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Equity and Access to Health Care

A Study of Rural Quang Nam Province, Vietnam

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This paper will addresses access to health care in rural Quang Nam Province in Vietnam. In doing so, it will examine the existing literature surrounding healthcare in Vietnam and compare it with the shortage of physicians in the study area and how that impacts who is able to receive care. The research presented in this paper synthesizes this analysis with interviews conducted by the author with policymakers and health care professionals in the study area. The paper concludes by offering policy recommendations that may rectify the healthcare issues that pervade the study area.
This paper examines equity and access to health care in rural Quang Nam Province (QNP), Vietnam with emphasis on district level health system organization, including commune health stations, village health officers, and volunteer public health officers as points of entry for healthcare services in rural villages. Central and QNP province government policies, the cost of medical care, Social Health Insurance, and the out-of-pocket costs for health care are also addressed in this paper.

The structure of QNP’s health system fosters equity and access for many in rural areas of the province. District hospitals and commune health stations’ priorities on health prevention programs improve the health status of their populations and prevent the spread of communicable diseases. Additionally, the strategic central location of district hospitals and commune health stations minimize the distance people need to travel to receive health services.

The central government is concerned about the health and wellbeing of its people. This concern is evident in several policies that support vulnerable sectors of the population that include children, veterans, retired persons, the elderly, and the poor. Public policies implemented by QNP’s Social Health Insurance Agency provide government assistance and, in some cases, free health care to the aforementioned sectors of the population.

Gaps in equity and access to the healthcare system are evident in two specific areas. First, approximately 23% of QNP’s population is uninsured. The majority of the uninsured are self-employed. While their income positions them beyond government support, they cannot afford to purchase health insurance. The uninsured are particularly vulnerable as they encounter greater financial barriers when accessing QNP’s health system than their counterparts who are insured. The uninsured are at greater risk for diminished health status because of foregoing preventative health care and delaying seeking any care until an emergency arises, creating financial instability.

Second, QNP is experiencing a shortage in physicians practicing in the rural areas of the province. The number of physicians practicing in QNP does not meet the health care needs of the population. An estimated 300 additional physicians are needed. The shortage of physicians creates inequity and barriers to accessing QNP’s healthcare system, particularly in the vast network of commune health stations that are the primary point of entry into the health system.
The central government has a vision of implementing universal health insurance. The Prime Minister approved the Master Plan for Universal Coverage in 2012. The plan expands coverage with targets of at least 70% of the population being covered by 2015, and 80% by 2020. Although the plan was adopted in 2012, Vietnam has made slow progress toward achieving its goals. Low enrollment rates persist and out-of-pocket costs continue to constitute a majority of healthcare costs. Despite the delays in fully implementing the Master Plan for Universal Coverage, the plan is a pathway to foster access to the nation’s healthcare system and improving equity among Vietnamese who are currently uninsured.

BACKGROUND

Vietnam is a middle-income nation. In 2015, the country’s population was 91.7 million. Development policies implemented by the Party and the State, specifically the “Doi Moi” reform process, increased trade and improved the wellbeing of the individuals throughout the country. According to the World Health Organization:

The “Doi Moi” reform process marked the shift from a centrally planned to a “socialist orientated market economy under State management”, the development of the rule of law and the implementation of an open door policy with all countries. Main reforms included return to household-based farming in agriculture, removal of restrictions on private sector activities in commerce and industry, and the rationalization of the state-owned enterprises. It is generally accepted that this process, launched in 1986, has achieved considerable progress in improving the overall well being of the vast majority of Vietnamese people.

Following a period of prolonged economic development, Vietnam reduced the poverty rate by more than 50% between 1990 and 2010.

Vietnam made considerable progress in the past two decades in improving the health status of its populations. In 2011, 6.8% of GDP was spent on health expenditures and the total expenditure on health per capita was $231 USD (World Health Organization, 2013). Hind and Minh state:

“The life expectancy in Vietnam is 72.8 years (70.2 for men and 75.6 for women), a level that is considerably higher than that in many countries with similar levels of GDP per capita. From 1990 to 2009, the infant mortality rate fell from 44.4% to 16.0%, the under-five mortality rate dropped from 58.0% to 24.5%, and the maternal mortality ratio declined from 233 to 69 maternal deaths per 100,000 live births. Estimated to be around 18% in 2010, the rate of under-five malnutrition has also fallen dramatically. These improvements are attributable to...
a widespread healthcare delivery network, increasing numbers of qualified health workers, and expanding national public health programs.

As the health status of Vietnam’s population improves, increased attention is being focused on prevention and the treatment of emerging health concerns that include noncommunicable diseases. According to the Ministry of Health, “Vietnam is undergoing an epidemiological transition in terms of disease patterns with increasingly more complex developments. The health sector is facing a dramatic increase in noncommunicable diseases and conditions, including cardiovascular diseases, cancer, mental disorders, and traffic accidents.” Traffic accidents are estimated to outpace infectious disease, accounting for more than 20% of total mortality.

**Methods**

This article critically summarizes literature on the topic of Vietnam health policy. Analysis of literature on the topic included journal articles published in peer reviewed journals and government reports released by the World Health Organization and Vietnamese Government. All literature was published in English. A series of interviews with Quang Nam Province government officials, policy makers, and healthcare professionals complemented analysis of the literature review. Interviews were conducted in-person, with the aid of an interpreter, between October 1 and November 27, 2014. The interviews are a critical aspect of the methodology, as published literature on the topic is limited.

**Quang Nam Province’s Health Care System Structure**

Quang Nam Province is one of the largest provinces in Vietnam, with an area that spans 10,438 square kilometers. Located in Central Vietnam, QNP has 16 districts, 2 cities, 244 communes, and around 970 villages. In 2015, QNP’s population numbered 1.48 million (General Statistics Office of Vietnam, n.d.). The majority of the population, 1,172,900, lives in rural QNP, with only 277,200 people residing in the provinces two urban centers (General Statistics Office of Vietnam, n.d.).

QNP has 35 public hospitals, five private hospitals, and an extensive network of 236 commune health stations (CHS). Each district has one hospital that is supported by a network of CHS. According to the Ministry of
Health, “To meet primary health-care needs, the Government has built and consolidated a commune health network, in which 99% of all communes have a CHS, 65.9% of all communes have a medical doctor, and 84.4% of villages have active village health workers.”

CHSs provide basic medical and preventative care, while district hospitals are equipped to treat more complex cases and care for patients for an extended period of time. Typically, a CHS will serve four villages, with a combined estimated population of 9,700 individuals. Ms. Thai Ngoc Huynh Van shared that all but three communes in QNP have a CHS.

QNP has a tiered healthcare system. Individuals access the healthcare system first at a CHS that is located either in, or adjacent to their village. As CHSs are equipped to provide basic medical care, an individual will be referred to their district hospital if the case is medically beyond the CHS’s capacity. If the case is severe, the individual is referred to a provincial hospital that can provide care for the most serious and advanced cases.

The Thang Binh District offers a good example of QNP’s health system’s structure. The Thang Binh Health Center is the district hospital and has emergency, surgical, pediatric, internal medicine, obstetrics, and pharmacy departments. While the hospital has 177 employees, only 29 are doctors. The most common conditions treated at the district hospital are respiratory problems, stomach issues, high blood pressure, and diabetes.

The Thang Binh Health Center is supported by a network of 22 commune health stations. Each CHS serves four villages and is open 24 hours a day. Typically, a CHS is staffed with two district administrative officers, two nurses, a birth assistant, and pharmacist. QNP does not have enough physicians to post a doctor at each CHS. Some CHSs will have a doctor on site one to two days per week.

Village health officers are an important component of QNP’s health system. Approximately 1,776 village health officers work in QNP. Village health officers are posted in villages and are paid by the government. One village health officer is typically assigned to a village. However, if the village has a large population, two or more village health officers will be posted there. The primary function of village health officers is to report outbreaks of communicable diseases, promote participation in health prevention programs, and perform basic first aid. Village health officers are an important link between villages and the QNP health system. They meet monthly with CHS staff to provide information on the health status of their village, emergent health and safety issues, and updates on health prevention programs.
In each village, the village health officer is supported by three volunteer public health officers. Reporting directly to the village health officer, volunteer public health officers are responsible for managing health prevention programs in the village. The volunteer public health officers have an important role in the village. They are valued and respected by their fellow community members.

Health prevention programs are a national priority in Vietnam. Both district hospitals and CHSs have a dual focus of preventative and curative care. However, CHSs prioritize health prevention programs. QNP health prevention priorities include: HIV awareness and prevention, food safety, disease prevention (clean hands), school-based health prevention programs, vaccine programs for children, and clean water.

**Social Health Insurance**

The Social Health Insurance Agency is QNP’s insurance agency. It is responsible for managing the social health insurance pool of funds, monitoring premiums, paying claims, and implementing the Ministry of Health’s policies on government supported health insurance programs. Health insurance covers healthcare services and provides financial protection by limiting an individual’s out-of-pocket expenses. Approximately 1.1 million people in QNP, 77% of the population, have health insurance.

In Vietnam, there are two primary methods to obtaining health insurance: through an employer, or purchasing a policy as an individual. Compulsory health insurance is required for all government and private sector employees who have worked in their current position for three months. Employees pay a portion of their monthly salary toward the insurance premium. The average out-of-pocket cost for a government or private sector employee is 1.5% of their monthly salary. The government contributes 3% of the employees’ monthly salary to the insurance premium. Self-employed individuals can elect to purchase health insurance; however, it is not mandated. Approximately, 141,381, or 9.9% of QNP’s population purchased individual health insurance policies in 2012.

The cost of an individual health insurance policy for a self-employed individual is calculated based on a percentage, 4.5%, of their monthly salary. Labor laws set the minimum monthly salary rate at 1,150,000 VND or $54 USD. Using this formula, the annual insurance premium for a self-employed
individual, with a monthly salary of 1,150,000 VND, is 621,000 VND, or $29.30 USD. Self-employed individuals making below the minimum amount are eligible for government support.

Several public policies support vulnerable sectors of the population, including the poor, near poor, children, veterans, and retired persons. For example, if an individual or family’s income is below the poverty line, the central government will provide health insurance and pay 100% of the premium. Nguyen, Nguyen, Sunderlin and Yasmi state, “The official poverty threshold being used by the Government is based on the monthly average income per capita sufficient to provide 2,100 calories of food intake per person per day.” Additionally, if an individual or family is slightly above the poverty threshold, the central government will pay 70% of the insurance premium and the People’s Committee of QNP will pay the remaining 30%, effectively providing health insurance free of cost to the near poor in the province. In 2013, approximately 383,791 individuals in QNP received government support for health insurance coverage; most of whom live in rural villages.

The Social Health Insurance Agency implemented policies that reduce the out-of-pocket costs for vulnerable sectors of the population mentioned above. The co-pay for a clinic visit or procedure for an individual with health insurance is 20%. Social Health Insurance pays the remaining 80%. However, certain sectors of QNP’s population are relieved of the co-pay requirement. For example, the government covers 100% of healthcare services for children under the age of 6, including preventative health measures such as vaccinations. Additionally, veterans and retired individuals have a reduced co-pay of 5% for a clinic visit or procedure.

As evident through the numerous policies aimed at increasing access to health care, both the central government and People Committee of Quang Nam Province are committed to taking care of its people. According to the Ministry of Health in 2009:

“Narrowing the disparity in health indicators such as maternal mortality, child mortality and the burden of health-care spending across living standards, regions and urban-rural areas is a priority in health policy development. This is evidenced in the large number of policies, e.g. providing free health insurance to the poor, subsidizing the near poor to purchase health insurance, investment in district level hospitals, etc.”
Mr. Bui Duy Thanh shared that conversations are currently underway to augment health insurance coverage for the poor, near poor, and retired Vietnamese.\textsuperscript{36}

Mr. Thanh stated that the QNP’s Social Health Insurance Fund pays out more in claims than it receives annually in premiums. The position of QNP is that it is the government’s responsibility to provide health insurance and care for the health and wellbeing of its people.\textsuperscript{37}

**ACCESS TO HEALTH CARE IN QUANG NAM PROVINCE**

QNP healthcare system is structured to promote access to healthcare services and health prevention programs. District hospitals are strategically located in the center of the district to minimize the distance people need to travel to receive health care. For example, the Thang Binh Health Center is in the center of the Thang Binh District and is 10 kilometers from the mountains and 25 kilometers from the sea.\textsuperscript{38} Thang Binh District’s 22 CHSs are also strategically located equal distance from the villages each station supports, thus minimizing the distance people need to travel to received health care. As such, the Tram Y Texa Binh Phuc Commune Health Station is located in the center of the four villages it supports. The average distance from the four villages to the Tram Y Texa Binh Phuc commune health station is 3.5 kilometers. Furthermore, all healthcare services at QNP’s CHSs are free of cost for all patients, regardless of their financial and health insurance status.\textsuperscript{39}

Access to QNP’s healthcare system extends beyond the strategic physical locations of its district hospitals and CHSs. According to the World Health Organization in 2003:

> Vietnam has been highly successful long before Alma Ata (1978) in providing preventive health services, in controlling the spread of communicable diseases and in achieving good health for its population. This was achieved partly thanks to its extensive healthcare delivery network with a very strong Primary Health Care component (9,806 commune health centers and more than 600 district hospitals), its large supply of health workers and its very well organized national public health programmes, such as the Expanded Program on Immunization.\textsuperscript{40}

Village health officers and volunteer public health officers are another vital element of QNP’s healthcare system. These valuable healthcare workers increase access to QNP’s healthcare system throughout the province’s vast network of villages. They provide personal support, information, and advance
QNP’s health prevention programs. Village health officers and volunteer public health officers essentially bring health care in the province to a person-to-person level.

Access to health care is fostered by numerous policies implemented by QNP’s Social Health Insurance Agency. These policies mitigate financial barriers and encourage individuals to access the healthcare system when they need it. For example, QNP’s social health insurance policies subsidize health insurance for vulnerable sectors of the population, including children, the elderly, retired individuals, veterans as well as the poor and near poor. Additionally, CHSs provide basic healthcare services free of cost to all QNP residents, dramatically increasing access to health care for all individuals in the province.

One area where access to health care in QNP is compromised is in the current shortage of healthcare professionals, namely physicians, practicing in rural areas of the province. Per Hinh and Minh, “The number of health workers in Vietnam has increased substantially over the past 10 years, but there are still severe shortages in remote and disadvantaged areas.” According to Mr. Luong Van Vui, Co-director of The Center for Health and Human Services, QNP needs an additional 300 physicians to meet the health care needs of its population. Dr. Sen, Director of the Thang Binh District Health Center, concurred with Mr. Vui’s assessment and stated that there are about 1.5 doctors for every 10,000 individuals in the Thang Binh District. He also commented that the Thang Binh District Health Center is at capacity. While the hospital has 132 beds, it serves 160 patients a day. Dr. Sen said the hospital needs at least 15 additional physicians, 45 nurses and 15 administrative officers to meet the current volume of patients.

The shortage of doctors in QNP creates barriers for individuals to access the province’s health system. For example, only 5 of QNP’s CHSs have a doctor on staff. While many CHSs have a physician one or two days a week, this set-up can lead to significant gaps in services. Additionally, QNP’s current physician shortage results in large caseloads, physician fatigue, and less time a doctor is able to spend with a patient. All of these factors limit access within QNP’s healthcare system.

**Equity and the QNP Healthcare System**

The central government and People’s Committee of QNP have implemented numerous policies and programs that foster equity of the
healthcare system. Specific policies include free health care for vulnerable populations including children, the elderly, and the poor. In addition, several policies favor those who are self-employed and live in rural QNP. The majority of residents that receive government assistance for health insurance live in rural QNP. The strategic geographic positioning of the province’s CHS network and labor laws establishing minimum monthly salary rates for social health insurance are two such examples explored in this paper.

The national priority on health care prevention programs is evident in rural QNP. These programs improve the health status of the population. Both village health officers and volunteer public health officers bring health care prevention programs to individuals in their villages and make sure that these vital programs achieve their objective. This staffing structure increases the effectiveness and equity of the healthcare system in rural QNP, while successfully eliminating barriers associated with travelling far from home for healthcare services.

One sector of QNP’s population, however, does experience diminished equity in access to the healthcare system. In 2013, approximately 23% of QNP’s population did not have health insurance. The profile of the uninsured in QNP is that of a self-employed farmer, market vendor, or temporary worker. Many self-employed individuals in rural QNP make an annual salary that positions them just beyond the income requirement to qualify for government assistance for health insurance. However, many of the self-employed in rural QNP, who constitute the majority of the 23% who are uninsured, cannot afford the annual health insurance premium and forgo purchasing health insurance for themselves and their family.

Living without health insurance poses many negative consequences for an individual and their family. First, should an uninsured person require medical care, they are personally responsible for paying the medical bill. Dr. Doan Van Sen stated the average cost of a clinic visit at the Thang Binh Health Center is 102,000 VND ($5.10 USD), while the average cost for a 7-10 day hospital stay is 660,000 VND ($33.00 USD). These out-of-pocket costs are prohibitive to the self-employed who cannot afford health insurance, but do not qualify for government assistance. Unforeseen financial expenses, compounded with lost wages from time off work, disrupt the financial stability of the self-employed individual and their family. Additionally, substantial medical bills have potentially long-term negative financial consequences for an individual and/or family and can prohibit them from meeting their basic needs.
The health status of the uninsured individual suffers as well. Preventative medical care is considered expensive and, as a result, is not a priority. According to Mr. Bui Duy Thanh, high-income people are concerned about healthcare prevention, while lower income people do not think about it (personal communication, November 21, 2013). Neglected health care and lack of preventative health care can lead to complicated and irreversible medical conditions that could have been prevented or treated. Diabetes and high blood pressure are two such conditions. The unintended result of having no health insurance can lead to a diminished health status that compromises the physical health, social wellbeing, and financial stability of an individual.

In 2012, the Prime Minister approved a national strategy to implement universal average. According to Matsushima and Yamada, “the Vietnamese government has placed further emphasis on this issue and it now has a grand design and time line to achieve universal health insurance coverage by 2014.” The national strategy, The Master Plan for Universal Coverage, has two specific aims: 1) to increase national participation in the social health insurance system from 60% in 2010, to 70% by 2015, and 80% by 2020; and 2) reduce out-of-pocket expenditures from 57% in 2010, to less than 40% by 2015. However, four years into the strategy, progress toward achieving these goals has been slow. According to Somanathan et al., “Enrollment rates are still quite low among the near-poor and other groups whose premiums are substantially, of not fully subsidized.” They, continue, “Out-of-pocket expenses are high and expose households to financial catastrophe and impoverishment.” The national assembly reviewed the national strategy and was positioned to possibly revise the Law on Health Insurance.

Should Vietnam achieve its goal of 80% participation in the social health insurance system by 2020, access and equity to the nation’s healthcare system will be significantly advanced for the country’s population.

Recommendations to Improve Access and Equity in QNP’s Health System

The following is a series of recommendation to improve access and equity to health care in QNP:

Goal No. 1

Increase the number of physicians working in rural QNP

Progress toward
this goal is underway. The Center for Human Resources Development established an agreement to provide student scholarships at Hue University of Medicine and Pharmacy.\textsuperscript{55} However, to achieve this long-term goal of adequate physician staffing in rural QNP, more momentum is needed.

\textbf{Strategy}

Increase the number of medical school scholarships available for students who agree to practice in rural QNP upon graduation. The medical schools in Tam Ky, Cao dang y te QN, and Hue University of Medicine and Pharmacy are ideal partners to achieve this goal.

Provide physicians with an annual financial bonus as incentive to practice in rural QNP. The amount of the bonus will increase incrementally with each additional year of government service at a rural district hospital or commune health station.

\textbf{Goal No. 2}

\textit{Increase equity in and access to QNP’s healthcare system for the uninsured}

\textbf{Strategy}

Should the goals of The Master Plan for Universal Coverage not be fully realized, reduce the income requirements to receive government assistance for health insurance. Adjustments to the income eligibility requirements will increase eligibility for government assistance for a proportion of the 23\% of QNP residents who are currently uninsured.

\textbf{Goal No. 3}

\textit{Implement universal health insurance in Vietnam}

\textbf{Strategy}
While The Master Plan for Universal Coverage was adopted in 2012, it remains unclear if the objectives of this reform will be fully realized. To achieve the goal of universal coverage, task Village Health Officers and Volunteer Public Health Officers to participate in the enrollment of individuals in their villages.

CONCLUSION

The thoughtfulness and intent for caring for the health of the population is evident in QNP’s health system. QNP developed and implemented a strategic health system framework that is supported by numerous policies that promote equity and access among several vulnerable sectors of the population, such as children, the poor, the near-poor, elderly, veterans, and retired individuals. The strategic location of district health centers and CHSs minimize the distance a person needs to travel to receive medical care. Additionally, Village Health Officers and Volunteer Public Health Officers increase access to QNP’s health system and promote health prevention programs in the more than 900 villages in the province.

The national focus on health prevention programs, organized around six priorities, supports the overall health status of Vietnam’s population and prevents disease. Prevention programs are implemented at the village, commune, and district level in an effort to have as broad of a reach as possible. Additionally, the CHSs primary priority of health prevention programs. Support from Village Health Officers and Volunteer Public Health Officers in each village, advance the prevention program’s objectives and help them to gain traction and acceptance. Finally, several QNP Social Health Insurance policies extend government-supported health insurance to children, the elderly, retired, veterans, the poor, and near-poor. As a result, 77% of this mostly rural population is insured.

While QNP’s health system is strategic and thoughtful in promoting equity and access to the health system, two primary issues limit the system's overall effectiveness. First, QNP’s does not have enough doctors to support its population of 1.45 million. The limited number of physicians practicing in rural QNP result in gaps in service, an unrealistic patient to doctor ratio of one doctor for every 10,000 people, and barriers to accessing the medical care. This is especially prevalent at CHSs that do are not staffed with a physician. Second, 23% of QNP’s population was uninsured in 2014. The vast majority of the uninsured in QNP are self-employed individuals with an annual income that positions them just beyond the scope of government assistance. The uninsured represent a particularly vulnerable sector of the
population. This sector is in a perilous position in terms of their health status and financial instability that could result from catastrophic out-of-pocket payment for medical bills.

The Master Plan for Universal Coverage was adopted in 2012. Should the plan's two key strategies of increasing enrollment in the social health insurance system to 80% by 2020, and reducing out-of-pocket expenditures to less than 40% by 2015 be fully realized, all sectors of Vietnam’s population would enjoy improved equity and access to the country’s healthcare system.

Notes

2 Somanathan, et al., 2014.
9 Thuy Ngoc Cho, personal communication, November 27, 2013.
10 Ministry of Health and Health Partnership Group, 2009, 14.
13 Thai Ngoc Huynh Van, personal communication, October 29, 2013.
16 Thuy Ngoc Cho, personal communication, November 27, 2013.
17 Thuy Ngoc Cho, personal communication, November 27, 2013.
18 Thai Ngoc Huynh Van, personal communication, October 29, 2013.
19 Thai Ngoc Huynh Van, personal communication, October 29, 2013.
22 Thuy Ngoc Cho, personal communication, November 27, 2013.
23 Thuy Ngoc Cho, personal communication, November 27, 2013.
26 Bui Duy Thanh, personal communication, November 21, 2013.
27 Huynh Quang Nen, personal conversation, December 3, 2013.
28 Bui Duy Thanh, personal communication, November 21, 2013.
29 Bui Duy Thanh, personal communication, November 21, 2013.
31 Bui Duy Thanh, personal communication, November 21, 2013.
32 Bui Duy Thanh, personal communication, November 21, 2013.
33 Bui Duy Thanh, personal communication, November 21, 2013.
34 Bui Duy Thanh, personal communication, November 21, 2013.
36 Bui Duy Thanh, personal communication, November 21, 2013.
37 Bui Duy Thanh, personal communication, November 21, 2013.
38 Doan Van Sen, personal communication, November 27, 2013.
42 Luong Van Vui, personal communication, October 1, 2013.
43 Luong Van Vui, personal communication, October 1, 2013.
44 Doan Van Sen, personal communication, November 27, 2013.
45 Doan Van Sen, personal communication, November 27, 2013.
47 Bui Duy Thanh, personal conversation, November 21, 2013.
49 Bui Duy Thanh, personal communication, November 21, 2013.
54 Somanathan, et al., 2014.

REFERENCES


