68.01	74.69	69.94	58.53	
Currently unmarried	31.99	25.31	30.06	41.47	
% Educational levels					0.0000
No schooling or incomplete primary school	54.18	42.21	59.7	63.06	
Primary school	15.43	10.98	25.57	11.44	
Secondary school	15.79	23.91	8.71	12.76	
High school and above	14.61	22.90	6.01	12.74	
% Employment status					0.0020
Not working	68.9	77.92	58.55	67.79	
Working	31.1	22.08	41.45	32.21	
% Alcohol consumption					0.6430
Never consumed	78.27	75.71	80.07	79.63	
Ever consumed	21.73	24.29	19.93	20.37	
% Smoking Status					0.0400
Currently not smoking	83.82	89.17	75.69	84.95	
Currently smoking	16.18	10.83	24.31	15.05	

Older people's Characteristics	Total (N= 1,011)	Northern (N= 438)	Central (N= 329)	Southern (N= 244)	*p*-value
Enabling factors					
% **Health insurance**					0.1239
No	21.62	17.29	20.11	27.99	
Yes (Any type of health insurance)	78.38	82.71	79.89	72.01	
% **Living Arrangements**					0.0368
Alone	8.64	5.37	8.72	12.34	
With spouse only	20.55	27.64	21.68	11.32	
With spouse and children only	17.74	14.96	15.70	22.81	
With others, with or without spouse and child(ren)	53.07	52.03	53.89	53.53	
% **Social participation**					0.0000
No participation	62.24	64.38	38.65	81.04	
At least 1 club/association	37.76	35.62	61.35	18.96	
% **Perceived sufficient income**					0.5768
Insufficient	69	66.50	72.98	68.31	
Sufficient	31	33.5	27.02	31.69	
% **Household wealth**					0.0415
Poor	33.23	39.33	22.82	35.54	
Average	35.6	37.14	43.18	26.98	
Rich	31.17	23.53	34.00	37.48	
% **Area of residence**					0.2008
Rural	70.24	72.91	77.73	60.37	
Urban	29.76	27.09	22.27	39.63	
% **Received monetary support from children**					0.0029
Yes	36.25	44.72	37.11	25.67	
No	63.75	55.28	62.89	74.33	
Health Needs					
% **Self-Rated Health**					0.1316
Good	15.16	13.92	11.90	19.53	
Poor	84.84	86.08	88.10	80.47	
% **Had ADL difficulties**					0.0877
No difficulty	43.62	36.13	46.03	50.11	
At least one difficulty	56.38	63.87	53.97	49.89	
% **Had chronic conditions**					0.0506
None	17.24	11.03	15.90	25.64	
One disease	27.00	26.62	28.00	26.52	
Two diseases	24.33	22.48	28.54	22.68	
Three or more diseases	31.43	39.86	27.56	25.16	
% **Psychological Distress**					0.0015
No symptom	7.73	12.87	3.70	5.42	
At least one symptom	92.26	87.13	96.29	94.58	

Source: Own calculations, using VNAS 2011

Descriptive analyses for the characteristics of older patients by health visits presented in Table 2. The results show that household wealth (p<0.01), living region (p<0.01), self-rated health

status (p<0.01), and the number of chronic conditions (p<0.001) were significantly different between those having at least a health visit and those without any health visit. Specifically, the majority of older patients who had health visits were lived in Northern areas, lived in households belonging to the average wealth groups, had poor self-rated health, and had three and more diseases.

Table 2: Characteristics of older patients, by health visits

Older people' Characteristics	Total (N=1,011)	Had at least one health visit (N= 888)	Had no health visit (N= 123)	*p*-value
Predisposing factors				
% **Age**				0.4183
60-69	38.38	38.21	39.92	
70-79	35.55	36.46	27.44	
80 and over	26.07	25.33	32.65	
Mean	72.60	72.45	73.73	
% **Gender**				0.3627
Women	60.73	59.99	67.24	
Men	39.27	40.01	32.76	
% **Marital Status**				0.9188
Currently married	68.01	68.08	67.35	
Currently unmarried	31.99	31.92	32.65	
% **Educational levels**				0.9276
No schooling or incomplete primary school	54.18	55.33	54.05	
Primary school	15.43	15.91	15.38	
Secondary school	15.79	17.61	15.58	
High school and above	14.61	11.14	15.00	
% **Employment status**				0.7259
Currently not working	68.90	68.62	71.42	
Currently working	31.10	31.38	28.58	
% **Alcohol consumption**				0.6418
Never consumed	78.27	78.61	75.34	
Ever consumed	21.73	21.39	24.66	
% **Smoking Status**				0.5728
Currently not smoking	83.82	84.18	80.61	
Currently smoking	16.18	15.82	19.39	
Enabling factors				
% **Had social health insurance**				0.7351
No	21.62	21.41	23.48	
Yes (Any type of health insurance)	78.38	78.59	76.52	
% **Living Arrangements**				0.3007
Alone	8.63	8.38	10.92	
With spouse only	20.55	20.31	22.66	
With spouse and children only	17.74	18.93	7.28	
With others, with or without spouse and child(ren)	53.07	52.38	59.13	

Older people' Characteristics	Total (N=1,011)	Had at least one health visit (N= 888)	Had no health visit (N= 123)	*p*-value
% **Social participation**				0.1763
No participation	62.24	61.06	72.61	
Participation in at least one club	37.76	38.94	27.39	
% **Perceived sufficient income**				0.8996
Insufficient	69.00	69.09	68.17	
Sufficient	31.00	30.91	31.83	
% **Household wealth**				0.0031
Poor	33.23	33.72	28.87	
Average	35.60	37.43	19.42	
Rich	31.17	28.85	51.71	
% **Living area**				0.4212
Rural	70.24	70.85	64.86	
Urban	29.76	29.15	35.14	
% **Living region**				0.0089
Northern	37.86	36.83	46.93	
Central	29.47	31.58	10.89	
Southern	32.67	31.59	42.18	
% **Received monetary support from children**				0.4620
No	63.75	63.13	69.19	
Yes	36.25	36.87	30.81	
Health Needs				
% **Self-Rated Health**				0.0061
Good	15.16	13.44	30.39	
Poor	84.84	86.56	69.61	
% **Had ADL difficulties**				0.3107
No difficulty	43.62	42.81	50.72	
At least one difficulty	56.38	57.19	49.28	
% **Had chronic conditions**				0.0001
None	17.24	14.75	39.18	
One disease	27.00	26.61	30.41	
Two diseases	24.33	25.09	17.61	
Three or more diseases	31.43	33.54	12.8	
% **Psychological Distress**				0.6337
No symptom	7.73	7.54	9.46	
At least one symptom	92.26	92.46	90.54	

Source: Own calculations, using VNAS 2011

Table 3 shows that the urban older patients were less likely than their rural counterparts to seek healthcare services at district hospitals, commune health centers, and private hospitals, while the urban older patients tended to have health check-ups at central and provincial hospitals. In general, urban older patients were less likely than their rural counterparts to have health visits.

Table 3: Healthcare service utilization rates of older people, by type of health facility

Characteristics	Total	Rural	Urban	*p*-value
% Place to receive the last treatment				0.0007
Central hospitals	16.17	11.95	26.75	
Provincial hospitals	23.12	19.41	32.4	
District health centers or hospitals	28.26	34.53	12.56	
Commune health centers	8.80	9.73	6.46	
Private hospitals	17.71	17.44	18.38	
Other types	5.94	6.93	3.45	
Mean	3.33	3.43	2.97	

Source: Own calculations, using VNAS 2011

Table 4 presents the results from multiple logistic regressions with the factors to be correlated with older patients' healthcare utilization. Model 1, the unadjusted model, shows that older patients in the Central region had 3.67 times higher probability than the Northern older patients in seeking healthcare services.

Adjustment for predisposing factors (Model 2) significantly increased the Central-Northern gap by 1.13 times, and the predisposing factors were not associated with the utilization of healthcare services.

Adjustment for enabling factors, Model 3 showed that the Central-Northern difference in utilization of healthcare services was further widened, in which the Central dwellers showed 5.09 times higher probability to visit health care services. Moreover, older patients living in households with rich wealth were 0.26 times less likely to have health visits than those living in poorer households.

When we included measures of healthcare-needs factors, the magnitude of the Central-Northern gap slightly reduced by 0.2 times (Model 4). In addition, having two or more types of chronic diseases was positively associated with healthcare services use.

Model 5, which was adjusted for interaction variable between areas and support from children, shows that receiving monetary support from children was positively associated with having health check-ups. To make a more straightforward explanation of the interaction term, Table 5 presents the mean predicted probabilities of using healthcare services among older people according to areas of residence and receipt of monetary support from children. The result showed that receiving monetary support from children increased the probability of healthcare utilization from 88% to 94% in rural areas, whereas there was a negative change in using healthcare service in urban older patients in terms of receiving monetary support from children.

Table 4: Logistic regression on the utilization of healthcare services among the Vietnamese older people

Older people's Characteristics	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)	Model 4 OR (95% CI)	Model 5 OR (95% CI)
Region					
Northern (ref.)			-	-	
Central	3.67*** (1.71 - 7.88)	4.80** (1.84 - 12.52)	5.09** (1.93 - 13.41)	4.89** (1.78 - 13.44)	4.95** (1.76 -13.89)
Southern	0.98 (0.49 - 1.94)	1.05 (0.51 - 2.18)	1.23 (0.58 - 2.61)	1.65 (0.79 - 3.44)	1.69 (0.80 - 3.54)
Living area			-	-	-
Rural (ref.)	-	-	-	-	-
Urban	0.84 (0.44 - 1.62)	0.79 (0.39 - 1.61)	0.69 (0.27 - 1.71)	0.83 (0.34 – 2.05)	1.24 (0.48 - 3.19)
Predisposing factors					
Age					
60-69 (ref.)		-	-	-	
70-79		1.23 (0.51 - 2.94)	1.62 (0.74 - 3.56)	1.42 (0.64 - 3.15)	1.23 (0.56 - 2.72)
80 and over		0.79 (0.28 - 2.26)	0.99 (0.37 - 2.64)	1.01 (0.38 - 2.71)	0.84 (0.33 - 2.16)
Gender					
Men (ref.)		-	-	-	
Women		0.45 (0.17 - 1.16)	0.45 (0.19 - 1.07)	0.43 (0.18 - 1.02)	0.48 (0.19 - 1.20)
Marital Status					
Currently married (ref.)		-	-	-	
Currently unmarried		1.27 (0.60 - 2.66)	1.59 (0.69 - 3.69)	1.48 (0.53 - 4.11)	1.44 (0.51 - 4.06)
Educational levels					
No schooling or incomplete primary school (ref.)		-	-	-	
Primary school		0.72 (0.28 - 1.87)	0.62 (0.24 - 1.62)	0.64 (0.20 - 2.09)	0.64 (0.20 - 2.00)
Secondary school		0.96 (0.34 - 2.74)	0.67 (0.25 - 1.82)	0.65 (0.23 - 1.83)	0.62 (0.22 - 1.74)
High school and above		1.55 (0.36 - 6.60)	1.02 (0.26 - 4.09)	0.96 (0.25 - 3.65)	0.84 (0.23 - 3.02)
Employment status					
Currently not working (ref.)			-	-	

Older people's Characteristics	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)	Model 4 OR (95% CI)	Model 5 OR (95% CI)
Currently working		1.07 (0.44 - 2.62)	0.60 (0.25 - 1.48)	1.21 (0.46 - 3.21)	1.22 (0.46 - 3.25)
Alcohol consumption					
Never consumed (ref.)		-	-	-	
Ever consumed		0.64 (0.26 - 1.60)	0.61 (0.24 - 1.58)	0.75 (0.32 - 1.74)	0.81 (0.34 - 1.90)
Smoking Status					
No (ref.)		-	-	-	
Yes		0.49 (0.19 - 1.26)	1.08 (0.40 - 2.87)	0.75 (0.29 - 1.97)	0.78 (0.28 - 2.19)
Enabling factors					
Health insurance					
Had no social health insurance (ref.)			-	-	
Had social health insurance			1.24 (0.47 - 3.29)	0.99 (0.35 - 2.77)	1.03 (0.37 - 2.90)
Living Arrangements					
Lived alone (ref.)			-	-	
Lived with spouse only			1.21 (0.32 - 4.57)	1.31 (0.32 - 5.39)	1.28 (0.32 - 5.20)
Lived with spouse and children only			3.47 (0.78 - 15.53)	2.84 (0.59 - 13.73)	2.63 (0.54 -12.69)
Lived with others, with or without spouse and child(ren)			1.04 (0.35 - 3.13)	1.24 (0.41 - 3.78)	1.25 (0.41 - 3.75)
Social participation					
No participation (ref.)			-	-	
Participation in at least one club			1.05 (0.50 - 2.18)	1.14 (0.57 - 2.26)	1.03 (0.53 - 2.01)
Perceived sufficient income					
Insufficient (ref.)			-	-	
Sufficient			0.75 (0.37 - 1.54)	0.96 (0.47 - 1.98)	0.91 (0.45 - 1.86)
Household wealth					
Poor **(**ref**.)**			-	-	
Average			1.03 (0.45 - 2.37)	1.23 (0.56 - 2.70)	1.23 (0.56 - 2.68)
Rich			0.26* (0.09 - 0.74)	0.33* (0.11 - 0.97)	0.32* (0.11 - 0.95)

Older people's Characteristics	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)	Model 4 OR (95% CI)	Model 5 OR (95% CI)
Received monetary support from children					
No (ref.)			-	-	
Yes			1.78 (0.85 - 3.71)	1.86 (0.93 - 3.73)	2.77** (1.29 - 5.93)
Health Needs					
Chronic conditions					
No disease (ref.)			-	-	-
One disease				1.76 (0.75 - 4.17)	1.66 (0.70 - 3.96)
Two diseases				3.21* (1.23 - 8.32)	3.25* (1.21 – 8.65)
Three or more diseases				4.99** (1.74 - 14.32)	4.94** (1.67 -14.56)
ADL Difficulty					
No difficulty (ref.)				-	
Had at least one ADL difficulty				1.11 (0.58 - 2.09)	1.16 (0.61 - 2.18)
Self-Rated Health					
Good (ref.)				-	
Poor				1.98 (0.74 - 5.29)	1.87 (0.70 - 5.04)
Psychological Distress					
No symptom (ref.)				-	
At least one symptom				0.91 (0.24 - 3.38)	0.91 (0.25 - 3.38)
Interactions					
Area x received monetary support from children					0.29 (0.08 - 1.12)
Constant	7.27*** (4.35 - 12.17)	13.00*** (3.13 -53.99)	10.12* (1.15 - 88.69)	2.19 (0.13 - 38.11)	2.18 (0.12 -37.92)
F-Statistic	4.49**	1.87*	1.91***	2.56***	2.72***

*Note: *p<0.05, **p<0.01, and *** p<0.001*
Source: Own calculations, using VNAS 2011

Table 5: Predicted probabilities of having healthcare visits according to area of residence and monetary support from children

	Rural	Urban
Did not receive monetary support from children	0.88	0.90
Received monetary support from children	0.94	0.83

Source: Own calculations, using VNAS 2011

Discussions

Utilizing Andersen (1995)'s conceptual framework of healthcare utilization, we found several notable findings regarding factors associated with the utilization of healthcare services among older patients in Vietnam. Our study showed that 89.8% of older patients received professional treatment, in which patients living in the Central region were more likely to use healthcare services than those living in the Northern region. This might be explained by the fact that there were large regional differences in the number of beds per capita, of which the Northern region had much fewer beds per capita, and in particular fewer provincial beds than did the Southern and Central regions (Somanathan et al., 2014). The results also showed that, while the predisposing factors and enabling factor widened the Central-Southern gap in utilization of healthcare services, the health-needs factors narrowed the gap. Notably, rural older patients visited commune health centers, district hospitals, and private hospitals more than their urban counterparts. This finding was inconsistent with other international studies which found that older persons living in urban areas visited physicians more than those living in rural areas (see, e.g., Laksono, Wulandari, & Soedirham, 2019; Li et al., 2018; Quashie & Pothisiri, 2018; Salinas et al., 2011). This could be explained by the fact that Vietnam's grassroots health care system with commune health centers (CHCs), and district health centers or hospitals provided remarkably equitable care. This system provided nearly all care for the poor, and a substantial share of healthcare services for all, particularly in rural areas (World Bank, 2016). Another possible reason was that, due to the effects of filial norms on intergenerational relations in Asian countries, adult children were considered as the most important source of support for old-aged parents in rural areas (Lin & Yi, 2013; Guo et al., 2019). In fact, our results showed that 36.25% of older patients received financial support from their children, and support received from children had a positive relationship with the propensity to have health visits among rural older patients. This finding was similar to those for older people in Thailand and China, which indicated that family support was a crucial factor contributing to healthcare utilization of older people.

Our findings for both rural and urban areas showed that health insurance was not a predictor of health service access among older patients. This finding contrasts with other international studies, which indicated the association between health insurance and health care visits (Gong, Kendig, & He, 2016; Wielen, Channon, & Falkingham, 2018). A possible explanation for such findings might be the ineffective referral mechanisms of health insurance at that time due to relatively poor quality at the primary level facilities (Somanathan et al., 2014). Another possible explanation was that there was an insignificant correlation between having health insurance and out-of-pocket (OOP) health expenditure in both rural and urban areas (Lee et al., 2019). There is a need to promote access to healthcare for older persons who own health insurance in Vietnam. Thus, some policies of the national strategy should be priorities in introducing adaptable health insurance mechanisms for older people in Vietnam.

In regard to other covariates associated with health care utilization, our findings revealed that chronic conditions were the most important predictors of utilization of healthcare among older people. This finding was in line with various studies which reported that chronic conditions had been associated with increased healthcare visit among older person (Clark, Kahn, & Tollman, 2013; Wandera, Kwagala, & Ntozi, 2015). Chronic diseases require greater needs for healthcare services, and thus national policies should be priorities in promoting training in gerontology for health care providers in terms of chronic diseases.

Conclusions

This study showed that there was regional disparity in the utilization of healthcare services, in which older patients living in the Central region were more likely to use healthcare services than older patients living in the Northern region. Notably, the health-needs factors (chronic conditions) were the most important predictors of utilization of healthcare in Vietnam. This suggested a great need to prioritize public healthcare services for chronic diseases among older people in both rural and urban in Vietnam. Besides, health insurance was found not to be a predictor of health service access among older patients, so there is a need for a government effort to improve comprehensive health insurance mechanisms for older people. In addition, receiving monetary support from children was the main driver contributing to the health visit in rural areas. In order to enhance equal access to and utilization of healthcare services among the Vietnamese older people in regional areas, there should be policies and priorities in improving the quality of healthcare services to treat chronic diseases, especially at commune and district levels. Along with these, enabling familial and communal factors to support older people in rural areas should also be a policy option to reach such a target. Reducing regional gaps in healthcare service utilization not only decreases inequity in health for older people but also contributes to the overall national development in Vietnam.

The strength of this study was the first use of a nationally representative sample of older people in Vietnam to examine factors associated with access to healthcare utilization among older persons. The findings of this study have implications for closing the gaps in access to health care utilization for older people in Vietnam. The application of the widely-used Andersen's healthcare behavioral model to the Vietnamese context assisted the findings of this study to also add significant evidence to the international literature on the existing field of research.

Although this study could provide valuable findings for health policy-makers in Vietnam, it could not avoid some limitations. First, as a cross-sectional data set, we could not examine causality between healthcare access and its determinants. Second, the method of survey was based on self-reported data, which could cause measurement errors and affected the accuracy of the results. Third, VNAS could not provide historical information on health-risk behaviors and living conditions of older people in rural and urban areas, which could be important factors determining their current health status, and thus healthcare-seeking behaviors. Likewise, the survey could not provide the number of inpatient admissions and outpatient visits for both urban and rural older people, so that we could not construct an indexation showing their differences in utilization of healthcare services at further details.

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