The Health-Seeking Behavior of the Elderly with Non-communicable Diseases at Coastal areas, Vietnam

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The Health-Seeking Behavior of the Elderly with Non-communicable Diseases at Coastal areas, Vietnam

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This certifies that the Master's thesis
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December 2021

DECLARATION

I, **Ho Minh Duy,** do hereby declare that the thesis entitled **"The Health-Seeking Behavior of the Elderly with Non-Communicable Diseases at Coastal areas, Vietnam"** is the result of my work except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in the candidature of any other degree.

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Ho Minh Duy

Korea, December 2021.

DEDICATION

To my great grandmother, parents

Tran Thi Vach

and

Ho Van Hiep & Phan Thi Hong

To my dear brother and sisters,

To all the people who provided me with your endless love and support,

Thank you for believing me and being a part of my life.

I wish you all the best.

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LIST OF ACRONYMS

Chronic obstructive pulmonary disease	COPD
Healthcare seeking behavior	HSB
Institute for Health Metrics and Evaluation	IHME
Intergenerational Self-help Club	ISC
The Ministry of Culture, Sports and Tourism	MOCST
Ministry of Health	MOH
Ministry of Labor-Invalids and Social Affairs	MOLISA
The Ministry of Transport	MOT
Non-communicable diseases	NCDs
Primary Health Care Unit	PHCU
United Nations	UN
Vietnam Association of the Elderly	VAE
World Health Organization	WHO

ABSTRACT

The Health-Seeking Behavior of the Elderly with Non-communicable Diseases at Coastal areas, Vietnam

Background

The aging population is rapidly increasing globally. It proves a severe impact on developing and low-income countries due to insufficient resources and lack of awareness towards the challenges of health issues. In Vietnam, over 11 million people aged 60 and over, accounting for 11.8% of the population. It is projected that by 2050 there will be nearly 29 million people (HelpAge, 2018). People over 60 years old have 2.6 diseases, over 80 years old have 6.8 diseases on average (Dang Thi Thanh et al., 2018; MOH, 2020). Therefore, healthcare facilities and the health services behavior of older populations with non-communicable diseases are considered important in formulating a health program targeting this group. Significantly, the coastal area is a challenging area where participants live (Government, 2016b).

Purpose

This study aimed to investigate the health-seeking behavior of the elderly with non-communicable diseases, and its associated factors.

Method

A Cross-sectional study was conducted in seven coastal areas in Thua Thien Hue province, Vietnam, with a sample of 370 people aged 60 years and older. Physicians diagnosed the presence of non-communicable diseases at health care facilities. Information on independent variables such as social, demographic, perceived health status, etc., and dependent variables such as health-seeking behavior through the utilization of healthcare services were collected using a structured questionnaire. In addition, a pilot investigation questionnaire on patients who visit a primary healthcare unit in one of seven coastal areas was conducted, and investigators were trained before collecting data. Chi-square and multiple logistic regression analyses were used to examine the factors associated with the utilization of health care services.

Results

The mean age of participants was 69.70 ± 6.6 (SD). Over half of the participants were fishery or agriculture, 14.3% of them were under an average standard of economic. The proportion of multiple non-communicable diseases was 18%. The disease duration was mainly about 5-10 years and more than ten years with the rate over 40%, respectively. Most participants were diagnosed at public health facilities. A third of quarter of participants required health care counseling. The results of the study showed that 69.8% of the total participants had health-seeking behavior. The findings also revealed that the elderly living alone were likely to have 4.5 times less health-seeking behavior than those who did not live alone (OR: 4.48, 95% CI: 1.016-19.78, p=0.048). Similarly, the economic status was related to the health-seeking behavior. People with an average and wealthier income seemed to have 2.8 times higher utilization of healthcare services than the poor and below

the average group (OR: 2.81, 95% CI: 1.11-7.11, p=0.029). A group with multiple NCDs were more likely to have nine times higher health-seeking behavior than those with only one disease (OR: 9.24, 95% CI: 2.665-32.15, p=<0.001). Health insurance and the needed for health care counseling were also relevant (OR: 4.16, 95% CI: 1.30-13.31, p=0.016), (OR: 3.91, 95% CI: 2.04-7.49, p<0.001), respectively.

Conclusion

Health-seeking behavior is one of the most important positive implications for the aged population, encompassing one's physical, mental, and psychological wellbeing. The future study would be clarifying the same results in-depth to understand and improve the health-seeking behavior in the elderly and enhance their quality of life.

Keywords: elderly, non-communicable diseases, health-seeking behavior, coastal

I. INTRODUCTION

1.1. Background

According to World Health Organization's forecast, the 21st century is an era of population aging, and it is estimated that by 2050, a total of 2 billion of the world's population over 60 years of age, up from 900 million in 2015, and 80% of it will live in developing countries (WHO, 2018a).

In Vietnam, over 11 million people aged 60 and over, accounting for 11.8% of the population. It is projected that by 2050 there will be nearly 29 million people (HelpAge, 2018). With this pace, Vietnam is becoming one of a few countries with the fastest population aging globally. Additionally, the elderly tend to have more than one disease simultaneously because all organs become functional impaired. According to the Vietnam Ministry of Health, people over 60 years old have 2.6 diseases, over 80 years old have 6.8 diseases on average (Dang Thi Thanh et al., 2018; MOH, 2020). From 2009 to 2019, non-communicable diseases (NCDs) always accounted for eight out of the top ten leading causes of death in Vietnam (IHME, 2019; Vollset et al., 2020). The rapidly increasing number of the elderly creates challenges for all countries, not excluding Vietnam, significantly increasing the burden of diseases on the health care system and finance and management of NCDs in the community. Many countries around the world today are showing significant concerns about this issue and are looking for optimal remedies.

In terms of the coastal areas, the poverty population was higher than other areas, and the national health criteria do not meet or fall below the country's standard average. Moreover, access to hygienic water, hygienic latrines, and transportation difficulties were also problems in this area. Therefore, according to Decision No. 1559/QD-TTg, The Prime Minister, the government approved that coastal area is extremely difficulties area (Government, 2016b).

Over the years, there have been numerous efforts in improving the provision of health services for the elderly group and health management, including promoting and developing national health insurance and primary health care units such as: giving free health insurance for an elder from 80 years of age and over, and vulnerable groups (Government, 2008); The project on health care for the elderly in the period 2017-2025 with the goal of "The health care needs of the elderly to adapt to the aging population" (MOH, 2016); National strategy to prevent and control of non-communicable diseases, period 2015-2025 (Government, 2015a).

Health-seeking behavior (HSB) has been defined as "any action or inaction undertaken by individuals who perceive themselves to have a health problem or to be ill to find an appropriate remedy" (Olenja, 2003; Ward, Mertens and Thomas, 1997). In addition, health-seeking behavior is measured in terms of utilization of health care services by inferring that it takes place as evidenced by the existence of multiple health care services and the need for primary health care (Cornally and McCarthy, 2011).

The health-seeking behaviors of the elderly are influenced by a variety of factors such as socio-economic, age, gender, family, financial status, perceived health status and illness, type of illness, and access to services (Dey et al., 2012). An Ihaji et al.'s study reported that the elderly's decision-making processes influenced their health-seeking behavior. This study reported that community norms and expectations influenced the elderly's decision-making process, such as appropriate behavior for men and women in terms of social expectations, rights, power, and access to resources for men and women, health-related behavior, as well as education, gender, and regional organization. (Elvis, 2014). Sarkisian et al.'s study, stated that having lower expectations for health when they get old was independently associated with the perception that health-seeking behavior for age-associated conditions is "not very important." In conclusion, these elderly were uninformed of the possible benefits of health care seeking to address their age-related health issues (Sarkisian, Hays and Mangione, 2002).

However, taking care and increasing the ability to access health services for the elderly have failed to keep pace with the rapidly aging population so far, thus putting a great deal of pressure on building and implementing relevant policies, especially health care for helping the elderly to live healthy in disadvantaged areas. Furthermore, there is currently a lack of research among the elderly with NCDs in coastal areas in my hometown, thus leading to a current shortage of data in this field. Therefore, I was motivated to study "Health-Seeking Behavior of the Elderly with Non-communicable Diseases at Coastal area, Vietnam." This study could provide clues for preventive measures and strategies to improve

the access ability to medical services and the well-being of this population.

1.2. Purpose

1.2.1. Research questions

What was the health-seeking behavior of the elderly with non-communicable diseases and the factors affecting them in coastal areas, Vietnam?

1.2.2. Objectives

- General Objectives:

To determine the health-seeking behavior and impact factors among the elderly from 60 years of age and over with non-communicable diseases at the coastal areas in the Central Region of Vietnam in 2020.

- Specific Objectives:

- To determine the health-seeking behavior among the elderly ≥ 60 years with non-communicable diseases at coastal areas, Phu Vang district, Thua Thien Hue province, Vietnam.
- To determine the factors affecting the health-seeking behavior among the elderly ≥ 60 years with non-communicable diseases at coastal areas, Phu Vang district, Thua Thien Hue province, Vietnam.

1.3. Operational Definition

1.3.1. The elderly group

According to United Nations and WHO, the elderly are 65 years and older (United Nations, 2019; WHO, 2010). The elderly as being frail and with altered pharmacology (Singh and Bajorek, 2014). In Vietnam, it is quite different. We define the elderly group as those equal to 60 years and over (Government, 2009). It presents the mandatory age of retirement for men in the public sector, and is the most commonly used age cut-off to separate the population in Asian countries.

1.3.2. Non-communicable diseases

Non-communicable diseases (NCDs), also called chronic diseases, tend to be of long duration and result from a combination of genetic, physiological, environmental, and behavioral factors (WHO, 2021).

1.3.2. Health-Seeking Behavior

Health-seeking behavior (HSB) has been defined as "any action or inaction undertaken by individuals who perceive themselves to have a health problem or to be ill to find an appropriate remedy" (Olenja, 2003; Ward, Mertens and Thomas, 1997).

II. LITERATURE REVIEW

2.1. Non-communicable disease among the Elderly

Nowadays, non-communicable diseases represent the most considerable global disease burden and have become prominent on the global health agenda. These NCDs account for 71% of deaths worldwide, and 77% are in low and middle-income countries (WHO, 2021). By 2030, the global mortality rate of NCDs would be 510.54 (per 100,000 population) and account for 75.26% of the total number of deaths in the World (Wang and Wang, 2020). Thus, NCDs have devastating health consequences for individuals, families, and communities, threatening the healthcare systems.

The elderly have a variety of age-related diseases, which leads to having more than one disease simultaneously because all organs are dysfunctional, and this requires additional resources to take care of their needs. The elderly are also a more vulnerable to changes in their environment and health status than younger people when affected by social, economic, and demographic changes (United Nations, 2019). As a result, they often face difficulties accessing appropriate healthcare services, particularly treatment and prevention, and they are also utilizing these services much less.

In Vietnam, the average life expectancy has been significantly increased. From 1900 to 2000 and to 2020, the life expectancy was raised from 71.3 to 73.5 and to 75.8 years,

respectively. Therefore, it was predicted that in the year 2100, the average life expectance of Vietnamese would be 81 years. Besides, it was also witnessed a sharp decrease in infant mortality from 33.51 in 1900 to 15.36 per 1000 live births in 2020, and estimated around 14 per 1000 by 2100 in the Southeast Asia, East Asia, and Oceania. The estimated infant mortality rate would be lower than the projected infant mortality rate in the world (17/1000 live births) (IHME, 2019; Vollset et al., 2020; Worldometer, 2020). Based on these population transition trend Vietnam's population is aging.

Vietnam is one of South East Asia countries with the highest number of elderly individuals (60+), but according to the national surveillance on the elderly in 2011, over 50% of the elderly reported their health status as weak and 6.7% very weak. In addition to physical care, the elderly requires mental care. (Giang, 2012; HelpAge, 2018). People from 60 to 79 years of age have an average of 2.6 diseases, and over 80 have 6.8 diseases (Dang Thi Thanh et al., 2018; MOH, 2020). A study by Nguyen Thi Tuyet et al. in 2020 showed that the disease pattern in Vietnam changed significantly from 1996 to 2016 and was forecasted to 2026. The incidence and mortality of injury and communicable diseases have decreased, while non-communicable diseases have increased (Figure 1).

Vietnamese also had a low level of physical activity, high consumption of salt, instant noodles, sweetened non-alcoholic beverages, and low consumption of fruit, vegetables, and seafood. The consumption of alcohol and smoking prevalence were high among men

(IHME, 2019; Nguyen and Hoang, 2018; WHO, 2018b). All these things increased the risk of NCDs (Sugathan, Singh and Hasni, 2019; WHO, 2021).

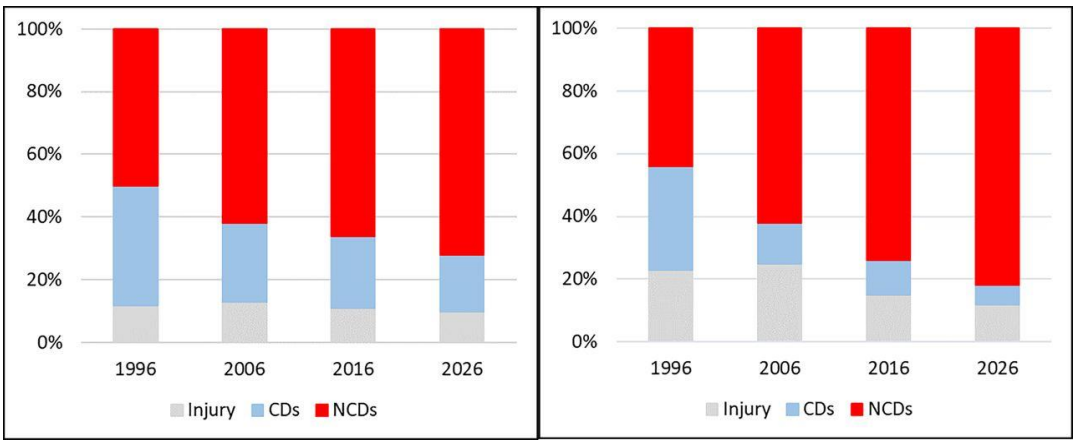

Figure 1. Morbidity and mortality pattern in Vietnam 1996 to 2026 (Nguyen and Trevisan, 2020) (CDs: communicable diseases)

From 2009 to 2019, non-communicable diseases (NCDs) always accounted for eight out of top ten leading causes of death in Vietnam (IHME, 2019) (Figure 2). The proportion cause of death by non-communicable diseases increased from 77% in 2018 to 81% in 2020 (WHO, 2018b; WorldBank, 2019).

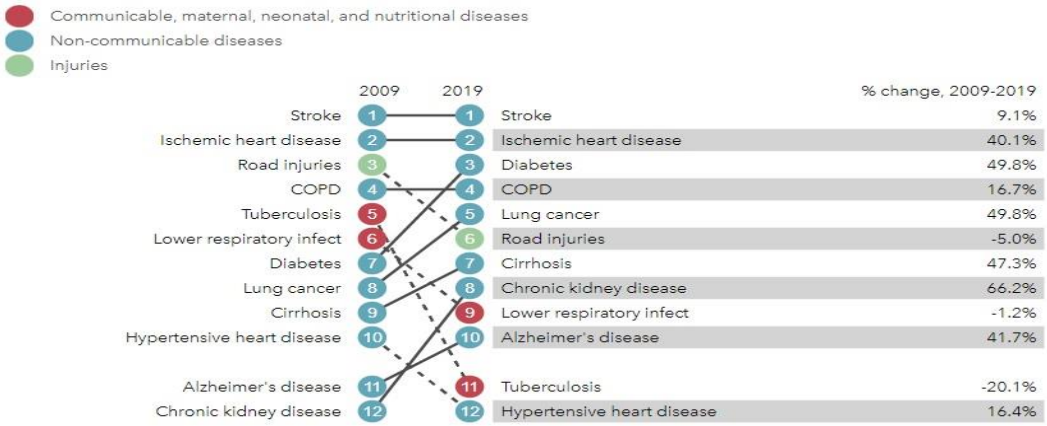

Figure 2. Top causes the most of deaths in Vietnam from 2009 to 2019 (IHME, 2019).

2.2. Health care services

According to the medical dictionary, health care services are a business that provides testing or treatment services for diseases or dysfunctions in humans, dispensing drugs or medical equipment for inpatient and outpatient treatment. The second explanation is a procedure performed on a person for diagnosing and/or treating disease ("Health Care Service,").

In Vietnam, the medical examination includes some activities: asking the patient, taking a history of health status, performing a physical examination, taking a laboratory test if necessary, and treating appropriate methods. Treatment is using medical methods and medicine that have been allowed (Government, 2012).

The healthcare service delivery system is divided into 4 levels (Figure 3) (Le et al., 2010; MOH, 2006):

- Central Hospitals, Specialized Central Hospitals, and University Hospitals under the Ministry of Health perform deep medical expertise and high technology often the place to treat severe and complex patients.
- Provincial hospitals: these are medical facilities with good technical facilities, highly qualified doctors.
- District hospitals: meeting the medical examination and treatment needs of the people and providing support to the primary health care units (commune-level), reducing the burden on provincial and central hospitals.

- Primary health care unit (commune level or commune health center): it is the lowest level in the Vietnamese health system, the first unit in contact with the people in the public health system, responsible for implementing primary health care contents such as implementation of national health programs, management of non-communicable diseases, provide essential medicines and treatment.
- Private hospital: depending on the organizational structure, the number of medical staff according to qualifications, medical equipment, and facilities will be considered equivalent to the district or provincial hospitals.
- Private clinic: considered equivalent to a primary health care unit.

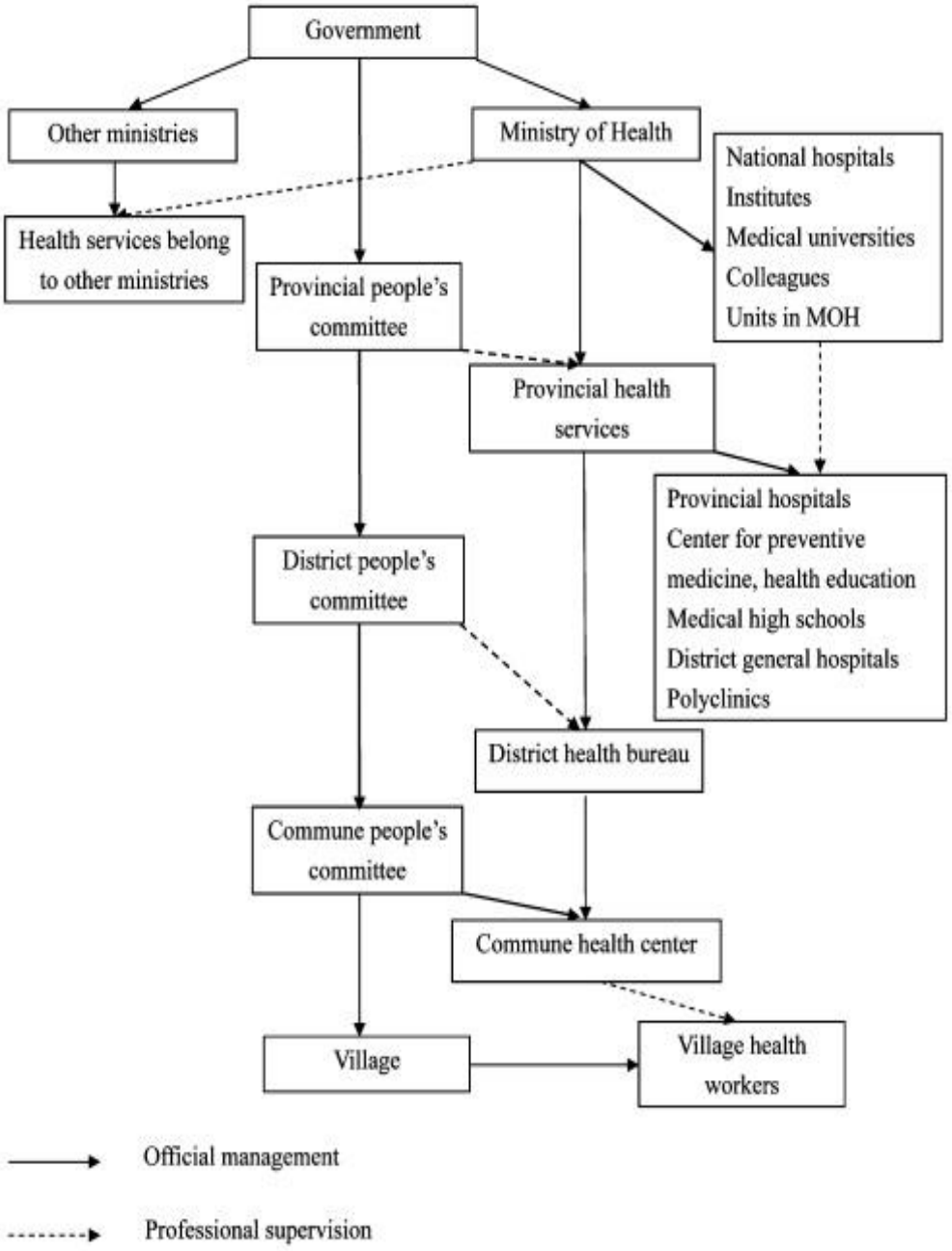

Figure 3. Health system in Vietnam (Le et al., 2010).

2.3. Health-Seeking Behavior

The better way to understand the health-seeking behavior and its possible implications for old people with NCDs might be the utilization of medical facility. Extensive research has shown that older adults prefer to receive the treatment at their residence or home (Sixsmith et al., 2014; Wiles et al., 2011). However, there was a gap between the services provided and the services needed.

There are several other definitions of health-seeking behavior. Healthcare-seeking behavior (HSB) defined as "any action or inaction undertaken by individuals who perceive themselves to have a health problem or to be ill to find an appropriate remedy" (Olenja, 2003; Ward, Mertens and Thomas, 1997). Individual actions to optimize wellness, recovery health, and rehabilitation are also considered health-seeking behavior (Moorhead et al., 2013). Health-seeking behavior includes activities undertaken to maintain good health, prevent ill health, and utilize health care services (Latunji and Akinyemi, 2018). Therefore, healthcare-seeking behavior means with or without a health problem and covers from potential to actual health problems. Health-seeking behavior is measured in terms of utilization of health care services by inferring that it takes place, evidenced by the existence of multiple health care services and the need for primary health care (Cornally and McCarthy, 2011).

2.3.1. Health-seeking behavior in the elderly

Health-seeking behavior is a crucial part of a component of the overall wellbeing of an individual, especially in the elderly, with decreasing mental and physical functions. Whether it is a perceived health concern or an actual illness, health-seeking behavior is necessary to control their health. The ability to recognize the need to access a health care service to maintain optimal health is essential (Gill, 2020).

The elderly is considered a frequent user of health care services. However, they might not be utilizing the available services due to socio-economic status and a limited source of information (Barua et al., 2017; Howse, Ebrahim and Gooberman-Hill, 2004; Walters, Iliffe and Orrell, 2001).

Health-seeking behavior is an essential aspect for the elderly with one or more NCDs, and proper utilization of medical facilities such as PHCU visits enhances their quality of life. Hence, it is crucial to explore the health-seeking behavior of the elderly regarding the factors that affect health-seeking behavior and to guide them to improve good health and reduce the barriers (Gill, 2020).

2.3.2. Factors related to engaging in health-seeking behavior

Health-seeking behavior is often affected by several factors such as gender, socio-economic conditions, disease conditions, and lack of information and counseling services, etc.

The previous studies explained that the variations in the health-seeking behavior between the gender were based on many factors. A study stated that health-seeking behavior was motivated by older individuals' decision-making processes as informed by community norms and expectations (Elvis, 2014). It seemed the social expectations about the behavior of men and women were appropriateness, various rights, social enhancement, accessibility to resources for, health-related behavior, education, gender, and church affiliation. A study in Bangladesh in 2020 showed that 71.43% of men and 28.57% of women had hypertension, while 72.22% of men and 27.78% of female patients were treated. One-third of women and two-thirds of men had vision problems, but only a third of female patients were treated (Ferdaus et al., 2020). In contrast, some studies among Vietnamese and other countries described a tendency to use health services more by women than men (Le, Gonzalez and Matola, 2021; Mackenzie, Gekoski and Knox, 2006; MOROOKA et al., 2017; Thompson et al., 2016). In general, there were gender differences in healthcare-seeking behavior.

Socio-economic status was one of the most substantial affecting factors in all age groups, which affected one's own decisions in all aspects of lifestyle, including utilization health care facility. Healthcare-seeking behavior affected the individual's ability to afford health care services and their accessibility, especially if living in rural areas with the cost of transportation, was an additional expense (Naushad et al., 2016). Socio-economic status also affected one's education level, which was another factor that influences health-seeking

behavior (Adongo and Asaarik, 2018; Latunji and Akinyemi, 2018; Naushad et al., 2016; Yahalom, 2020).

Diseases and their related difficulties were affecting the role in health-seeking behavior of old aged people. The elderly sought health care more often when the illness was perceived as severe and did not improve or worsen over time (Hussain et al., 2019; Thompson et al., 2016; Webair and Bin-Gouth, 2013; Xue et al., 2019). A study conducted in the Vietnamese population reported that non-communicable disease conditions were the most critical predictors for old-aged people in utilizing health care services (Nguyen and Giang, 2021).

2.4. Policies and Strategies for the Elderly in Vietnam

Although the elderly are people whose health status has declined and are less involved in the wealth-creating process, they always play an essential role in society and family life. They continue to contribute in many forms to socio-economic development and maintain political security and safety in the locality. However, most of the elderly in Vietnam have a difficult life, inadequate health care, an unsatisfactory life, and many people live alone.

Recognizing this, the government has paid attention and enacted many policies and strategies for the elderly to ensure their material and spiritual life. The Vietnam Association of the Elderly was established in 1995. Ten years later, the government established the Vietnam National Committee on Ageing in 2004. In 2009, The first Law for the Elderly was promulgated by the Government of Vietnam (Government, 2009). Followed by

activities such as National Plan of Action on Older Persons for the period 2012-2020 in Decision No. 1781/QD-TTg, selected October every year as the *"Month of action for the elderly"*…(Committee, 2018; HelpAge, 2018; VAE, 2016). Most recently, the Prime Minister adopted Decision No. 1533/QD-TTg approving the project on expanding the Intergenerational Self-help Club (ISC) for 2016-2020 (Government, 2016a). In the last Decision, the government implemented the goal set out that *"At least 50% communes, wards, and towns have Intergenerational Self-help Clubs or other establishments which over 70% older persons in the area participate in and benefit from, in order to care for and promote the role of older persons"(Government, 2016a)*. These actions have created legal frameworks for relevant Ministries, Branches, and organizations such as the Ministry of Health, the Ministry of Culture, Sports and Tourism, the Ministry of Transport, Ministry of Labor - Invalids and Social Affairs to issue strategies and plans to improve and enhance the quality of life of the elderly.

Policy on health care for the elderly was concerned with special regulations. It was clearly expressed in the Law on the Elderly and several sub-law documents. In general, the main features of health care policy for the elderly include (Government, 2008, 2009; MOH, 2020; Ta, 2018):

- Priority in the utilization of health care services for the elderly, especially those aged 80 and over at health care facilities.

- Establishing geriatric departments or reserving several beds for the elderly patients

(except Children's Hospitals); Recovering elderly patients' health after acute treatment at the hospital and instructions for continued treatment and care at home; guiding non-drug treatment methods at grassroots health care level for the elderly patients.

- Encouraging organizations and individuals to provide free medical checkups and treatment for the elderly.

- At the residence, the grassroots health care level (primary health care unit) is responsible for making records on health management of the elderly, propagating and disseminating health care knowledge for the elderly.

The Ministry of Culture, Sports and Tourism and the Ministry of Transport also applied the policy of exempting and discounting services for the elderly and including the reduction of ticket prices at tourist destinations at least 20% of prices (MOCST, 2012), reducing fares when taking public transport by at least 15% ticket prices (MOT, 2011).

The Ministry of Labor – Invalids and Social Affairs developed support policies for the elderly by giving social pension (HelpAge, 2018; MOLISA, 2014; Ta, 2018; VAE, 2016). For the elderly who are in a poor group, no income or pension, live alone or disabled, and from 60-79 years of age, get VND 180.000 (equivalent to 09 USD) per month. The elderly who met the above criteria, from 80 years of age and over, get VND 270,000 (equivalent to 13.5 USD). All the poor people get free health insurance yearly (Government, 2008).

For the policy of wishing and celebrating a long-life expectation, the 100 years of age

are wished and given gifts by the President, the 90-year-olds are wished and given gifts by the Presidents of the People's Committees of the provinces and centrally cities. Furthermore, the People's Committees of communes, wards, and townships shall coordinate with the local Association of the Elderly to celebrate the longevity of the elderly aged from 70 to 100 years or older on such days as Vietnamese Elderly Day 6/6; International Elderly Day 1/10; Lunar New Year or the birthday of the elderly.

2.5. Study Area

Phu Vang is a coastal and lagoon district in Thua Thien Hue province, Vietnam (Figure 4). It has about 235.4 kilometers square with 17 areas and 02 townships (Committee, 2016). The population of Phu Vang district was 179,589 people, of which the population aged 60 years and older was 23,090 people, accounting for nearly 12.9 % of district population (Statistics, 2019). There are 07 extremely difficulties areas, coastal areas according to Decision No.131/QD-TTg dated January 25, 2017 of the Prime Minister on Approving the List of with extreme difficulties in coastal and island areas in the period 2016-2020 (Government, 2017). Including Phu Gia (the merger of two areas Vinh Phu and Vinh Thai), Vinh Ha, Phu Xuan, Phu Dien, Vinh An, and Phu An area.

People's lives in these regions have some unique characteristics. For example, the main occupation is in the fishery, groundwater often becomes salty water, low education level, a higher proportion of untrained workers than the average of the province, transportation difficulties. All of these characteristics lead to difficulties in the utilization

of healthcare services.

In recent years, the grassroots healthcare network has been invested in facilities and equipment and the management and care of the elderly but has not been wholly and synchronously. Therefore, although the above activities have contributed to improving the healthcare of the elderly, these actions have not yet met the needs of many elderly people, in reality, especially the elderly living in coastal areas.

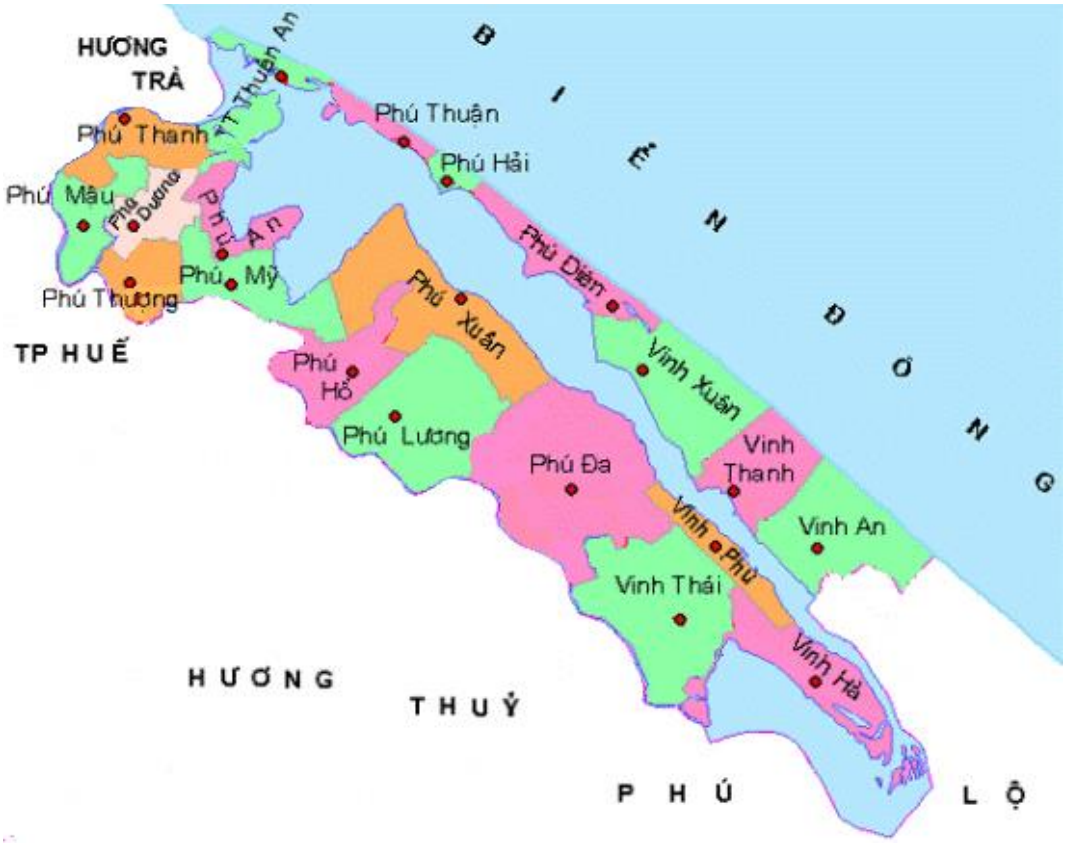

Figure 4. Map of Phu Vang district, Thua Thien Hue province.

III. MATERIAL AND METHODOLOGY

3.1. Study Design

This study focused on a cross-sectional research design to analyze health-seeking behavior, including utilization of medical facilities among the elderly with non-communicable diseases at seven coastal areas, Phu Vang district, Thua Thien Hue province, Vietnam.

3.2. Participants

The target population of this study was the elderly aged 60 years and over, having at least one non-communicable disease, and living in coastal areas, Phu Vang district, Thua Thien Hue province, Vietnam.

3.2.1. Inclusion and Exclusion Criteria

The inclusion criteria were as follows:

- 60 years of age or over.
- Living in the study areas for a long time, over 12 months.
- Able to understand the Vietnamese language.
- Having a stable health status enough to participate in the study.

The exclusion criteria were as below:

- Having severe diseases that they cannot respond to.

- Refusing to participate in the study.

3.2.2. Sample Size Estimation

The sample size was calculated using formula (Binh, Jongudomkarn and Phuong, 2020; Kotrlik and Higgins, 2001; Naushad et al., 2016):

$$N = Z^2_{1-\alpha/2} \frac{p(1-p)}{d^2}$$

With:

- Z: The standard normal deviate for α, $\alpha = 0.05 \Rightarrow Z_{1-\alpha/2} = 1.96$
- d: tolerated margin of error, d= 0.05.
- p: the sample proportion, p = 0.62 (the rate of elderly with hypertension in the last research at rural area, Vietnam) (Bui Van et al., 2019).

We can say:

$$N = 3.84 \times \frac{0.62 \times (1 - 0.62)}{0.0025}$$

The research sample size was calculated as 362. Thus, we ended up with a total of 370 subjects participating in this study.

3.2.3. Sampling

This study was conducted in Phu Vang district, Thua Thien Hue province, Vietnam. The target area was located in seven coastal areas. Initially, we used stratified random sampling based on the number of elderly in each locality (Acharya et al., 2013). Then, areas with a more significant number of the elderly were selected for the sample (Table 1).

The formula for selecting the elderly was:

b = total selected*a/total elderly

b = $\frac{a}{7805} * 370$ (a: number of the elderly)

Table 1. Sampling estimate of study participants selected for each area.

No.	Area	No. elderly (a)	No. selected (b)
1	Phu Gia	1.160	55
2	Vinh Ha	1.215	58
3	Phu Xuan	1.372	65
4	Vinh Xuan	948	45
5	Phu Dien	1.587	75
6	Vinh An	974	46
7	Phu An	549	26
	Total	**7.805**	**370**

Then, each coastal area's primary health care unit collected the list of people who met the inclusion criteria (Binh, Jongudomkarn and Phuong, 2020). Then, a random sampling method was used to select participants for the study from the list of each area. Subsequently, the selected participants were contacted and asked for an appointment for a home visit.

3.3. Theoretical framework of health-seeking behavior

Theoretical framework of health-seeking behavior is presented in figure 5.

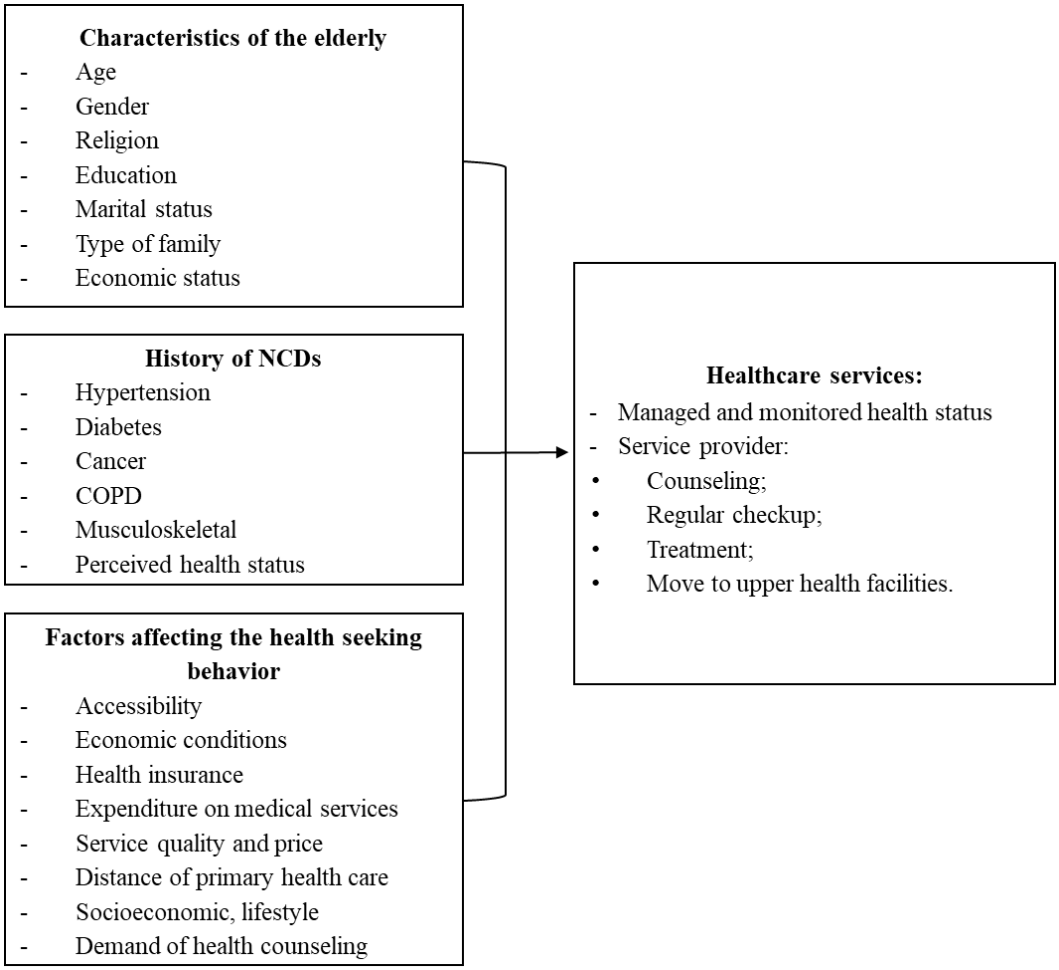

Figure 5. Theoretical framework

3.4. Measures

The study instrument was an interview questionnaire with 45 items. The first part comprised questions about general information with 12 variables. The second part of the questionnaire consisted of 16 variables related to history of non-communicable diseases and health status history. The last part concerned health-seeking behavior. The detail of all variables used in this study is presented in Table 2.

Table 2. Description of Variables and indicators

Variables	Categories	Classification	Definition
Dependent variables	Health-seeking behavior	Yes=1; No=0	Presence of NCDS and frequency of health visits and diagnosis
	Utilization of medical facility	Yes =1; No= 0	Health care facility visits and treatment history
Independent variables	**General Characteristics**		
	Age	60-69; 70-79; and 80 years of age and over	Elders completed 60 years and over
	Gender	Male; Female	Gender of the participants
	Religion	Buddhism; Christianity; no religion	The religion that participants followed or not
	Education	Primary school or less; Secondary school and above	The highest level of education that already completed

Variables	Categories	Classification	Definition
Independent variables	Marriage status	Married and others: single, separated/divorced, and widowed.	The marital status of participants
	Type of family	Alone and not alone: living with husband/wife, parent(s), myself and child/children.	A person whom participants lived with
	Occupation	Agriculture/fishery; Small business; Labor/employee; Public servants; Housewife; Military…	The jobs that participants spent most of time
	Economic status	Under average: poverty, upper poverty but under medium. Average and upper: medium, wealthier (Government, 2015b).	Self-reported household monthly income base on Government level

Variables	Categories	Classification	Definition
Independent variables	Distance of primary health care	1-2; 3-5; and >5 kilometers	The distance from participants house to the nearest primary health care unit
	Health insurance	Yes; No	An insurance form applied in the majority of health care sectors in Vietnam
	Type of health insurance membership	Government support; Myself; Family support.	A person or organization that helped to get health insurance
Independent variables	**History of Non-communicable diseases**		
	Presence of NCDs	Hypertension; Diabetes; Cancer; COPD; Musculoskeletal…	Non-communicable disease that participants had (multiple choice)
	Time of diagnosis	< 5 years; 5-10 years; and >10 years	Time of diagnosis to present

Variables	Categories	Classification	Definition
Independent variables	Diagnosis center	Government hospital; Private clinic; PHCU.	Medical facilities diagnosed disease
	Treatment	Prescription; Self-medication/treatment; None	Form of treatment disease
	Perceived health status	Normal+; Poor-	Self-reported health status on 5 level scale
	Sensory health status (vision)	Normal+; Difficult-	Self-reported sensory health status on 5 level scale
	Hearing	Normal+; Difficult-	Self-reported sensory health status on 5 level scale
	Physical mobility	Normal+; Difficult-	Self-reported sensory health status on 5 level scale

Variables	Categories	Classification	Definition
Independent variables	Memory	Normal+; Difficult-	Self-reported sensory health status on 5 level scale
	Personal hygiene	Normal+; Difficult-	Self-reported sensory health status on 5 level scale
	Presence of complication	Yes; No	The disease had complicated development in the past and caused serious consequences at the present
	Need counseling service of NCDs	Yes; No	The need for health care counseling in participants
	Types of counseling service	Prevention, self-care; Diet; Healthy lifestyle	Content that participants want to be consulted (multiple choice)

Variables	Categories	Classification	Definition
Independent variables	Source of counseling information	TV, radio; Panels, posters, flyers; Talk by topic; Book, newspaper.	Form of counseling that participants want to be received (multiple choice)
	Health-Seeking Behavior		
Independent variables	Occur again periodically NCDs in last 6 months?	Yes; No	Recurrence of NCDs within last 6 months
	Type of medical facilities	PHCU; Private clinic; District/provincial hospital; Central hospital.	Types of medical facilities that participants visited
	Reason of this facilities	Near house/convenience; Enthusiasm; Excellent expertise; Insurance cover; Less waiting	The reason that participants chose that health care facilities (multiple choice)

Variables	Categories	Classification	Definition
Independent variables	Received services	Yes; No	Participants received health care services or not
	Type of treatment	Inpatient; Outpatient; Move to upper level.	Types of treatment that participants received
	Payment	Myself; Family member: wife/husband/daughter/son or nephew; Health insurance.	A person or organization paying for the treatment
	Satisfaction of treatment	Yes; No	Self-reported the satisfaction when using health care services
	Satisfaction of facility	Yes; No	Self-reported the satisfaction with equipment, facilities, medications when using health care services

Variables	Categories	Classification	Definition
Independent variables	Effectiveness of treatment	Yes; No	Self-reported the effectiveness of the treatment
	Regular checkup	Yes; No	Regular visited health care facilities for medical checkup
	Preferred healthcare service	At home; PHCU; Private services; District hospital; Provincial/central hospital	Health facilities of place that participants wished to receive health care services (multiple choice)
	Knowledge of PHCU managed NCDs	Yes; No	Heard any information about NCDs was managed at PHCU
	Knowledge of prevention and control NCDs	Yes; No	Heard any information about how to prevent and control NCDs

Variables	Categories	Classification	Definition
Independent variables	How to prevention and control	Increase physical activity; Implement proper nutrition; Decrease beer, alcohol, tobacco…	Ways to prevent and control NCDs (multiple choice)
	Source of information	Social media; PHCU; Local government; Departments/unions…	Source of information that participants received for prevention and control NCDs (multiple choice)
	Reason not need healthcare service	Mild illness; Self-medication/treatment…	The reason that participants did not utilization health care services.

3.5. Data Collection

A pilot investigation questionnaire on patients who visit a primary healthcare unit in one of seven coastal areas to ensure the meaning and wording of the questions were understandable and then revised to increase clarity. Seven local health workers were trained to understand the purpose of the study and data collection methods, understood all the questions and would give the same explanation to interviewees.

My colleagues conducted approximately 30 minutes of face-to-face interviews to collect the data. Each investigator had a list of respondents and made appointments with them in their homes. Once there, the investigators explained the purpose of the study and invited the respondents to participate. Oral consent was given before the interviews began and ended with signed confirmation. Next, the investigators asked each question and to fill in the answers provided on the datasheets. Finally, supervisors reviewed the data collected. All of the 370 people invited to participate did agree to be interviewed.

3.6. Data Analysis

- Data analysis was performed by using IBM SPSS for Windows (version 26.0).

- Data would be presented with descriptive statistics of mean, standard deviation for continuous variables and frequency, percentages for categorical variables.

- Association of health-seeking behavior comparison was calculated by Chi-square analysis or Fisher's Exact test.

- The associations between health-seeking behavior and socio-demographic

characteristics and healthcare services characteristics would be examined by Multiple logistic regressions with 95% confidence intervals (95% CI).

3.7. Ethics Statement

The study was conducted under the supervision of the Research Ethics Council and approval of the Board of Directors of Health Services of Thua Thien Hue province, Vietnam. Participants were asked to sign or take fingerprints on the informed consent form after being informed of the freedom of withdrawal and other rights in a non-coercive environment. All information was kept confidential, encrypted, and only for research purposes. The results would be used to propose and recommend the improving the population's health and the healthcare system.

IV. RESULTS

4.1. Characteristics of the Study Population

4.1.1. General Characteristics

370 elderly people with non-communicable diseases in seven coastal areas, Vietnam, were included in the study. General characteristics of the study population was presented in table 3. The mean age of participants was 69.70 ± 6.6 (SD). The proportion between the two genders was approximately equal (49.2 % male and 50.8% female). The majority were Buddhist (46.8%), 83.2% were people married or cohabiting, and 91.4% of participants lived with their relatives. In terms of their occupation, over half of participants were fishery or agriculture (55.4%), and the next largest group was housewives or nothing (21.9%). 14.3% of the elderly were under an average standard of economic. Nearly two-thirds (58.4%) of the participants were located between 3-5km far from the nearest primary health care unit. The proportion of people with health insurance was 93.2%, and 54.9% of those with self-buying health insurance.

Table 3. Distribution of demographic characteristics (n=370)

Variables		Sample	
		N	%
Demographic characterisctics			
Mean age in years (SD): 69.70 (6.582)			
Age group (years)			
	60-69	195	52.7
	70-79	128	34.6
	80+	47	12.7
Gender			
	Males	182	49.2
	Females	188	50.8
Religion group			
	Do not follow	113	30.5
	Buddhism	173	46.8
	Christianity	84	22.7
Education group			
	Primary school and lower	74	20.0
	Secondary school and upper	296	80.0
Marital status			
	Married/ Cohabiting	308	83.2
	Others[a]	62	16.8
Type of family			
	Alone	32	8.6
	Not alone	338	91.4
Occupation			
	Agriculture / Fishery	205	55.4

Variables		Sample	
		N	%
	Small business	76	20.5
	Public servants (part time/volunteer)	8	2.2
	Housewife / Nothing	81	21.9
Economic status			
	Under average	53	14.3
	Average and upper	317	85.7
Distance of primary health care			
	1-2 km	103	27.8
	3-5 km	216	58.4
	>5 km	51	13.8
Health Insurance			
	No	25	6.8
	Yes	345	93.2
Type of Insurance membership			
	Government	122	32.9
	Family	17	4.6
	Self	203	54.9
	None	28	7.6

[a]Others (Single/ Separated/ Divorced / Widowed)

4.1.2. History of Non-communicable diseases and perceived health status

The history of non-communicable diseases, perceived health status, and health-seeking behavior utilized by medical facilities are given in figure 6-7 and table 4.

Hypertension is the most prevalent disease in a study population with 42.4%, and following group was a musculoskeletal disease with 17.8%. The proportion of multiple non-communicable diseases were high at 17.6% (Figure 6).

The study participants had known their diseases for 5-10 years (41.1%) and over ten years (44.9%) through treatment when they came to government hospitals (80.6%) and primary health care units (18.9%), respectively. However, the percentage of participants who followed the treatment process with prescription was 81.3%. 18.7% of the study population had no treatment, bought medicine by themselves, or was self-treated by traditional methods. 15.9% of the study population feel they had poor health status. Most of the participants (74.6%) were categorized within the “difficult or/and more” in memory and physical mobility (46.5%) according to self-rated sensory health status. Furthermore, 24.3% of those had complications of their diseases, and a third of quarter of participants required health care counseling (74.6%). Self-care information (69.5%) was the main topic that participants wanted to be received from counseling services through social media such as television or radio programs (69.5%) (Figure 7). Only 69.8% of participants with reoccurrence of non-communicable diseases (86.8%) utilized health care services for treatment. The main reason participants did not need support from health care services were mild illness (46.4%) and self-bought medicine or self-treated by traditional methods (53.6%).

Table 4. History of NCDs and perceived health status (n=370)

Variables		Sample	
		N	%
Health related characteristics			
Presence of NCDs			
	Hypertension	157	42.4
	Diabetes	41	11.1
	Cancer	3	0.8
	COPD	38	10.3
	Musculoskeletal	66	17.8
	Multiple NCDs	65	17.6
Time of diagnosis			
	<5 years	52	14.0
	5-10 years	152	41.1
	>10 years	166	44.9
Diagnostic center			
	Government Hospital	298	80.6
	Private clinic	2	0.5
	PHCU	70	18.9
Treatment			
	Prescription	301	81.3
	Self-medication/treatment	18	4.9
	None	51	13.8
Perceived health status			
	Normal	311	84.1
	Poor	59	15.9

Variables		Sample	
		N	%
Sensory health status			
Vision			
	Normal	291	78.6
	Difficult	79	21.4
Hearing			
	Normal	276	74.6
	Difficult	94	25.4
Physical mobility			
	Normal	198	53.5
	Difficult	172	46.5
Memory			
	Normal	94	25.4
	Difficult	276	74.6
Personal hygiene			
	Normal	320	86.5
	Difficult	50	13.5
Complications*			
	No	280	75.7
	Yes	90	24.3
Counseling service of NCDs			
	No	94	25.4
	Yes	276	74.6
Other counseling service †			
Prevention	No	178	48.1
	Yes	192	51.9
Self-care	No	113	30.5

Variables		Sample	
		N	%
Diet	Yes	257	69.5
	No	154	41.6
Lifestyle	Yes	216	58.4
	No	191	51.6
	Yes	179	48.4
Source of information (NCDs) †			
TV, Radio	No	113	30.5
	Yes	257	69.5
Panels, Posters, Flyers	No	162	43.8
	Yes	208	56.2
Talk by topic	No	194	52.4
	Yes	176	47.6
Book, Newspaper	No	228	61.6
	Yes	142	38.4
Reoccurrence of NCDs			
	No	49	13.2
	Yes	321	86.8
Go to the medical facilities			
	No	97	30.2
	Yes	224	69.8
Reason not need healthcare service			
	Mild illness	45	46.4
	Self-medication/treatment	52	53.6

NCDs= Non communicable diseases; COPD=Chronic obstructive pulmonary disease; * Presence of complication; †Multiple response

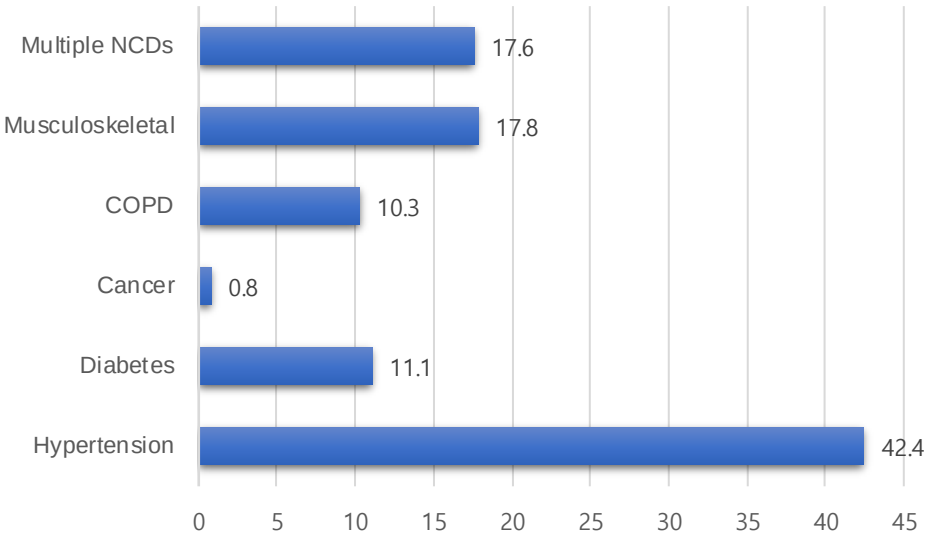

Figure 6. Presence of non-communicable diseases.

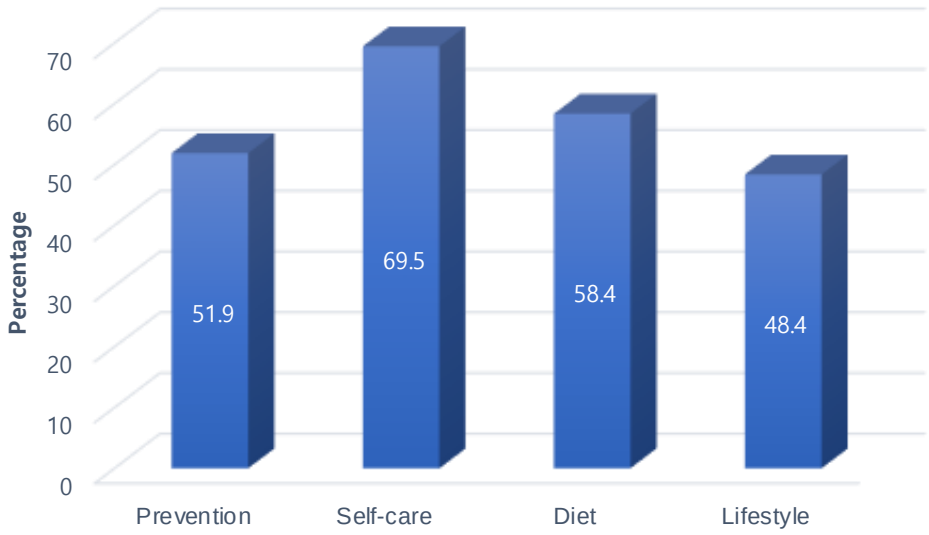

Figure 7. Content of health care counseling

4.2. Health-Seeking Behavior of the Study Population who have utilized medical facilities within the last six months

The results of health-seeking behavior of the study population who have utilized medical facilities within the last six months were given in table 5. A total of 370 the elderly had non-communicable diseases; 224 had health-seeking behavior. Most of the participants utilized the medical facilities at PHCU (66.5%) due to the convenience of accessing their house (71.9%). In addition, the membership of national health insurance coverage (69.6%). Nearly a half of the participants (48.7%) agreed that the healthcare providers were excellent expertise for treatment (Figure 8).

Outpatient was the primary form of treatment (75%), and only 4% of them had to pay the fee for services when utilizing health care services. Over 90% of patients gave their satisfaction on treatment and medical facilities such as equipment and medicine. 95.5% thought that the treatment was adequate, but only 85.3% followed the regular medical checkup. Over half of patients preferred treatment at PHCU (50.9%) while 38.4% of patients chose district hospitals. 83% of the subjects knew that their disease was managed at PHCU and 89.3% knew how to prevent and control disease by themselves. 80.8% reported that the primary way to prevent and control the disease was to practice healthy diet. Almost all the information about the prevention and control of disease came from social media and PHCU (76.8%, 71.4%, respectively).

Table 5. Health-seeking behavior of the study population who have utilized medical facilities within the last 6 months (n=224)

Variables		Sample	
		N	%
Type of medial facilities			
	PHCU	149	66.5
	Private Clinic	4	1.8
	District / Provincial hospital	52	23.2
	Central hospital	19	8.5
Reason of using health facilities †			
Near house, convenience	No	63	28.1
	Yes	161	71.9
Enthusiasm	No	105	46.9
	Yes	119	53.1
Excellent expertise	No	115	51.3
	Yes	109	48.7
Insurance cover	No	68	30.4
	Yes	156	69.6
Less waiting	No	107	47.8
	Yes	117	52.2
Type of treatment			
	Inpatient	28	12.5
	Outpatient	168	75.0
	Move to upper level	28	12.5
Payment for healthcare services			
	Myself	6	2.7
	Family members	3	1.3
	Insurance	215	96.0
Satisfaction of treatment			
	No	11	4.9
	Yes	213	95.1

Variables		Sample	
		N	%
Health facility satisfaction			
	No	19	8.5
	Yes	205	91.5
Effectiveness of treatment			
	No	10	4.5
	Yes	214	95.5
Regular checkup			
	No	33	14.7
	Yes	191	85.3
Preferred healthcare service †			
At home	No	168	75.0
	Yes	56	25.0
PHCU	No	110	49.1
	Yes	114	50.9
Private clinic	No	203	90.6
	Yes	21	9.4
District hospital	No	138	61.6
	Yes	86	38.4
Provincial / Central hospital	No	175	78.1
	Yes	49	21.9
Knowledge of PHCU			
	No	38	17.0
	Yes	186	83.0
Knowledge of prevention and control			
	No	24	10.7
	Yes	200	89.3
Prevention and control followup †			
Increase physical activity	No	63	28.1
	Yes	161	71.9

Variables		Sample	
		N	%
Implement proper nutrition	No	43	19.2
	Yes	181	80.8
Decrease beer, alcohol, tobacco	No	75	33.5
	Yes	149	66.5
Source of information (prevention and control)†			
Social media	No	52	23.2
	Yes	172	76.8
PHCU	No	64	28.6
	Yes	160	71.4
Local government	No	117	52.2
	Yes	107	47.8
Departments, Unions	No	108	48.2
	Yes	116	51.8

PHCU=Primary health care unit; †Multiple response

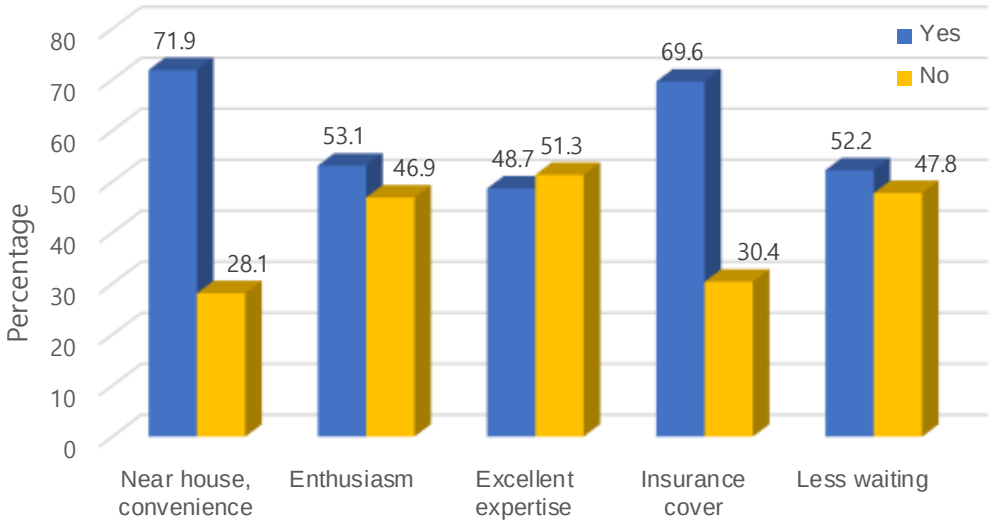

Figure 8. Reason of using health facilities.

4.3. Association of Health-Seeking Behavior comparison

The association between socioeconomic characteristics and health-seeking behavior regarding utilization of medical facilities was shown in table 6. Type of family, economic status, health insurance, presence of NCDs, perceived health status, presence of complications, and need for health care counseling indicated significantly associated with healthcare services utilization ($p<0.05$). There was a statistically significant difference between two groups, living alone and not living alone, with health-seeking behavior. The difference was also found in the group with an average and wealthier income and the poor and below the average group. In terms of health insurance, there was a significant difference in utilization of healthcare services between a group have health insurance and group without health insurance. The similar results were noticed in the group with or without the presence of complication of illness and the need for healthcare consultation. A group with only one non-communicable disease and a group with multiple NCDs tended to have different health-seeking behavior. It was similar to the perceived health status in the normal group and the poor group.

Table 6. Association of health-seeking behavior for utilized medical facilities comparison

Variables	Categories	Utilization of Medical Facilities				t/F*	*p*
		Yes (n=224)		No (n=97)			
		N	%	N	%		
Age group (years)							
	60-69	120	71.0	49	29.0		
	70-79	78	71.6	31	28.4	2.054	0.358
	80+	26	60.5	17	39.5		
Gender							
	Male	102	66.2	52	33.8	1.767	0.184
	Females	122	73.1	45	26.9		
Religion group							
	Do not follow	66	66.0	34	34.0		
	Buddhism	108	74.5	37	25.5	2.772	0.250
	Christianity	50	65.8	26	34.2		
Education group							
	Primary school and lower	47	70.1	20	29.9	0.005	0.941
	Secondary school and upper	177	69.7	77	30.3		
Marital status							
	Married	182	69.7	79	30.3	0.002	0.967
	Others [a]	42	70.0	18	30.0		
Type of family							
	Alone	16	51.6	15	48.4	**5.372**	**0.020**
	Not alone	208	71.7	82	28.3		
Economic status							
	Under average	225	51.0	24	49.0	**9.653**	**0.002**
	Average and upper	199	73.2	73	26.8		
Distance of primary health care							
	1-2 km	66	74.2	23	25.8		
	3-5 km	124	68.5	57	31.5	1.182	0.554
	>5 km	34	55.7	17	33.3		

Variables	Categories	Utilization of Medical Facilities				t/F*	*p*
		Yes (n=224)		No (n=97)			
		N	%	N	%		
Health Insurance							
	No	6	27.3	16	72.7	**20.240**	**<0.001**
	Yes	218	72.9	81	27.1		
Presence of NCDs							
	One disease	165	64.0	93	36.0	**21.178**	**<0.001**
	Multiple NCDs	59	93.7	4	6.3		
Perceived health status							
	Normal	178	66.7	89	33.3	**7.305**	**0.007**
	Poor	46	85.2	8	14.8		
Complications [b]							
	No	152	64.7	83	35.3	**10.824**	**0.001**
	Yes	72	83.7	14	16.3		
Counseling service of NCDs							
	No	33	45.2	40	54.8	**27.065**	**<0.001**
	Yes	191	77.0	57	23.0		

* Chi-Square or Fisher's Exact Test

[a] Others (Single/ Separated/ Divorced / Widowed); [b] Presence of complication

4.4. Multiple Logistic Regression Analysis of Associated Factors and Health-Seeking Behavior for utilized medical facilities

Associated factors and health-seeking behavior for utilization of medical facilities were given in table 7. It showed that the elderly living alone were more likely to have 4.5 times less health-seeking behavior than those who did not live alone (OR: 4.48, 95% CI: 1.016-19.78, p=0.048). The results also explained that economic status was related to health-seeking behavior. People with an average and wealthier income seemed to have 2.8 times higher utilization of health care services than the poor and below the average group (OR: 2.81, 95% CI: 1.11-7.11, p=0.029). A group with multiple NCDs were likely to have nine times higher health-seeking behavior than the group with only one disease (OR: 9.24, 95% CI: 2.66-32.15, p=<0.001). Health insurance and needed health care counseling were also relevant factors that affected the health-seeking behavior (OR: 4.16, 95% CI: 1.30-13.31, p=0.016), (OR: 3.91, 95% CI: 2.04-7.49, p<0.001), respectively.

Table 7. Multiple logistic regression analysis of associated factors and health-seeking behavior for utilized medical facilities (n=224)

Variables / Factors		Utilization of Medical Facilities %	OR	95% CI	*p*
Age group (years)					
	60-69	71.0	1.00		
	70-79	71.6	1.45	0.76-2.78	0.263
	80+	60.5	0.50	0.22-1.14	0.097
Gender					
	Male	66.2	1.00		
	Females	73.1	1.22	0.68-2.19	0.495
Religion group					
	Do not follow	66.0	1.00		
	Buddhism	74.5	1.44	0.75-2.77	0.272
	Christianity	65.8	0.72	0.33-1.57	0.412
Education group					
Primary school and lower		70.1	1.00		
Secondary school and upper		69.7	0.87	0.40-1.88	0.721
Marital status					
	Married	69.7	1.00		
	Others [a]	70.0	1.01	0.55-1.87	0.967
Type of family					
	Alone	51.6	1.00		
	Not alone	71.7	**4.48**	**1.01.-19.78**	**0.048**
Economic status					
	Under average	51.0	1.00		
	Average and upper	73.2	**2.81**	**1.11-7.11**	**0.029**
Distance of primary health care					
	1-2 km	74.2	1.00		
	3-5 km	68.5	0.93	0.48-1.81	0.827
	>5 km	66.7	0.57	0.22-1.43	0.230

Variables / Factors		Utilization of Medical Facilities %	OR	95% CI	*p*
Health Insurance					
	No	27.3	1.00		
	Yes	72.9	**4.16**	**1.30-13.31**	**0.016**
Presence of non-communicable disease					
	One disease	64.0	1.00		
	Multiple NCDs	93.7	**9.24**	**2.65-32.15**	**<0.001**
Perceived health status					
	Normal	66.7	1.00		
	Poor	85.2	1.44	0.52-4.01	0.483
Complications [b]					
	No	64.7	1.00		
	Yes	83.7	1.81	0.82-3.99	0.143
Counseling service of NCDs					
	No	45.2	1.00		
	Yes	77.0	**3.91**	**2.04-7.49**	**<0.001**

[a] Others (Single/ Separated/ Divorced / Widowed); [b] Presence of complication

V. DISCUSSION

The present study conducted health-seeking behavior of the elderly with non-communicable diseases living in coastal areas, Vietnam. The findings explored the health-seeking behavior of the elderly with non-communicable diseases and the factors associated with it. My colleagues conducted face-to-face interviews with 370 older people who participated in the study.

The mean age of elderly was 69.70 ± 6.6 (SD). The average life expectancy was 75.8 years for both sexes of Vietnamese people, which was consistent with the result (Worldometer, 2020). This mean age was similar to some previous studies in Vietnam and other countries (Bang et al., 2017; Ha et al., 2015; Le, Gonzalez and Matola, 2021). The mean age in the study, which was conducted in Thuy Chau ward, Huong Thuy town, Thua Thien Hue province, Vietnam, was 71.76 ± 8.745 (SD) (Binh, Jongudomkarn and Phuong, 2020), and the study in rural areas, China was 65.81 ± 9.39 (SD) (Zhang, Liu and Ni, 2019). However, this result was higher than the result of study in Bangladesh (61.8-63 ± 2.04-2.95) (Ferdaus et al., 2020) and lower than the result of study in Germany (74-74.7 ± 5.1-5.3) (Scherer et al., 2016), the study in Los Angeles (76.0 ± 6.9) (Sarkisian, Hays and Mangione, 2002). This difference could be attributed to the average life expectancy and the age distribution by groups of each country. In developed countries, the elderly are 65 years of age and over (United Nations, 2019; WHO, 2010). Meanwhile, in Vietnam and many other countries, 60 years of age are classified as the elderly (Government, 2009).

In terms of presence of non-communicable diseases, this study found that hypertension (42.4%) was the most prevalent non-communicable disease among the elderly, followed by musculoskeletal (17.8%), multiple NCDs (17.6%), diabetes (11.1%) and COPD (10.3%). Cancer had very few cases reported, less than 1% (0.8%). The prevalence of NCDs in this study was much higher than in previous reports: 31.6% hypertension, 3.6% diabetes, 5.3% COPD, 0.6% cancer, and excepting 50.8% musculoskeletal in the rural Quoc-Oai district of Hanoi, Vietnam (Bang et al., 2017); 6% diabetes, 0.7% cancer, and 8.3% musculoskeletal in Thuy Chau ward, Huong Thuy town, Thua Thien Hue province, Vietnam (Binh, Jongudomkarn and Phuong, 2020); 32.3% hypertension, 4.9% COPD, and 3.2% cancer in the Northwest Ethiopia (Abebe et al., 2017). However, this result was much lower than some studies: 62.15% hypertension among elderly ethnic minorities in Chiem Hoa district, Tuyen Quang province, Vietnam (Bui Van et al., 2019); 40% multiple NCDs in Southern provinces, Vietnam (Ha et al., 2015); 56% hypertension, 64% diabetes in rural Bangladesh (Ferdaus et al., 2020); 47.8% hypertension, 34.8% musculoskeletal, 26.1% diabetes in Malaysia (Sugathan, Singh and Hasni, 2019); 56% hypertension, 21.8% diabetes in China (Lin et al., 2017); 74% hypertension, 23% diabetes, 1% cancer in Albania (Gabrani, Schindler and Wyss, 2021). It might be due to the national hypertension and diabetes screening program in recently years, which were applied at primary health care unit. As a result, the national screening program contributed to reduce unrecognized hypertension and diabetes diseases in the community (MOH, 2020; Ta, 2018). However, due to a limited infrastructure, the area was identified to increase the accessibility to healthcare services in

coastal areas, and more screening for cancer and other NCDs (Pham et al., 2019). Besides, the high consumption of salt and lifestyles of people living in coastal areas were also factors affecting the prevalence of non-communicable diseases in this area.

Regarding health-seeking behavior, this study found that out of 224 elderly people, 69.8% were seeking health utilization for at least 6 months. The proportion of utilization of health care services was much less than the study conducted in three regional Vietnam. In the previous study, the proportion of health-seeking behavior among the elderly at the North, the Central, the South region in Vietnam and total was 87.39%, 96.24%, 86.86%, and 89.82%, respectively (Nguyen and Giang, 2021), 83.3% at Thua Thien Hue, Quang Tri and Khanh Hoa province, Vietnam (MOROOKA et al., 2017), and 83.7% in Assam, India (Barua et al., 2017). The elderly in Vietnam had an outpatient visit with an average of 4.3 ± 6.4 times per year (Le, Gonzalez and Matola, 2021). However, this result was similar to findings in previous studies conducted among elderly population in Bangladesh with 33-67% depending on diseases (Ferdaus et al., 2020), and higher than in Pakistan with 43.3% (Hussain et al., 2019) and Dong Nai, Vinh Long provinces, Vietnam with 29.3% (Ha et al., 2015).

The study was used Chi-square analysis to determine the association of health-seeking behavior, and multivariate logistic regression analysis to find the association between health-seeking behavior and socio-demographic characteristics and healthcare services characteristics with significance level $\alpha = 0.05$. The study could not find an association

between health-seeking behavior and age, gender (p>0.05). In this study, the health-seeking behavior was roughly equivalent for men and women in all ages groups with 0.71, 0.72, 0.61, and 0.66, 0.73, respectively. The equality between age group and gender existed when they received healthcare services respecting our government policies and laws. This result was similar to the previous study on the elderly in Indonesia, India and London. There were no differences between age groups and gender when using healthcare services (Barua et al., 2017; Gill, 2020; Madyaningrum, Chuang and Chuang, 2018). However, this result was slightly different from previous results in other regions in Vietnam, Malaysia, Nigeria, Ghana, Bangladesh, Spain, Canada, and Germany. Previous results found significant associations between age, gender and utilization of healthcare services (Adongo and Asaarik, 2018; Binh, Jongudomkarn and Phuong, 2020; Elvis, 2014; Fernandez-Lazaro et al., 2019; Tien and Zhang, 2017). Women usually reported chronic pain and number of visits to health care facilities than men (Scherer et al., 2016; Sugathan, Singh and Hasni, 2019; Thompson et al., 2016). In general, the elderly was often thought to have a negative health-seeking attitude and be especially sensitive to stigma associated with illness. They thought that diseases were age-relative-diseases; thus, considered less importance healthcare-seeking. Men had fewer positive attitudes toward health-seeking behavior than women, according to previous studies (Fernandez-Lazaro et al., 2019; Mackenzie, Gekoski and Knox, 2006; Sarkisian, Hays and Mangione, 2002). Ghana and Bangladesh witnessed a contrasting health-seeking behaviors among men (Adongo and Asaarik, 2018; Ferdaus et

al., 2020). The explanation for this issue might be that there was still discrimination between men and women in these countries.

Religion, education status, marital status, and distance of primary health care were not associated with health-seeking behavior among the elderly living at coastal areas (p>0.05). There was no difference between three religious' groups (Buddhism, Christianity, not follow) and health-seeking behavior in this study. The result agrees with a study conducted in Indonesia, with no association between the Muslim group and other groups among the elderly (Madyaningrum, Chuang and Chuang, 2018). However, a study conducted in Nigeria showed that two religious groups differed significantly on utilization of health care services (Elvis, 2014). A possible explanation is that the elderly, whether religious or not, have the same demand for health care services and to improve their health status.

In terms of education status, previous studies showed a significant association with health-seeking behavior (Adongo and Asaarik, 2018; Latunji and Akinyemi, 2018; Tien and Zhang, 2017). The person with a high educational level reported higher utilization of health care services (Elvis, 2014). The study in Thuy Chau ward also found that better educations were positively related to attitudes toward health-seeking behavior, and good health outcomes (Binh, Jongudomkarn and Phuong, 2020). The high burden of multimorbidity was among older people with illiteracy (Ha et al., 2015). However, the results in this study did not find an association between education status and the utilization of health care services. This result was similar to the study of outpatient visits among

Vietnamese older people by Duc Dung Le et al. and the report on older people in Indonesia (Le, Gonzalez and Matola, 2021; Madyaningrum, Chuang and Chuang, 2018). This study had classified educational status into two groups primary school & lower, secondary school & upper that could be the cause.

In “access to primary care in Pennsylvanian rural townships”, a study showed that distance from services could reduce residents’ ability to access primary care (Eneh, 2018). Other studies also agree that location of residence and time spent traveling to health facilities affect seeking health behavior (Adongo and Asaarik, 2018; Hussain et al., 2019; Madyaningrum, Chuang and Chuang, 2018). However, there was no difference between the distance to primary health care unit and the health services utilization in this study. The Duc Dung Le et al. study also agrees with this result (Le, Gonzalez and Matola, 2021). This difference is due to the administrative geographical division of each country. In Vietnam, each geographical administrative unit is called a ward or commune, including educational and medical, commercial and administrative institutions. The farthest distance from the commune's outer edge to these institutions is not more than 10 km. Thus, ensuring everyone can access services without any barriers.

The present study could not find an association between married group and other groups in marital status and health-seeking behavior (p>0.05). This result was similar to the study of outpatient visits among elderly in Vietnam and Indonesia (Le, Gonzalez and Matola, 2021; Madyaningrum, Chuang and Chuang, 2018) but in contrast to some previous

studies such as study in Thuy Chau ward, Huong Thuy town, Thua Thien Hue province, Vietnam (Binh, Jongudomkarn and Phuong, 2020; Tien and Zhang, 2017). However, this study found that type of family was associated with utilization of healthcare services. The elderly living alone were more likely to have 4.5 times less health-seeking behavior than those who did not live alone (OR: 4.5, 95% CI: 1.016-19.78, *p*=0.048). The study in the rural Quoc-Oai District, Vietnam, reported that the elderly with chronic diseases are living alone, is one of the causes for shortage of career when necessary and in the emergency cases (Bang et al., 2017). The young labor movement from rural to urban areas in the working age to work and the impact of socio-economic changes make this issue (Tien and Zhang, 2017). This result was also similar to previous studies in Vietnam, Nigeria, but this association was not found in Spain (Fernandez-Lazaro et al., 2019; Latunji and Akinyemi, 2018; Le, Gonzalez and Matola, 2021).

This study found that economic status and health insurance were two main factors related to health-seeking behavior. The elderly with the poor and below the average group income seemed to have 2.8 times less utilization of health care services than wealthier and an average group (OR: 2.8, 95% CI: 1.11-7.11, p=0.029). Economic conditions determine the willingness to pay the costs related to health-seeking behavior, such as participating health insurance, paying fee for services (Xu, 2020). According to a study in India, 81.2% of the elderly did not utilize health care services due to lack of money (Barua et al., 2017). On the other hand, the older adults received financial support from their children, which had a positive relationship with the propensity to utilize healthcare services (Nguyen and

Giang, 2021; Quashie and Pothisiri, 2019). Some previous studies in Vietnam, China, Ghana, and Nigeria also agreed that economics status was associated with seeking health care among people (Adongo and Asaarik, 2018; Latunji and Akinyemi, 2018; Tien and Zhang, 2017; Xu, 2020) but a study in India did not (Barua et al., 2017). Furthermore, health insurance appeared to mitigate the impact of economic considerations in this study, in addition to enhancing access to healthcare services (Latunji and Akinyemi, 2018; Le, Gonzalez and Matola, 2021; Madyaningrum, Chuang and Chuang, 2018; Xue et al., 2019). Lack of health insurance may limit access to services, resulting in unmet needs and poor health outcomes among the aged, especially among the poor elderly (Osei Asibey and Agyemang, 2017). 14.3% of the elderly were living below the poverty line, and 6.8% people did not have health insurance. This proportion was higher than an average nation's indicator (Government, 2016b). However, a study conducted in Vietnam by Nguyen T.A. et al. showed that health insurance was not a predictor of access to healthcare services, which could be explained by the fact that health insurance services were limited (Nguyen and Giang, 2021).

In the previous studies, the elderly with higher number of non-communicable diseases were more likely to use healthcare services (Le, Gonzalez and Matola, 2021; Madyaningrum, Chuang and Chuang, 2018) but in contrast with a study conducted in Spain could not found the association (Fernandez-Lazaro et al., 2019). In this study, the proportion of multiple NCDs was high at 17.6% of the elderly. The group with multiple NCDs were likely to have nine times higher health-seeking behavior than the group with

only one disease (OR: 9.24, 95% CI: 2.665-32.15, p=<0.001). Furthermore, demand of counseling health service is one factor that motivates the elderly to seek healthcare behavior in this study. The elderly with higher need of health care counseling were more likely to have 3.9 times higher health-seeking behavior than those who did not (OR: 3.91, 95% CI: 2.04-7.49, p<0.001). In contrast, there was no evidence of an association between health-seeking behavior and perceived health status, presence of complication (p>0.05). Such a finding was not similar to previous data reported in Vietnam, Indonesia, Spain, and Canada (Fernandez-Lazaro et al., 2019; Madyaningrum, Chuang and Chuang, 2018; Nguyen and Giang, 2021; Thompson et al., 2016).

Limitations

This study had certain limitations. First, this study used secondary data sources; the datasheets collected from the questionnaire did not mention the frequency of healthcare facilities utilization and directly related to the specific NCDs. Second, data collection was conducted in the third quarter of 2020, when the pandemic COVID-19 broke out, but we had not assessed the impact of the pandemic on the health-seeking behavior of the elderly. Finally, this study could not generalize the consistency of the findings due to the limited sample size or small sample size. Vietnam is geographically diverse with various cultures, there may be a variation in the health-seeking behavior, and service delivery came from different regions. However, the result of this study could be comparable to other parts of Vietnam with similar features in the social-economic and cultural background in a future study.

VI. CONCLUSION

The purpose of this study was to better utilization of medical facilities among aged people over 60 years, health-seeking behavior among NCDs older people and find out the factors associated with it.

This study explored that 69.8% of the elderly with non-communicable diseases at coastal areas Phu Vang district, Thua Thien Hue province, Vietnam had health-seeking behavior through the utilization of healthcare services. The number of households living in the house, economic condition, health insurance, presence of non-communicable diseases and the need for health care counseling have affected the health-seeking behavior of the elderly. In the future, the government should pay more attention to this group, such as expanding the beneficiaries of health insurance support by the government, establishing of nursing homes for the elderly alone, generating income for the elderly, improving health care counseling services through communication via social media, and encouraging people to change their unhealthy lifestyles to improve the health status and also to prevent the incidence of NCDs.

Health-seeking behavior is one of the most important positive implications for the aged population, encompassing one's physical, mental, and psychological wellbeing. Attain wellness, physically and mentally; one needs to actively understand and act upon any health issues, which was quantified as health-seeking behavior in this study. More research is

required to understand health-seeking behavior in older adults and factors from other physical and cognitive models to clarify the factors related to health-seeking behavior. This clarification is crucial to understanding health-seeking behavior in older adults as it can be the driving force behind assisting aging-in-place and providing essential references for decision-makers to generate context-specific incentive mechanisms and strategic plans in the future.

REFERENCE

Abebe SM, Andargie G, Shimeka A, Alemu K, Kebede Y, Wubeshet M, Tariku A, Gebeyehu A, Bayisa M, Yitayal M, Awoke T, Azmeraw T, Birku M. The prevalence of non-communicable diseases in northwest Ethiopia: survey of Dabat Health and Demographic Surveillance System. BMJ Open 2017;7(10):e015496.

Acharya AS, Prakash A, Saxena P, Nigam A. Sampling: Why and how of it. Indian Journal of Medical Specialties 2013;4(2):330-3.

Adongo WB, Asaarik MJ. Health Seeking Behaviors and Utilization of Healthcare Services among Rural Dwellers in Under-Resourced Communities in Ghana. International Journal of Caring Sciences 2018;11(2).

Bang K-S, Tak SH, Oh J, Yi J, Yu S-Y, Trung TQ. Health status and the demand for healthcare among the elderly in the rural Quoc-Oai District of Hanoi in Vietnam. BioMed research international 2017;2017.

Barua K, Borah M, Deka C, Kakati R. Morbidity pattern and health-seeking behavior of elderly in urban slums: A cross-sectional study in Assam, India. Journal of family medicine and primary care 2017;6(2):345-50.

Binh VTD, Jongudomkarn D, Phuong NTA. Health Needs Assessment of the Elderly with Chronic Diseases in Thuy Chau Ward, Huong Thuy Town, Vietnam 2020.

Bui Van N, Vo Hoang L, Bui Van T, Anh HNS, Minh HT, Do Nam K, Tri TN, Show PL, Nga VT, Thimiri Govinda Raj DB, Chu D-T. Prevalence and Risk Factors of Hypertension in the Vietnamese Elderly. High Blood Pressure & Cardiovascular Prevention 2019;26(3):239-46.

Committee CS. Report on ensuring the human rights of older persons of Viet Nam Association of the Elderly under the 3rd Cycle of the Universal Periodic Review on Viet Nam of the United Nations Human Rights Council. Ha Noi, 2018

Committee PVs. History of Phu Vang district. People's Council, People Committee of Phu Vang district 2016

Cornally N, McCarthy G. Help-seeking behaviour: A concept analysis. International journal of nursing practice 2011;17(3):280-8.

Dang Thi Thanh P, Phuong N, Hai M, Ho T, Nguyen Vu Quoc H, Eun-hi K. Current status and future direction of elder care in Vietnam. 2018.

Dey S, Nambiar D, Lakshmi J, Sheikh K, Reddy KS. Health of the elderly in India: challenges of access and affordability. Aging in Asia: Findings from new and emerging data initiatives. National Academies Press (US), 2012.

Elvis IEU, Gerald; Chinelo Helen Ene, Ogwuche. Educational level, sex and church affiliation on health seeking behaviour among parishioners in Makurdi metropolis of Benue state. Journal of Educational policy and entrepreneurial research 2014;1(2):311-6.

Eneh AO. Access to Primary Care in Pennsylvanian Rural Townships [Ph.D.]. Ann Arbor: Walden University, 2018.

Ferdaus F, Zahan R, Rahman MA, Chowdhury S. A study on health related risk factors and health seeking behavior among elderly population in rural Bangladesh. Mediscope 2020;7(2):75-81.

Fernandez-Lazaro CI, García-González JM, Adams DP, Fernandez-Lazaro D, Mielgo-Ayuso J, Caballero-Garcia A, Moreno Racionero F, Córdova A, Miron-Canelo JA. Adherence to treatment and related factors among patients with chronic conditions in primary care: a cross-sectional study. BMC family practice 2019;20(1):1-12.

Gabrani J, Schindler C, Wyss K. Health Seeking Behavior Among Adults and Elderly With Chronic Health Condition(s) in Albania. Frontiers in public health 2021;9:616014-.

Government. Law on Health Insurance No.25/2008/QH12. Official Gazette - The English Translation of Cong Bao, 2009-03, Nos. 09-10, pp. 6-21: The National Assembly, 2008

Government. Law on the Elderly No. 39/2009/QH12. Official Gazette - English Translation of Công Báo, 2010-03, No. 10, pp. 4-13: The National Assembly, 2009

Government. Law on Medical Examination and Treatment No. 40/2009/QH12. Hanoi: The National Assembly, 2012

Government. Decision No.376/QD-TTg on Approving the National strategy to prevent and control of cancar, cardiovascular disease, diabetes, chronic obstructive pulmonary disease, bronchial asthma and other non-communicable diseases,

period 2015 - 2025. Hanoi

The Prime Minister, 2015a

Government. Decision No. 59/2015/QD-TTg on Promulgating multidimensional poverty levels applicable during 2016-2020. Hanoi: The Prime Minister, 2015b

Government. Decision No.1533/QD-TTg on Approval of Project on Intergenerational Self-Help Club Expansion for the period of 2016-2020. Ha Noi: The Prime Minister, 2016a

Government. Decison No.1559/QD-TTg on Promulgate criteria for communes with special difficulties in coastal areas and islands in the period 2016-2020. Hanoi: The Prime Minister, 2016b

Government. Decision No. 131/QD-TTg dated January 25, 2017 of the Prime Minister on Approving the List of communes with extremely difficulties coastal and island areas in the period 2016-2020. Government Portal: The Prime Minister 2017

Giang L. VIET NAM AGING SURVEY (VNAS), 2011: KEY FINDINGS. 2012.

Gill N. Health-Seeking Behaviour Related to Selected Dimensions of Wellness in Community-Dwelling Older Adults. The University of Western Ontario, 2020.

Ha NT, Le NH, Khanal V, Moorin R. Multimorbidity and its social determinants among older people in southern provinces, Vietnam. International journal for equity in health 2015;14(1):1-7.

Health Care Service.

HelpAge. Ageing population in Vietnam. HelpAge International, 2018

Howse K, Ebrahim S, Gooberman-Hill R. Help-avoidance: why older people do not always seek help. Reviews in Clinical Gerontology 2004;14(1):63-70.

Hussain R, Rashidian A, Hafeez A, Mirzaee N. Factors Influencing Healthcare Seeking Behaviour At Primary Healthcare Level, In Pakistan. Journal of Ayub Medical College, Abbottabad: JAMC 2019;31(2):201-6.

IHME. Viet Nam: Institute for Health Metrics and Evaluation, 2019

Kotrlik J, Higgins C. Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research. Information technology, learning, and performance journal 2001;19(1):43.

Latunji O, Akinyemi O. Factors influencing health-seeking behaviour among civil servants in Ibadan, Nigeria. Annals of Ibadan postgraduate medicine 2018;16(1):52-60.

Le D-C, Kubo T, Fujino Y, Pham T-M, Matsuda S. Health care system in Vietnam: current situation and challenges. Asian Pacific Journal of Disease Management 2010;4(2):23-30.

Le DD, Gonzalez RL, Matola JU. Modeling count data for health care utilization: an empirical study of outpatient visits among Vietnamese older people. BMC Medical Informatics and Decision Making 2021;21(1):265.

Lin H, Li Q, Hu Y, Zhu C, Ma H, Gao J, Wu J, Shen H, Jiang W, Zhao N. The prevalence of multiple non-communicable diseases among middle-aged and elderly people: the Shanghai Changfeng Study. European journal of epidemiology 2017:159-63.

Mackenzie CS, Gekoski WL, Knox V. Age, gender, and the underutilization of mental health services: The influence of help-seeking attitudes. Aging and mental health 2006;10(6):574-82.

Madyaningrum E, Chuang Y-C, Chuang K-Y. Factors associated with the use of outpatient services among the elderly in Indonesia. BMC health services research 2018;18(1):1-9.

MOCST. Circular No. 06/2012/TT-BVHTTDL on The detailed regulation of some of the provisions of the Digital Protocol 06 /2011/NĐ-CP January 14th, 2011 Government of the Government in Support of the Elderly Participation in Cultural Activity, sport and travel and celebrate the longevity of elderly people. Hanoi: The Ministry of Culture, Sports and Tourism, 2012

MOH. Overview of the Health System and Organization of the Vietnam Health Network. The Ministry of Health, 2006.

MOH. Decison No.7618/QD-BYT on Improvement of the proposal on Healthcare for Older People period 2017- 2025. Hanoi: Ministry of Health, 2016

MOH. Management elderly people and improvement their health in the pandemic COVID-19 2020. Available from: https://kcb.vn/nguoi-cao-tuoi-quan-ly-va-nang-cao-suc-khoe-trong-boi-canh-dich-covid-19.html.

MOLISA. Circular No.29/2014/TTLT-BLDTBXH-BTC on Implementing Several Articles of the Government's Decree No. 136/2013/ND-CP on Adopting Social Assistance

Policies for Social Support Beneficiaries Hanoi: The Ministry of Labor, Invalids and Social Affairs, 2014

Moorhead S, Johnson M, Maas ML, Swanson E. Nursing Outcomes Classification (NOC): Measurement of Health Outcomes. Elsevier 2013.

MOROOKA I, Anh LHQ, SHIMAMURA Y, YAMADA H, NGUYEN MT. Patient choice of healthcare facilities in the central region of Vietnam. Journal of International Cooperation Studies 2017;25(1).

MOT. Circular No. 71/2011/TT-BGTVT on Prescribing the support for the elderly in mass transit. Hanoi: The Ministry of Transport, 2011

Naushad M, Bhawnani D, Verma N, Jain M, Anand T, Umate LV. Morbidity pattern and health seeking behavior in elderly population of Raipur City, Chhattisgarh, India. Indian Journal of Community Health 2016;28(3).

Nguyen TA, Giang LT. Factors Associated with Regional Disparity in Utilization of Healthcare Services among the Vietnamese Older People. Journal of Population and Social Studies [JPSS] 2021;29:15-31.

Nguyen TT, Hoang MV. Non-communicable diseases, food and nutrition in Vietnam from 1975 to 2015: the burden and national response. Asia Pac J Clin Nutr 2018;27(1):19-28.

Nguyen TT, Trevisan M. Vietnam a country in transition: health challenges. BMJ Nutrition, Prevention & Health 2020;3(1):60.

Olenja J. Editorial Health seeking behaviour in context. East African medical journal 2003;80(2):61-2.

Osei Asibey B, Agyemang S. Analysing the Influence of Health Insurance Status on Peoples' Health Seeking Behaviour in Rural Ghana. Journal of Tropical Medicine 2017;2017:8486451.

Pham T, Bui L, Kim G, Hoang D, Tran T, Hoang M. Cancers in Vietnam—burden and control efforts: a narrative scoping review. Cancer Control 2019;26(1):1073274819863802.

Quashie NT, Pothisiri W. Rural-urban gaps in health care utilization among older Thais: The role of family support. Archives of Gerontology and Geriatrics 2019;81:201-8.

Sarkisian CA, Hays RD, Mangione CM. Do older adults expect to age successfully? The association between expectations regarding aging and beliefs regarding healthcare seeking among older adults. Journal of the American Geriatrics Society 2002;50(11):1837-43.

Scherer M, Hansen H, Gensichen J, Mergenthal K, Riedel-Heller S, Weyerer S, Maier W, Fuchs A, Bickel H, Schön G, Wiese B, König HH, van den Bussche H, Schäfer I. Association between multimorbidity patterns and chronic pain in elderly primary care patients: a cross-sectional observational study. BMC Fam Pract 2016;17:68.

Singh S, Bajorek B. Defining 'elderly' in clinical practice guidelines for pharmacotherapy. Pharmacy practice 2014;12(4):489-.

Sixsmith J, Sixsmith A, Fänge AM, Naumann D, Kucsera C, Tomsone S, Haak M, Dahlin-Ivanoff S, Woolrych R. Healthy ageing and home: The perspectives of very old people in five European countries. Social science & medicine 2014;106:1-9.

Statistics GOoTTHP. Statistical Yearbook of Thua Thien Hue province: General Office of Thua Thien Hue Provincial Statistics 2019

Sugathan S, Singh DSB, Hasni NAB. Reported Prevalence And Risk Factors Of Chronic Non Communicable Diseases Among Inmates Of Old-Age Homes In Ipoh, Malaysia. Kerala Medical Journal 2019;12(4):87-91.

Ta TH. Policies for the Elderly in Viet Nam Population and Development: General Office for Population and Family Planning, 2018

Tien DN, Zhang G. Quality of life among the elderly in suburban Hanoi, Vietnam: Needs assessment and socio-economic factors affecting the elderly care 2017 International Conference on Innovations in Economic Management and Social Science (IEMSS 2017): Atlantis Press, 2017

Thompson AE, Anisimowicz Y, Miedema B, Hogg W, Wodchis WP, Aubrey-Bassler K. The influence of gender and other patient characteristics on health care-seeking behaviour: a QUALICOPC study. BMC Family Practice 2016;17(1):38.

United Nations. World Population Ageing 2019 Highlights, 2019

VAE. Ageing population in Vietnam 2016. Available from: http://hoinguoicaotuoi.vn/en/c/ageing-population-in-vietnam-40.htmlegislation_detail.html.

Vollset SE, Goren E, Yuan C-W, Cao J, Smith AE, Hsiao T, Bisignano C, Azhar GS, Castro E, Chalek J, Dolgert AJ, Frank T, Fukutaki K, Hay SI, Lozano R, Mokdad AH, Nandakumar V, Pierce M, Pletcher M, Robalik T, Steuben KM, Wunrow HY, Zlavog BS, Murray CJL. Fertility, mortality, migration, and population scenarios for 195 countries and territories from 2017 to 2100: a forecasting analysis for the Global Burden of Disease Study. The Lancet 2020;396(10258):1285-306.

Walters K, Iliffe S, Orrell M. An exploration of help-seeking behaviour in older people with unmet needs. Family Practice 2001;18(3):277-82.

Wang Y, Wang J. Modelling and prediction of global non-communicable diseases. BMC Public Health 2020;20(1):822.

Ward H, Mertens TE, Thomas C. Health seeking behaviour and the control of sexually transmitted disease. Health Policy and planning 1997;12(1):19-28.

Webair HH, Bin-Gouth AS. Factors affecting health seeking behavior for common childhood illnesses in Yemen. Patient preference and adherence 2013;7:1129.

WHO. Definition of an older or elderly person: World Health Organization, 2010

WHO. Ageing and health. World Health Organization, 2018a

WHO. Noncommunicable Diseases (NCD) Country Profiles. The World Health Organization, 2018b

WHO. Noncommunicable diseases, 2021

Wiles JL, Leibing A, Guberman N, Reeve J, Allen RES. The Meaning of "Aging in Place" to Older People. The Gerontologist 2011;52(3):357-66.

WorldBank. Cause of death, by non-communicable diseases (% of total) - Vietnam. The World Bank, 2019

Worldometer. Vietnam Demographics 2020. Available from: https://www.worldometers.info/demographics/vietnam-demographics/#life-exp.

Xu C. Accessibility of Health Care Services for Older Adults in China [Ph.D.]. Ann Arbor: Iowa State University, 2020.

Xue J, Ren X, Xu Y, Feng Q. Analyzing Health Seeking Behavior of Chinese Residents and Their Influencing Factors Based on CHNS Data. Procedia Computer Science 2019;162:835-41.

Yahalom J. Social Factors of Health-Seeking Behavior: On Medical Treatment for Elders

With Dementia in Oaxaca, Mexico. Journal of Humanistic Psychology 2020:0022167819899591.

Zhang T, Liu C, Ni Z. Association of Access to Healthcare with Self-Assessed Health and Quality of Life among Old Adults with Chronic Disease in China: Urban Versus Rural Populations. Int J Environ Res Public Health 2019;16(14).

Appendix 1

No: ☐

Questionnaire

The Health-Seeking Behavior of the elderly with non-communicable diseases at coastal area, Vietnam

Date: ……../……../…..……..

……., Phu Vang district, Thua Thien Hue province

Investigator: …….…….…….…….

This is an interview about the utilization of healthcare services of the elderly in health facilities. All information is kept confidential and is for research purposes only.

(Only interview person who born in 1960 or earlier)

Name of person to be investigated:

……..…

(Mark ✓ to the corresponding answer wherever necessary)

Do you agree to participate in this interview on voluntary principle?

1. Yes (Continues the interview)
2. No (End the interview)

A. GENERAL INFORMATION

No.	Questions	Answers	Notes
Q1	When were you born?	Year:…….. or Age:…….	
Q2	Sex	1. Male 2. Female	
Q3	Religion	1. Do not follow 2. Buddhism 3. Christianity 4. Others: ……	

Q4	The highest education?	1. No school 2. Primary school 3. Secondary school 4. High school 5. Intermediate school, College 6. University, Graduate school	
Q5	Marital status?	1. Single 2. Married 3. Separated / Divorced 4. Widowed	
Q6	Who are you living with now?	1. Husband /wife 2. Parent(s) 3. Alone 4. Myself and my child/ children	
Q7	What **was** your occupation?	1. Agriculture / Fishery 2. Small business 3. Labor / Employee 4. Public servants 5. Housewife 6. Military 7. Other: ……	
Q8	What **is** your occupation? **(CURRENTLY)**	1. Agriculture / Fishery 2. Small business 3. Labor / Employee 4. Public servants (part time/volunteer) 5. Housewife 6. Nothing	
Q9	Self-assessment of your economic level per family?	1. Poverty 2. Uper poverty but under medium 3. Medium 4. Wealthier	

Q10	How far from your home to primary health care unit?	1. 1-2 km 2. 3-5 km 3. > 5km	
Q11	Do you have health insurance?	1. Yes 2. No	**2=>Q13**
Q12	Who is buying the health insurance for you?	1. Government support 2. Myself 3. Family support	

B. THE HISTORY OF NON-COMMUNICABLE DISEASES AND HEALTH-SEEKING BEHAVIOR OF THE ELDERLY

B.1. THE HISTORY OF NON-COMMUNICABLE DISEASES

No.	**Types of diseases**	**Presence of illness** *1. Yes* *2. No*	**Confirmation of diagnosis** *Years ago?* *1. <5 yrs* *2. 5-10 yrs* *3. > 10 yrs*	**Diagnostic center** *1. PHCU* *2. Hospital* *3. Private clinic*	**Treatment** *1. Prescription* *2. Self-medication* *3. No treatment*
Q13	Hypertension				
Q14	Diabetes				
Q15	Cancer				
Q16	COPD				
Q17	Musculoskeletal				
Q18	Others: …….				

Q19	Self-assessment of health status?	1. Very good 2. Good 3. Normal 4. Poor 5. Very Poor	

No.	**Status**		**Good**	**Normal**	**Difficult**	**Very difficult**	**Can not**
Q20	Defects	Vision	5	4	3	2	1
Q21		Hearing	5	4	3	2	1

Q22		Physical mobility	5	4	3	2	1
Q23		Memory	5	4	3	2	1
Q24	Personal hygiene		5	4	3	2	1

Q25	Do you have other complications due to your health condition?	1. Yes 2. No	
Q26	Do you need counseling about non-communicable diseases?	1. Yes 2. No	**2=>Q29**
Q27	What information do you think is necessary for non-communicable diseases? *(Multiple choice)*	1. Knowledge of prevention 2. Knowledge of self-care 3. Diet 4. Healthy lifestyle	
Q28	How would you like to receive information about non-communicable diseases? *(Multiple choice)*	1. TV, radio 2. Panels, posters, flyers 3. Talk by topic 4. Book, newspaper	

B.2. HEALTH-SEEKING BEHAVIOR OF ELDERLY WITH NON-COMMUNICABLE DISEASES IN LAST 6 MONTHS

Q29	Have you had any occur again periodically NCDs in last 6 months?	1. Yes 2. No	**2=> End**
Q30	Did you go to the medical facilities for treatment or prescription?	1. Yes 2. No	**2=> Q45**
Q31	Where did you go to visit?	1. PHCU 2. District / Provincial hospital 3. Central hospital 4. Private clinics	
Q32	Why did you choose it for healthcare services? *(Multiple choice)*	1. Near house, convenience 2. Enthusiasm 3. Excellent expertise 4. Health insurance cover 5. Less waiting time	

Q33	Did you receive healthcare services at that time?	1. Yes 2. No	
Q34	How were your treated?	1. Inpatient 2. Outpatient 3. Move to upper level	
Q35	In general, are you satisfied with your healthcare services during your treatment?	1. Yes 2. No	
Q36	Who pays for the healthcare services fee?	1. Myself 2. Wife / Husband 3. Daughter / Son or nephew 4. Health insurance	
Q37	In your opinion, are medical equipment, facilities and medications adequate?	1. Yes 2. No	
Q38	Do you think the treatment is effective?	1. Yes 2. No	
Q39	Do you often go to the medical facility for regular checkups?	1. Yes 2. No	
Q40	Where would you like to be examined and treated? *(Multiple choice)*	1. At home 2. PHCU 3. Private services 4. District hospital 5. Provincial / Central hospital	
Q41	Do you know your diseases are being managed at PHCU?	1. Yes 2. No	
Q42	Do you know how to prevent and control disease that you are suffering?	1. Yes 2. No	**2=> End**

Q43	How to prevent and control the disease specifically? *(Multiple choice)*	1. Increase physical activity 2. Implement proper nutrition 3. Decrease using beer, alcohol and tobacco. 4. Others: ……	
Q44	Where did you find out information related to health issues? *(Multiple choice)*	1. Social media 2. PHCU 3. Local government 4. Deparments, Unions… 5. Others:……	
Q45	What is the reason you do not go to the medical facilities for treatment?	1. Mild illness 2. Self-medication 3. Self-treatment 4. Others: ……	**End**

Thank you for participating!

Appendix 2

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

APPLICATION FOR USING DATA SOURCE

Dear Board of Directors of the Health Services of Thua Thien Hue province.

My name is: **Ho Minh Duy**
Date of birth: April 24, 1993

I used to work at Center for Disease Control of Thua Thien Hue province – The public employee seconded to Medical Specialty Department, Health Services of Thua Thien Hue province.

From September 1, 2020, I have participated in the Master's Degree Program in Global Health Policy and Financing Capacity Building at Graduate School of Public Health, Yonsei University, Korea. However, due to complications of the COVID-19 pandemic, the curriculum will be taught in the online form in the first semester.

While studying online in Vietnam, I collaborated with author Nguyen Quang Dinh to collect data related to the use of medical examination and treatment services of the elderly with chronic non-communicable diseases at primary health care units of coastal communes, Phu Vang district, Thua Thien Hue province.

Stemming from learning needs, I plan to use data sources in collaboration with author Nguyen Quang Dinh collected to do my thesis. This has been agreed upon by the subject author.

I am writing this application form to receive admission from the Board of Directors for utilizing the data source of author Nguyen Quang Dinh on the use of medical examination and treatment services of the elderly with chronic non-communicable diseases at primary health care units of coastal communes, Phu Vang district, Thua Thien Hue province.

I commit to using the data for the above purposes and only for the purpose of scientific research.

I appreciate your kindness agreement./.

Thua Thien Hue, October 21th, 2020

Director	Author	Applicant
SỞ Y TẾ		
Dr. Nguyen Nam Hung, PhD	Nguyen Quang Dinh	Ho Minh Duy