

Unmet Healthcare Needs and Associated Factors in Rural Vietnam: A Cross-Sectional Study

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Research

Keywords: Health services accessibility, medically underserved area, healthcare disparities

Posted Date: June 16th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-35473/v1>

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Abstract

Background: Although health status in Vietnam has been much improved, people living in rural areas have faced several challenges, including a rapid increase of the aging population, inadequate capacity of health system, and problems of inequities in access to the healthcare system. The purpose of this study was to examine the current utilization of healthcare services, exploring unmet healthcare needs and their associated factors among adults living in rural Vietnam.

Methods: This cross sectional study was conducted with 233 participants in a rural area of Binh Phuoc province and a suburban area of Da Lat city in Vietnam from October–December 2017. The methods included face-to-face interviews using a structured questionnaire as well as anthropometric and blood pressure measurements. We considered participants to have unmet health needs if they had any kind of health problem during the past 12 months for which they were unable to see a healthcare provider in the same period. Multivariate logistic regression analysis was performed to determine the factors associated with unmet healthcare needs.

Results: Of the participants, 18% (n=43) had unmet healthcare needs. The common causes of unmet healthcare were transportation (30%), a lack of available doctors or medicines (47%), and communication issues with healthcare providers (16%). The multivariate logistic regression showed that having stage 2 high blood pressure and reporting no place to go for medical problems were associated with unmet healthcare needs.

Conclusions: Healthcare services are still needed in disadvantaged group living in rural or suburban area of Vietnam. Efforts should focus on availability of medicines, improvement of transportation system as well as communication skills of healthcare providers to improve access to healthcare services.

Background

Vietnam has made enormous progress not only in its socioeconomic development, but also in the overall health status of its citizens. Vietnam has achieved several health-related Millennium Development Goals, such as the decrease of infant and maternal mortality, increased immunization coverage of 97.2% for children younger than 1 year old, and increased treatment rate of 80% for tuberculosis and HIV/AIDS patients.(1) Life expectancy increased from 70.5 years in 1990 to 75.8 years in 2015. In addition, there has been rapid increase in public health facilities and medical equipment available due to increased funds for the health sector from both the government and private sources. (2)

Still, there are several challenges for and problems in Vietnam's healthcare system. These include an emerging increase of noncommunicable diseases (NCDs), such as cardiovascular disease, cancer, and diabetes, an aging population, an inadequate capacity of the health system, and inequities in access to the healthcare system. (2-4)

According to a study on NCD service availability in Vietnam that focuses on ethnic minorities living in a mountainous area, commune health centers play a main role in NCD care and risk factor management, but they have limited NCD preventive and treatment services, have limited medication availability, and are underutilized. (5)

Unmet healthcare needs can be defined as the differences between the utilization of necessary healthcare services to manage a particular health problem and the actual medical service used. (6) (7) Unmet healthcare needs have been reported to be associated with a high mortality rate, especially in the elderly adults population. (8, 9) Unmet healthcare needs and health utilization indicators have also been used to monitor equity in health services. (10, 11) Factors associated with unmet needs for healthcare services depend on the healthcare system as well as individual status, but, in general, they can be classified into three categories. (12, 13) The first category is accessibility, which includes distance to medical facilities, transportation, and financial factors. The second is acceptability, which includes awareness and knowledge about health care. The third is availability, which includes the unavailability of certain medical services, delay, and medical services not being available in certain areas.

The purpose of this study was to examine the current utilization of healthcare services by exploring unmet healthcare needs and their associated factors among adults living in rural Vietnam.

Methods

Study design and participant recruitment

This study was done as a part of feasibility study in Korea's official development assistance project, in collaboration with The University of Medicine and Pharmacy at Ho Chi Minh City. It was a cross sectional study conducted in one rural area in Binh Phuoc province, and the other one of suburban area, Da Lat city in Lam Dong province. These areas were selected due to cooperation from commune health centers and convenience of transportation for interviewers.

Located in the Southeast region of Vietnam, Binh Phuoc, a predominantly rural province, covers an area of 6,871 km², and is divided into 5 commune-level towns, 92 communes, and 14 urban communes. The population of Binh Phuoc in 2015 was 944,400. Dak Nhai, a commune in Binh Phuoc, is in a mountainous area and is 30 to 70 km away from the district hospital. Dak Nhai commune is the residence of ethnic minority peoples, especially the Stieng and M'Nong people. Located in the central highlands of Vietnam, Da Lat city, a district level city, covers an area of 395 km², spreading over 12 urban communes and 4 communes. The population of Da Lat in 2015 was 406,105, of which 55,596 were suburban inhabitants (13.7%). The suburban residents primarily make their money from agriculture, forestry, or handicrafts, and agriculture plays an important part of their local economy. The Ta Nung commune, Tram Hanh commune, and urban commune #7 were selected. These communes are all in suburban areas of Da Lat city, and are 7 to 30 km away from the district hospital.

We selected 203 participants in the Binh Phuoc province and 101 participants in Da Lat city from a list of households from the local authorities, and a total of 304 people were recruited for participation in this study. Among them, 233 people were finally selected after excluding participants less than 19 years old. Well-trained researchers from the faculty of public health of the University of Medicine and Pharmacy at Ho Chi Minh City visited households with help from local health facility leaders and invited family head or any other members of family at home to participate in the survey.

Survey instrument and measurements

Face-to-face interviews were conducted using a structured questionnaire, which included questions about the participant's socio-economic status, health problems, health service utilization, health service responsiveness and satisfaction, and healthcare services needed. The socioeconomic characteristics included age, gender, marital status, education level, ethnicity, occupation, monthly income, number of family members, and health insurance. Health related factors included self-perceived health status, smoking, drinking, physical activity, and underlying chronic disease, such as hypertension, diabetes mellitus, dyslipidemia, heart disease, stroke, chronic lung disease, and depression. Anthropometric measurements including height, weight, and systolic and diastolic blood pressure (SBP and DBP, mmHg) were taken by the researchers using a portable weight and height measurement device (BSM370, InBody Co., Seoul, Korea) and a blood pressure measurement device (HEM-1020, Omron Co., Tokyo, Japan). Height and weight were measured with the subjects barefoot and lightly clothed. Blood pressure was measured twice and recorded when subjects were sitting.

Body mass index was calculated as kg/m^2 . Blood pressure was chosen for the mean values of two measurements and categorized as normal ($\text{SBP} < 130$ and $\text{DBP} < 85$), prehypertension ($130 \leq \text{SBP} < 140$ or $85 \leq \text{DBP} < 90$), stage 1 hypertension ($130 \leq \text{SBP} < 140$ or $85 \leq \text{DBP} < 90$), or stage 2 hypertension ($\text{SBP} \geq 160$ or $\text{DBP} \geq 100$).⁽¹⁴⁾

Questions regarding healthcare service utilization consisted of number of admissions to the hospital or visits to an emergency department and number of visits to an outpatient clinic during the previous 12 months, and expenses during those admissions or visits.

Participants were also asked to evaluate healthcare services they had experienced, that is, how satisfied they were with the healthcare services, and were requested to suggest further improvements they needed. Participants were compensated with a cash equivalent of 5 USD when they finished the interviews.

Unmet healthcare needs group

Participants were asked if they had any kind of health problems during the past 12 months and whether they could see the healthcare providers they needed to solve their problems. Those who had health problems and were unable to see healthcare providers were classified as being in the unmet health needs group and were asked further questions to explore the reasons for not seeing healthcare providers. We classified the questions into three categories of accessibility, availability, and acceptability. For

accessibility, we asked about factors such as knowledge of how to find appropriate doctors, fear, transportation, physical disabilities, difficulties in getting appointments at hospitals, language barriers, and insurance or cost issues. For availability issues, we asked about factors such as lack of available doctors, lack of available medicines, lack of available time, lack of support in visiting the hospital, and lack of health insurance. For acceptability issues, we asked about cultural/religious beliefs, communication with healthcare providers, getting enough information, treatment decision making, privacy, treatment choice, waiting time, condition of the waiting room, and hygiene status of healthcare facilities.

Statistical analysis

Both descriptive and analytical statistical analyses were carried out using SAS 9.4 software. Descriptive statistical analysis was used to present the socio-demographic characteristics, healthcare service utilization, and healthcare service evaluation of participants. Student’s *t*-test and Chi-squared test were used to compare the differences between the unmet healthcare needs group and the healthcare met group. Multivariate logistic regression was performed to determine the factors associated with unmet healthcare needs. The significance level was set at $p < 0.05$.

Results

Of the 233 participants, 64% were less than 50 years old and only 12% of participants were over 65 years old. Overall, 18% of participants (n=43) had unmet healthcare needs. Sociodemographic factors of the unmet and met healthcare needs groups are presented in Table 1.

Unmet healthcare needs group had significantly higher proportions of ethnic minority people than healthcare met group ($p=.045$). In addition, number of unmet healthcare needs group differed significantly between Binh Phuoc (35/159, 22%) and Da Lat (8/74, 11%) ($p=.040$) and in terms of having larger numbers of family ($p=.029$). Unmet healthcare needs group was more likely to get unhealthy behaviors such as smoking ($p=.015$) and hazardous drinking ($p=.056$).

Table 1. Sociodemographic characteristics of study participants

Characteristic, n (%) or median(IQR)	Unmet needs group N=43	Healthcare met group N=190	P-value
Age in years			0.555
19–34	11 (26)	64 (34)	
35–49	16 (37)	59 (31)	
50–64	9 (21)	46 (24)	
≥ 65	7 (16)	21 (11)	
Sex			0.049
Male	25 (58)	79 (42)	
Female	18 (42)	111 (58)	
Marital status			0.192
Married	34 (79)	165 (87)	
Education level finished			0.275
Illiterate	7 (16)	14 (7)	
Primary	23 (53)	111 (59)	
Secondary	8 (19)	32 (17)	
High school	5 (12)	24 (13)	
More than high school	0 (0)	8 (4)	
Ethnicity			0.045
Vietnamese	26 (60)	131 (69)	
Mnong/Stieng	14 (33)	32 (17)	
Others	3 (7)	27 (14)	
Occupation			0.538
Farmer	32 (74)	127 (67)	
Homemaker	7 (16)	31 (16)	
Service or sale workers	3 (7)	16 (8)	
Others	1 (2)	16 (8)	
Area			0.040
Binh Phuoc	35 (81)	124 (65)	

Da Lat	8 (19)	66 (35)	
Having insurance			0.132
Yes	34 (79)	128 (67)	
No	9 (21)	62 (33)	
Number of family members (median, IQR)	5 (4, 6)	4 (3, 5)	0.029
Monthly income, 1000 VND (median, IQR)	3,333(1,666, 6,000)	3,500(1,500, 5,000)	0.930
BMI, kg/m ²			0.442
< 18.5	20 (47)	112 (60)	
18.5–22	9 (21)	27 (14)	
23–24	9 (21)	29 (15)	
≥ 25	5 (12)	20 (11)	
Blood pressure, mmHg			0.054
SBP <130 and DBP <85	16 (37)	108 (57)	
130≤SBP<140 or 85≤DBP<90	9 (21)	36 (19)	
140≤SBP<160 or 90≤DBP<100	10 (23)	31 (16)	
SBP≥160 or DBP≥100	8 (19)	15 (8)	
Chronic disease			
Hypertension	7 (16)	33 (17)	
Diabetes mellitus	1 (2)	7 (4)	
Dyslipidemia	0 (0)	10 (5)	
Heart disease	1 (2)	27 (14)	
Stroke	0 (0)	4 (2)	
Chronic lung disease	5 (12)	7 (4)	
Chronic viral hepatitis	1 (2)	1 (1)	
Depression	4 (9)	37 (19)	
Physical activity			0.127
High	12 (28)	55 (29)	
Moderate	6 (14)	52 (27)	
Low	25 (58)	80 (42)	

Currently smoking			0.015
Yes	18 (42)	45 (24)	
Hazardous drinking			0.056
Yes	15 (35)	38 (20)	

BMI, body mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure, VND: Vietnam Dong, IQR: interquartile range

Table 2 presents the healthcare utilization patterns of both groups. Higher cost with longer distance for emergency services were observed in unmet healthcare needs group. Total costs for health services were significantly lower in unmet healthcare needs group. The most common means of transportation was private car or motorcycle.

The unmet healthcare needs group had higher response (30%) to the question of having no place to go for an advice for health compared to the healthcare met group (5%). The most commonly encountered health challenges in both groups were joint pain or back pain, with half of participants reported these conditions. Of note, heart disease and cancer were reported significantly higher in the healthcare met group.

Table 2. Healthcare utilization and health service needs

Characteristic, n (%) or median(IQR)	Unmet group N=43	Control group N=190	P- value
Number of admission to the hospital during the past 12 months	0	1	
Average cost per night at the hospital (1000 VND)	Not applicable	300	
Distance from home to the hospital (km)	Not applicable	33	
Number of visits to emergency room	5	26	0.720
Average costs per emergency service at the hospital (1000 VND)	1300 (1000, 1700)	1000 (500, 1300)	0.515
Distance to the emergency department (km)	34 (30, 37)	25 (4, 38)	0.434
Total cost for health services during the past 12 months (1000 VND)	15 (0,750)	1500 (300, 3000)	<0.001
Having a place to go for advice about health	30 (70)	180 (95)	<0.001
Type of transportation			0.348
Private car or motorcycle	28 (70)	141 (74)	
Public car	1 (3)	5 (3)	
Ambulance	1 (3)	2 (1)	
Other	6 (15)	36 (19)	
Transportation time in minutes	20 (10,90)	30 (15,90)	0.557
General health status			0.932
Excellent/Very good	1 (2)	5 (3)	
Good	9 (21)	43 (23)	
Fair	21 (49)	98 (52)	
Poor	12 (28)	44 (23)	
Health status compared to the previous 12 months			0.142
Better	7 (16)	20 (11)	
Worse	19 (44)	115 (61)	
About the same	17 (40)	55 (29)	
Place to go to when you are sick			0.086
District hospital	13 (30)	55 (29)	

Emergency department	8 (19)	24 (13)	
Private Health Clinic	7 (16)	64 (34)	
Commune health Center	6 (14)	58 (31)	
University/teaching hospital	3 (7)	17 (9)	
Traditional	1 (2)	3 (2)	
Others	6 (14)	16 (8)	
Top three health challenges you are dealing with			
Joint pain or back pain	21 (49)	94 (49)	0.939
Chronic disease	7 (16)	55 (29)	0.089
Stroke	6 (14)	20 (11)	0.519
Cancer	5 (12)	51 (27)	0.035
Heart disease	4 (9)	50 (26)	0.017
What is needed to improve the health of you, your family, and neighbors			
Wellness services	19 (44)	81 (43)	0.853
Health screening program	15 (35)	68 (36)	0.911
Healthier food	10 (23)	56 (29)	0.413
Specialized physicians	8 (19)	64 (34)	0.053
Types of health screenings and services needed			
Routine medical check-up program	18 (42)	93 (49)	0.401
Blood pressure management	11 (26)	72 (38)	0.128
Disease outbreak prevention	11 (26)	35 (19)	0.328
Treatment of alcohol abuse	10 (23)	18 (9)	0.012

VND: Vietnam Dong, IQR: interquartile range

Table 3 shows reasons for participants in the unmet healthcare group not using health services. As for accessing healthcare service, transportation was identified as the most important factor. Regarding the availability issue, lack of available doctors and lack of medicines accounted each for 47% of all causes. Moreover, 23% did not use insurance during the last visit, and 86% even did not even receive a refund despite they reported having no problem in using insurance. Regarding the acceptability issue,

communication issues with healthcare providers were the most common barrier, accounting for 16% of all causes.

Table 3. Reasons for not using health services in the unmet healthcare needs group

Reasons	Prevalence n (%)
Accessibility	
Transportation	13 (30)
Do not know how to find doctors	5 (12)
No insurance and unable to pay for the care	4 (9)
Unable to pay co-pays/deductibles	4 (9)
Fear	3 (7)
Language barriers	2 (5)
Availability	
Healthcare provider did not prescribe any medicine at your last visit	20 (47)
Unable to get medicines prescribed	20 (47)
Did not use healthcare insurance at last visit	10 (23)
Lack of availability of doctors	6 (14)
Unable to receive refund from healthcare insurance	4 (9)
Acceptability	
Clarity of communication	7 (16)
Waiting room	5 (12)
Health services in general	5 (12)
Information about treatment	4 (9)
Involvement in decision making	4 (9)
Room hygiene at health facilities	4 (9)
Do not understand the need to see a doctor	3 (7)
Time healthcare provider spent for you	3 (7)
Freedom to choose healthcare provider	1 (2)

Table 4 shows the factors associated with unmet healthcare needs that were identified using multivariate logistic regression analysis. Having stage 2 high blood pressure (OR=3.96, 95% CI= 1.07-14.71) and reporting no place to go for evaluation and management of medical problems (OR=13.86, 95% CI= 3.87-49.67) were significant factors associated with unmet healthcare needs. In addition, participants who reported higher total medical costs spent last year (OR=0.61, 95% CI= 0.45-0.84) and had heart disease (OR=0.28, 95% CI= 0.08-0.97) were less likely to have unmet healthcare needs.

Factors	Odds ratio	95% confidence interval
Age in years		
19–34	1.00	1.00
35–49	1.98	0.53 – 7.43
50–64	2.46	0.59 – 10.22
≥ 65	4.38	0.55-34.89
Sex		
Female	1.00	1.00
Male	2.04	0.74 -5.58
Education		
Less than high school	1.00	1.00
More than high school	2.43	0.79 -7.49
Having health insurance		
No	1.00	1.00
Yes	2.28	0.67 -7.75
Monthly income increase by 1,000 VND	1.28	0.47 -3.48
Marital		
Single or divorced	1.00	1.00
Married	0.35	0.10 -1.40
Location		
Binh Phuoc	1.00	1.00
Da Lat	2.56	0.66 – 9.93
Number of family increase by one person	1.27	0.93 – 1.72
BMI, kg/m ²	0.94	0.79 – 1.12
Blood pressure group		
SBP <130 and DBP <85	1.00	1.00
130≤SBP<140 or 85≤DBP<90	2.03	0.58-7.04
140≤SBP<160 or 90≤DBP<100	1.50	0.38 -5.94
SBP≥160 or DBP≥100	3.96	1.07 – 14.71

Total medical costs spent last year increase by 1000VND	0.61	0.45 – 0.84
Having underlying heart disease		
No	1.00	1.00
Yes	0.28	0.08 – 0.97
Place to go when you have a medical problem		
Yes	1.00	1.00
No	13.86	3.87 – 49.67

BMI, body mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure, VND: Vietnam Dong

Discussion

Our study identified factors related to unmet healthcare needs among adults living in rural and suburban areas of Vietnam. Unmet healthcare needs were found in 18% of participants, which was higher than 11% of general population in Korea (15) and much higher than unmet healthcare needs in 1.6% of the rural population in Thailand (16). Having no healthcare resources when medical problems occur was strongly associated with unmet healthcare needs. Thus, no source of care can be regarded as being potentially inaccessible to healthcare service. How we assess people's unmet healthcare needs is important because access to effective healthcare services is the next step in improving health for Vietnamese people living in rural areas. However, access to health service is a complex concept, and measuring unmet healthcare needs could be approached on multiple levels and according to several frameworks. (17) Anderson et al. proposed 3 components of individual level characteristics labelled as "predisposing factors" (demographic factors, social factors, or individual beliefs), "enabling factors" (income, health insurance, or usual source of care), or "perceived need" (perceived or evaluated need for service). (18) These components lead to health service utilization, and this framework has produced outcomes such as appropriate utilization and consumer satisfaction. Since this study evaluated the effect of individual characteristics on unmet healthcare needs, we explored the individual variables according to the Anderson's framework. As for predisposing factors, study participants presented no significant differences except for slightly higher proportions of males and people of ethnic minority in the unmet healthcare needs group. However, among enabling factors, no usual source of care and higher numbers of family members were identified as significant differences between the two groups. If a person has underlying medical illness or disease, he or she has a healthcare need for the treatment. From the "need" point of view, having stage 2 hypertension and unhealthy health related behaviors including smoking and hazardous drinking were observed more often in unmet healthcare needs group. This was relatively different from previous studies, in which economic problems were significantly responsible for the accessibility problem (19-21). This might due to the relatively homogenous nature in our study population, where all of them were living in suburban or rural areas of Vietnam. Most of participants were living by agriculture, had no formal education after primary school, had health insurance to cover medical

costs, and had a monthly income that was not significantly different from the other group. In our study, personal “need” issues were important in unmet healthcare needs, and stage 2 hypertension could possibly be related to untreated high blood pressure such as cardiovascular problems or chronic kidney disease. Heart disease was not correlated with unmet healthcare needs, possibly due to the reverse causation that the unmet needs group had a lower chance of heart disease diagnosis. Nearly half of participants could not get prescription from healthcare providers or could not get medicine, and this was the biggest cause of unmet healthcare needs. This might reflect the importance and need for a greater investment of community-level health resource allocation such as identifying population who are potentially inaccessible to healthcare service, support for them, and providing healthcare services. (22) More than two thirds of the study population used a motorcycle to go to the hospital, and this was also a barrier to access to healthcare service similar in previous published studies .(23, 24) Older adults (more than 65 years old) who might have had multiple comorbidities made up only 12% of the total study participants, thus the most common health challenge people reported in our study was joint pain or back pain. However, chronic disease such as high blood pressure, diabetes or chronic lung disease was also recognized as health challenges because of its economic burden, which might cause repeated, lifelong medical expenditures for the treatment of chronic disease. (25) Health policy aimed toward improving healthcare in rural areas should consider not only cost and effectiveness of interventions or policy, but also providing equity in access to healthcare as well as reducing financial risks.(26)

There are several limitations in this study. First, sites were not randomly chosen because of the availability of cooperation from commune health centers and transportation convenience for interviewers. Study participants were selected from the list of households provided by local authorities, and from this list we tried to select participants according to even distribution of age and gender. However, our population might not be representative of people living in rural areas of Vietnam.

Second, we did not link our survey results with objective data such as morbidity, mortality, health insurance status covered by national insurance, public health service provided by commune health centers, number of healthcare facilities, or number of healthcare providers including doctors and nurses. These community-based data can suggest more objective indicators including health resource allocation per capita. In addition, community level factors associated with unmet healthcare needs were not evaluated in this study. Further research including nationally representative data and considering objective data will be necessary for establishing health policy in rural Vietnam.

Despite these limitations, this study has evaluated health problems and unmet healthcare needs among people living in rural and suburban areas of Vietnam. Our findings show that 18% of people living in rural and suburban areas of Vietnam have unmet healthcare needs, and unavailability of medicine and transportation were barriers to accessing healthcare services. Further studies with representative samples of the population will be needed to evaluate unmet healthcare needs in Vietnam.

In conclusion, our study suggested that healthcare services are still needed in disadvantaged groups living in rural or suburban areas of Vietnam. Efforts should focus on availability of medicines,

improvement of transportation system as well as communication skills of healthcare providers to improve access to healthcare services.

Abbreviations

SBP : systolic blood pressure

DBP : diastolic blood pressure

OR : odds ratio

CI : confidence interval

Declarations

■ Ethics approval and consent to participate

The Institutional Review Board of the University of Medicine and Pharmacy at Ho Chi Minh City reviewed and approved the all activities of this study. All participants were informed about the survey and were asked for their verbal consent before collecting data. Participants could withdraw from the interview at any time without any threat or disadvantage.

■ Consent for publication

Not applicable

■ Availability of data and materials

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

■ Competing interests

The authors declare that they have no competing interests.

■ Funding

The research was funded by Korea's Official Development Assistance Project of Korea Institute for Advanced Technology.

■ Author's contributions

JYK : conceived of the study, abstracted and analyzed data, JYK and DIK: developed the first draft, contributed to the final revision of the manuscript, DVD: contributed to the study design and critically reviewed the final draft of the manuscript, YP: data collection and interpretation , PHNT and MTTT : set

up the study and conducted the survey, analyzed data and contributed to the final revision of the manuscript, TTT: analyzed the data, interpreted the results and contributed to the final draft of the manuscript. All authors read and approved the final manuscript.

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Figures

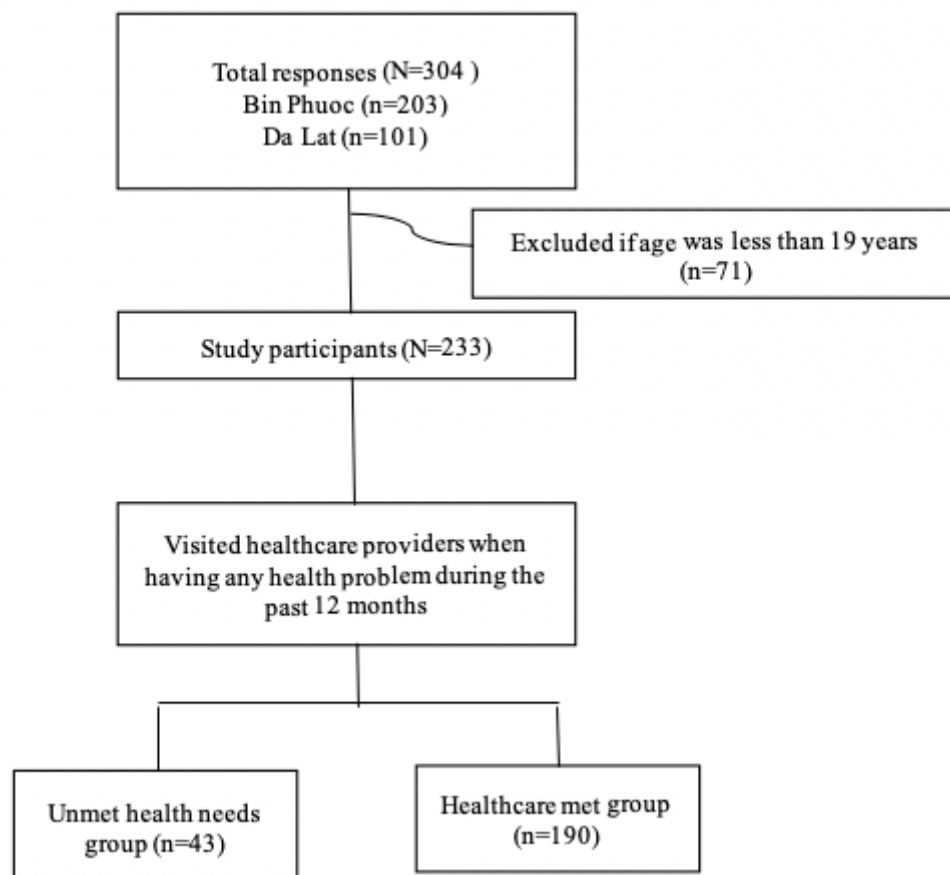


Figure 1

Flowchart of study participants