

PART A. RESEARCH ISSUE AND METHODOLOGY

Part A consists of four chapters that provide background for the research questions raised about the community healthcare system in rural Vietnam (Chapter 1), describe the rural health care system in Vietnam (Chapter 2), present a rationale for the research framework used in evaluating the health care system (Chapter 3), and provide an overall description of the databases used to clarify the research questions (Chapter 4).

CHAPTER ONE

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1. CHAPTER ONE: BACKGROUND AND THESIS OBJECTIVES

This chapter addresses the question: How much do we need to conduct health system research in Vietnam, and what should we focus on? The answer is placed in an international context on health system research. Research questions and objectives of the thesis are then presented.

1.1. BACKGROUND

1.1.1 International context of health system research

The desire for survival in human beings drives the need for healthcare. The simplest and often most popular pattern of healthcare in many modern societies is self-treatment, either with or without medicine. About a century ago, the state intervened giving rise to modern healthcare systems (WHO 2000a). Policies and strategies for healthcare systems may differ from country to country, even from region to region. However one common goal across many countries is, to form a sustainable health system that is accessible and affordable to every citizen.

Strategies to achieve this goal, however, are not clear and simple. There have been three overlapping generations of healthcare system reform during the 20th century (WHO 2000a). However, there are no universal solutions, and no country has achieved an ideal model (Feachem 2000; Kawabata 2000). One model employed in many socialist countries was ‘universal, free health care’. This was a centralized, state-controlled model originating in the former USSR. It was maintained for decades but collapsed in those countries that employed it just 10 years after the Alma-Ata conference in 1978, at which WHO/UNICEF launched an international strategy of primary health care for achieving the goal of ‘Health for All by the year 2000’. In the last decade of the 20th century, many countries, regardless of socio-economic status, embarked on health care system reform with a new vision. This concept centered on responding to people’s demands rather than focusing exclusively on presumed needs and concentrating on the

sustainability of the system rather than just provision within the public sector. At the beginning of the 21st Century, the design and performance of health systems are once again at the center of the international agenda (Feachem 2000; WHO 2000a).

Evidence is needed as to what currently works in healthcare, what should be maintained, what yields health benefits and what should either be discarded or reformulated. New approaches are needed to address the many and varied future challenges. Therefore, research has a critical role to play in healthcare sector reform.

Establishing a realistic model of the health care system that fits an individual country is challenging. Each health care system reflects its country's particular history, dominant ideology, and specific economic and socio-demographic circumstances. Reform involves a sustained process of fundamental change in policy and institutional arrangements and is therefore intrinsically complex (Janovsky and Cassels 1996; WHO 2000a). With such a complex phenomenon, the success of health care sector reforms will greatly depend on the availability of scientific evidence to provide the basis for adopting and guiding policy. Therefore, each country needs to set its own research agenda in order to identify its systems' problems, solutions and opportunities (Janovsky and Cassels 1996; WHO 2000b)

This is a great challenge for developing countries where research environments are not adequately resourced to support a systematic research agenda. Support from the developed world and international collaboration are vital to facilitate health system research in developing countries. However, over the last decade only "...5% of the global investment in health research ...(has been)... devoted specifically to the health problems of developing countries, representing over 90% of the disease burden.." (COHRED, GFHR et al. 2000). Until 1996, the ad hoc committee on health research of the World Health Organization found that "... very little was known about the impact of the many ongoing health sector reform initiatives around the world, in particular, about their impact on poor and disadvantaged population groups." (WHO 2001).

1.1.2. Vietnamese context of healthcare sector reform

In Vietnam, social and economic reform was formally introduced in 1986, steering the country away from a centrally planned system towards one that was market oriented. Healthcare sector reform began in 1989 in an attempt to preserve the healthcare system's focus on equity and other inherent strengths while adapting to the new economic realities. As a result, it was viewed as adapting to ideological and political change, rather than a scientific assessment of the current situation or working towards a better future health system.

The process of becoming a multi-component economy began in the late 1970s and was accelerated by the crisis of socialist ideology in Eastern Europe and the Soviet Union during the 1980s. In 1986, the government formally initiated Vietnam's move toward reformation with the *Doi moi* (renovation) Policy. The nature of *Doi moi* in Vietnam differed from *Perestroika* in the Soviet Union and other types of reform in the ex-socialist Eastern European countries. For Vietnam, reform focused on economic efficiency, while the political system remained unchanged. The model of so-called "market-oriented socialism" was adopted. In practice this meant that creating a market oriented socialist society would not involve any change in the political leadership of the country. It remained a strategic change only in which privatization and market forces were used to strengthen the efficiency of the current governance system. For the health sector, this approach was expressed as a policy that diversified health services to include a private health care system while political will for health equity and the public health system remained. As a result, from 1989, private practice, the commercial sale of pharmaceuticals, and fee-for-service medical care, were all allowed. The overlapping approaches to policy-making, financing, planning, management and delivery of services arising from this transformation caused uncertainty and confusion (LaFond 1995; Dung 1996).

By the early 1990s, the *Doi moi* reforms of economic liberalization had taken effect. Central planning had been abandoned, agriculture had been decollectivized, public enterprises were being divested, and private industry was thriving. Legislation was

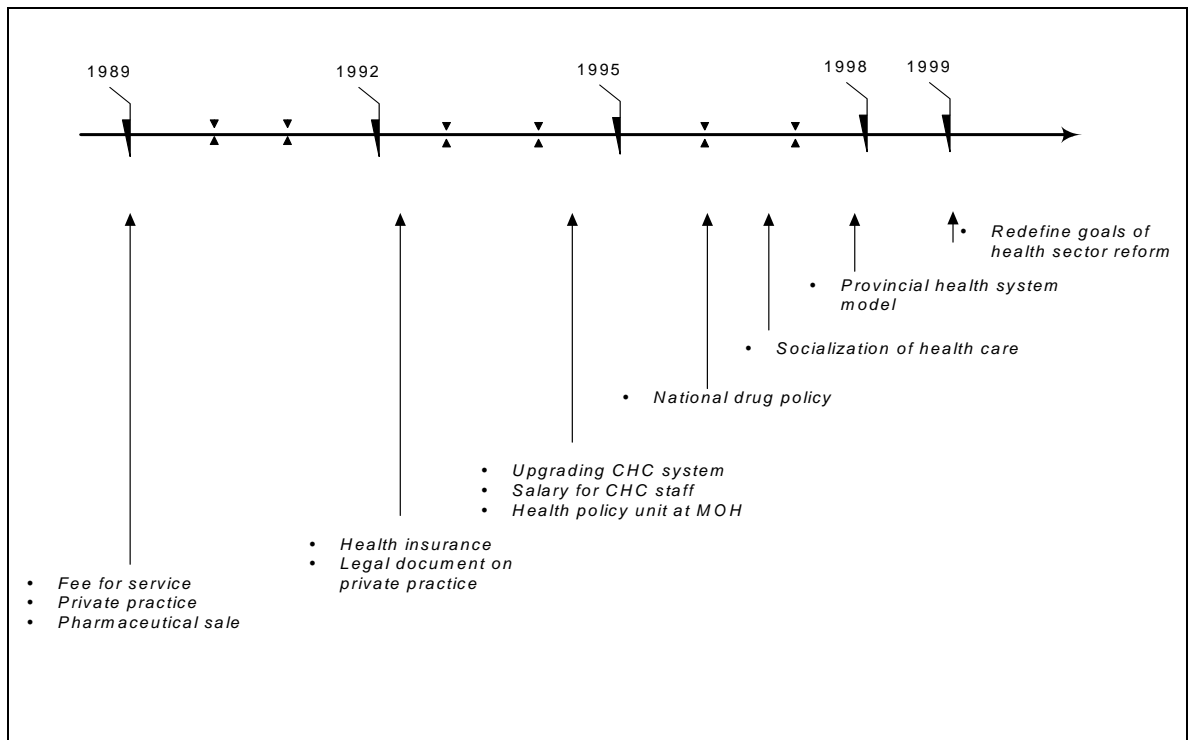
created to guarantee the security of business operations and to promote free competition between the public and private sector.

This transition to a market oriented system jolted the health care system affecting both users and providers. The collapse of cooperatives greatly reduced the local source of financing for the Commune Health Centers (CHC). The public hospital system introduced separate wards, so-called needs-based service clinics, in addition to their usual service department, in order to raise income for their staff. The introduction of health service fees in an environment of low salaries, inadequate legal frameworks, and where poor operational guidelines were used to run the public-private mix in hospitals, created enormous management challenges (Jerve, Krantz et al. 2001). There was a sharp decrease in health service use of public health care facilities during 1989-1994, and many public health staff left the system to join private providers (World Bank 1992; Ministry of Health 1997).

For the consumers, the poor now had less access to health care services compared with those better off in spite of the political will for health equity. However, the most striking feature of the utilization pattern was the increase in people self-medicating rather than consulting health care providers (Prescott 1997). Analyses of the health care system in Vietnam during this period warned of an unavoidable crisis in the near future (World Bank 1992; Vietnamese Communist Party-the Party Central Committee 1993; Government of the Socialist Republic of Vietnam 1994).

However, the success of economic reforms during the 1990s, the stabilization of political status along with increased overseas assistance to the health sector and the effective use of foreign aid (World bank, Sida et al. 2001) helped Vietnam control the situation. The government launched various policies to address key issues for health system reform including health system financing, improving quality of health care services, control of market failure in health care, and equity of access to health services. Figure 1-1 shows the chronology of policy and strategies implemented nationally during the first 10 years of health sector reform.

Figure 1-1. Chronology of policy and strategies implemented during the first 10 years of health sector reform in Vietnam (1989-1999)



The whole period of 1989-1999 may be divided into two phases. The first phase (1989-1994) was seen as a ‘silent period’ to ‘wait and see’ what happened after the health policies released in 1989. The notable strategies launched in this period were experimentation with health insurance (1992/93) and the encouragement of the private sector by deregulating private practice in the health care system in 1993 resulting in consulting rooms, private hospitals, joint-venture hospitals, and private pharmacies. No other policies impacting on the health care system were implemented during the first five years after the introduction of *Doi moi*. Instead, the Ministry of Health focused on strengthening internal management and human resource development at the central level, although this was not explicitly stated as a policy for health sector reform in this period.

There were two key initiatives introduced in the first phase of reform that provided momentum for making the implementation of health system policy more effective in the subsequent years: (1) the revision of medical training programs towards a problem-based learning approach, and (2) the redirection of the Ministry of Health’s plan to program structure management. These changes were made internally within the

Ministry of Health structure, and were mostly aimed at changing central level management. These changes are rarely mentioned in international discussion papers on health system reform in Vietnam in the 1990s. This is probably because this was diluted in a national policy of restructuring the public service system. However, it was the changes in medical training programs initiated in this period, at both secondary and tertiary medical levels¹, that facilitated the replacement of the socialist preventive medical training program with western oriented public health training programs (Tuan 1995), and upgrading of the quality of secondary medical training. These changes, together with an input-process-output approach to program management, created an environment within the Ministry of Health and the public health sector in general, which was more favorable to subsequent reforms.

After years of being left to its own devices during a period of substantial socio-economic change, the primary health care system was in danger of collapse (Vietnamese Communist Party-the Party Central Committee 1993). The macroeconomic situation in Vietnam stabilized in the early 1990s, with the national economy growing at an annual rate of 8% to 9% between 1992 and 1997. Despite a degree of economic deregulation, the State retained its central role in Vietnamese life, and the health and education systems were again at the top of the national agenda, as the government began to reinvest in these sectors. In 1994, the government decided to strengthen the public health system by revitalizing the CHC sector (see Decision No. 58/TTg 1994 and MOH 1996). This decision is seen as a starting point for the second phase of reform, from 1995 to 1999. This second phase was characterized by various strategies that supported the CHC system and reinvested in hospitals without moving to restrict or support the private health sector. Under the slogan of ‘socialization of healthcare’, non-government and private resources were encouraged to invest in health care. Private hospitals with either local or overseas financial support started to be built in Ho Chi Minh city and Hanoi. There are about one hundred international NGOs are active in health in Vietnam by the end of the 1990’s (World Bank, Sida et al. 2001).

¹ In Vietnam, medical training is managed by the Ministry of Health, the secondary level is for nurse, midwife, assistant doctor, and non-university level pharmacist ; the tertiary level is medical practitioners and pharmacists.

The policy to strengthen the CHC system saw infrastructure improvements, training for local health staff, and since 1995, the payment of CHC salaries from state funds (Ministry of Health, Ministry of Finance et al. 1995). These changes have revitalized the commune health system. The second phase included pilot programs for various health insurance schemes, and a national health insurance program was launched in 1995 (Government of the Socialist Republic of Vietnam 1998). In 1996, the Vietnam National Drug Policy was officially approved, and a master-plan was developed to promote the safe manufacture, import, supply and use of good quality pharmaceuticals in both the private and public sectors (Socialist Republic of Vietnam-Ministry of Health 1996). There have also been various direct interventions by the Ministry of Health to improve public health policy and to build institutional management capacity through development projects supported by international donors. A notable example was the Vietnam–Sweden Health Cooperation program 1994-1999, which provided support to eight areas, and placed a long-term advisor within the Health Policy Unit of Ministry of Health (Jerve, Krantz et al. 2001).

In summary, the first ten years of introducing a market-based approach into a centrally planned system saw the Vietnamese health care sector go through two phases of development. In the first phase, 1989-1994, the health care system was driven by a central policy of diversifying health care services, which was seen as a passive response to the nation's changing economic system. In the second phase, 1995-1999, health care reform has centered on a determined effort by the government to maintain the dominance of the public health sector at a time when the country was moving ever closer to free market philosophies. While the government acknowledges the potential for private health care to complement the public sector, it remains skeptical about the role of the market in health care. The government fears what could happen when an unregulated private sector collides with an under-funded public sector, in a setting where public knowledge about health issues is extremely limited. In the government's view, the public health care system should be the dominant provider, and private for profit health care is seen as little more than an adjunct.

1.1.3. Current trends of health care system reform

Health care sector reform in Vietnam is undergoing a new phase of change, related to globalization. These changes include an increased reliance on complicated technologies in health care, which will certainly lead to increased health care costs, and will likely lead to increased inequalities in patient care. The use of more complicated techniques carries with it a need to create a regime of health care guidelines. Professional organizations, such as doctors' and nurses' associations, are also likely to take a more prominent role. The growth of the private providers reduces the level of direct government control over the health care sector.

In the late 1990s, politicians and bureaucrats in Vietnam were debating the respective roles of the State and market forces within the health sector. The fundamental question was: What direction should Vietnam take to further develop its health care system? Should it continue with current policy or move towards a more market oriented health care system by handing increasing numbers of previously public sector functions to the private sector?

A number of factors have strengthened the government's resolve to reinforce the so called 'market-oriented socialist system' in Vietnam. These factors included a decade of GDP growth figures averaging around 7% per annum; successful reduction of poverty levels from 58% of the population in 1993, to 37% in 1998 and 29% in 2002 (World Bank and ADB 2002; UNCT 2003); significant improvement of the key health outcomes (i.e., childhood morbidity, childhood malnutrition, fertility rates, and life expectancy) (World Bank, Sida et al. 2001); and the stabilizing of the political system in the context of the Asian economic crisis which started in 1997 with widespread social distress in the affected countries of Southeast Asian (Indonesia, Malaysia, Thailand, and the Philippines) (Thailand Development Research Institute 2000). As Vietnam enters the third millennium, there is an emphasis on goals of health sector reform to strengthen the quality of the public health sector, make it more equitable and to improve the efficiency of the health care system (Hung, Minas et al. 2000; Hung, Dzong et al. 2001). The Vietnamese health system model as outlined by the government for the first decade

of the 21st century sees the current system with a stronger public sector in terms of quality and efficiency, and less negative impact by the private sector on people's health.

In achieving the acknowledged objectives of health care reform, certain critical policy questions need to be answered:

- How to finance the health care system in order to counter the tendency of increasing inequities in health and mobilize sufficient funding for the public sector?
- How to increase the quality of the public system and improve equity in the utilization of the available resources?
- How to control service provision to avoid market forces taking the lead and creating unnecessary forms of health care?
- How to increase efficiency of the public system and deal with the spread of new technologies in health care while avoiding extreme costs, poor quality and ineffective priorities in public health care facilities?

Various strategies have been piloted in a search for answers to these questions. The Ministry of Health has suggested mandatory health insurance for all (Vietnam Health Insurance Committee 2001) but this is still under review. In terms of rural health care, projects aimed at promoting provincial health systems as the primary area of health care delivery have been initiated in different regions since 1998 (Hung, Anderson et al. 2000). For example, health system development projects in the provinces of Thai Binh, Binh Thuan, and An Giang were started in 1998, and a recently launched project in Hung Yen aims to strengthen the provincial health care system for better health care of the poor. However, these programs have not been evaluated. A new approach using community development and poverty alleviation in addressing social and health issues has been raised in Vietnam. In 1998, local initiatives to reduce poverty were consolidated into one national poverty alleviation program. This program sought to cover 1715 extremely poor communes with a package of government services including the strengthening of public health services (The Government of Vietnam-Donor-NGO Poverty Working Group 1999). In addition, the Ministry of Health is pursuing community-based evidence for public health policy formation in order to deal with the complicated issues of health care sector reform in the first decade of the 21st century

(Hung, Anderson et al. 2000). Health sector reform and its potential role over the next decade to reduce poverty in Vietnam has been also discussed by the government.

In summary, health care sector reform in Vietnam has been characterized by an intense government effort to sustain public health sector dominance at a time when the wider country is moving ever closer to free market philosophies. The role of private for-profit health care providers is therefore only considered as an adjunct to the public health sector. Interventions introduced during the last five years aim to improve the quality of the public health sector, and make it more equitable. However, besides some positive performances by the public health system, such as the success of malaria control in the 1990s (Schuftan 2000) and the control of the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003, evidence is emerging that market failures in health care seem beyond the government's control (Chuc and Tomson 1999; Naterop and Wolffers 1999; Lonnroth 2000; Vietnam Health Insurance Committee 2001; Khe, Toan et al. 2002; Anh 2004). There has also been an increase in health related inequalities (Bhushan, Bloom et al. 2001).

1.1.4. Research on health system reform in Vietnam

Before *Doi moi*, almost all information about the Vietnamese health system was controlled by the government which claimed the health system was equitable and efficient. Health care was free to all, and most endemic diseases appeared to be under control, including malaria. Childhood mortality was lower than other wealthier countries in the same region who had not suffered the consequences of war (see (McMichael 1976; Dung 1996). As Vietnam had been at war and became a focal point of political conflicts between the socialist and capitalist systems, it was not possible to critically appraise the country's health system before the 1980s. However, the introduction of health sector reform together with increased support from international organizations has led to significant advances for health system research in Vietnam during the last 15 years.

Existing health system research in Vietnam can be classified into two groups: studies on developing and planning donor-funded long-term programs, and those conducted for

academic purposes. The first consists of health surveys or health program/health project evaluations supported by the UN organizations (UNFPA, WHO, UNDP, UNICEF), the World Bank, the Asian Development Bank, European Commission (EU) and other bilateral organizations: Sida (Sweden), CIDA (Canada), AusAID (Australia), Lux-Development (Luxembourg). These studies were conducted using large sample sizes and collected high quality information about the health sector as well as the socio-economic and environmental contexts. The second group has been carried out independently from the surveys supported by international organizations and the government and consists of various journal and discussion papers written by international scholars and local researchers working independently or in collaboration with government research institutions and universities. This work is often conducted in small areas or using secondary data from various resources to analyze specific aspects of the health care system.

The most important surveys and evaluations related to health sector include:

- The Vietnam Living Standard Surveys 1992/93, and 1997/98 which document the changing patterns of household health behaviors against economic quintiles (VLSS surveys; nationally representative sample) (Haughton, Haughton et al. 1999; General Statistics Office 2000)
- Evaluations of the Health Sector Cooperation Program between Vietnam and Sweden which evaluated the impact of Swedish support for the health sector in Vietnam within the context of a country and a health sector reform (Jan Valdelin et al 1992; Jerve, Krantz et al. 2001)
- The Demographic and Health Surveys with nationally representative samples in 1988 (VNDHS-I), 1997 (VNDHS-II) and 2002 (VNDHS-III) to measure levels of fertility, infant and child mortality, and indicators of maternal and child health including HIV/AIDS (only in the 2002 survey) (Vietnam: National Committee for Population and Family Planning 1999).
- The Primary Health Care for Women and Children Surveys conducted in the provinces of Long An, Ben Tre and Quang Ngai 1998 (the AusAID primary health care project surveys) to provide baseline data on health status and use of health care services in representative household samples (Dibley, Luu et al. 1999)

- The Health System Development Surveys, 1999, in Thai Binh, An Giang, and Binh Thuan (EU-surveys), and in 2001, in Hung Yen (Lux-development survey; provincial representative sample) (Tuan, Thach et al. 2000; Tuan, Thach et al. 2001).

These surveys were conducted to provide baseline information on all components of the community health care system including: users, public and private health care providers, and community context. The National Health System Survey, 2001-2002, was implemented by the Ministry of Health of Vietnam (both provincial representative sample and nationally representative samples) mainly to measure health outcome indicators.

To date, the surveys of VLSS 92/93 -97/98, VNDHS-I & II, and the AusAID Primary Health Care Project Survey have been subjected to two levels of analysis. In the first level, the survey teams conducted preliminary data analysis and wrote survey reports to support government planning. Further analysis was used to produce specific research papers and discussion papers for publication (Haughton, Haughton et al. 1999; Gwatkin, Rutstein et al. 2000); (Hong, Dibley, et al. 2002). The VNDHS-III and the Health System Development Surveys at Provincial Levels in Thai Binh, Binh Thuan, An Giang, and Hung Yen have so far produced only survey reports with preliminary data analysis. The National Health Survey is still in the phase of data management and writing of preliminary reports.

The second body of research covers various specific aspects of the health care system including: overall system assessment (Guldner and Rifkin 1993; Chen and Hiebert 1994; Hien, Ha et al. 1995; LaFond 1995; Witter 1996; Tuong, Phong et al. 2000); sustainability of the primary health care system (Gellert 1995; Tuan 1995; Bloom 1998; Segall, Tipping et al. 2000); the development of the private sector (Dung 1996; Naterop and Wolffers 1999); healthcare financing (Ensor and San 1996), and health care and pharmaceuticals (Wolffers 1995; Chalker 2001).

A post-graduate research training program funded by SAREC (Sweden) during the 1990s, including the FilaBavi project started in 1999 in Bavi district (60 km west of Hanoi), allowed local researchers to conduct several small scale research projects on

various public health topics, some of them directly connected to health system research. These included: case-studies on health service utilization in mountainous areas (Toan, Khe et al. 2001; Khe, Toan et al. 2002), private health care providers and pharmacy providers in urban areas (Chuc and Tomson 1999; Chuc, Larsson et al. 2001; Lonroth, Thuong et al. 2001), and women and child care service utilization in rural areas (Toan, Hoa et al. 1996).

Most papers reporting data collected before 1995 (World Bank 1992) Chen & Hiebert 1994; Ensor & San 1996; Guldner & Rifkin 1993; LaFond 1995; Prescott 1997; Smithson 1993; Witter 1996) came to the same conclusion about the first five years of health sector reform in Vietnam. This was that the well-developed public health service established prior to reform was deteriorating, and the government lacked the resources and political imperative to restore it. Also, researchers reported that the largely unregulated private sector was experiencing rapid growth, treatment of illness was dominated by individuals self-medicating, and the poor generally delayed treatment and had less access to hospitals or private doctors than those better off .

The analysis from 1995 and onwards based on national scale surveys showed signs of a system recovering from the crisis before 1995 “...the period of reform and renovation, while generally successful, has led to a new set of problems ...(with) major challenges ahead ...(and that) the easy gains in the sector have already been achieved, and the further gains will be difficult and will require even greater effort and resources..” (World Bank, Sida, AusAID, Royal Netherlands Embassy, & Ministry of Health Vietnam 2001). However, the case-studies reveal a more skeptical view of the quality of public health services provided in disadvantaged areas. It appeared the government had limited control of the private sector in urban areas leading to the overuse of drugs as well as case-mismanagement of social diseases, for example, treatment of tuberculosis by private providers in Ho Chi Minh city (Chuc and Tomson 1999; Naterop and Wolffers 1999; Lonroth 2000; Chuc, Larsson et al. 2001; Khe, Toan et al. 2002).

1.1.5. Health system reform in Vietnam: research in focus

One of the key challenges that all ex-socialist countries face when they move from a state-led, free-health care system to one of public-private mix, is increased inequity in health opportunities. Vietnam is no exception and the Vietnamese government considers equity and efficiency in health care as the two major goals of the health sector reform. Challenges appeared in the first five years of the health sector reform when the private sector began to evolve rapidly and the network of CHCs was in danger of collapsing (Guldner and Rifkin 1993; Vietnamese Communist Party-the Party Central Committee 1993; Gellert 1995). Various interventions were launched in an attempt to revitalize the CHC system and strengthen the provincial health system in rural areas (Ministry of Health-Ministry of Finance-Ministry of Labour, Invalids & Social Affairs 1995; Phuong 1998; Hung, Anderson et al. 2000) but the sustainability of these interventions was always an issue. Despite these interventions, the CHC system remains under-utilized while the hospital services at central level are over-used. Self-medication remains a popular approach to illness, and private providers work in systems with lax quality control and many are not registered with the government (Tram 1999; Jerve, Krantz et al. 2001; World bank, Sida et al. 2001). Evidence of drug price increases which are out of the government's control have also been a public health concern (Vietnam Health Insurance Committee 2001; Anh 2004).

The future of health care services in Vietnam depends on whether the CHC system can be upgraded to provide basic health care services to rural people. If not, there is a very real danger of repeating the Chinese scenario where poor, rural communities have virtually no access to basic health care services (Bloom and Xingyuan 1997). The World Bank estimated that a single service contact with a public health hospital costs the equivalent of 22% of all non-food expenditure for a year for a typical person in the lowest quintile and this inequitable situation is cause for alarm (World bank, Sida et al. 2001). Vietnam is a poor country and the lack of a critical mass of human resources in almost all fields relating to health system research leaves many questions relating to the current rural health care crisis unanswered.

The government has confirmed that strengthening of the rural health care system is a priority for preventing inequality in health and health care in Vietnam, a country where 80% of people live in rural areas, and where 90% of these are poor. In addition, health care reform has been placed in the context of poverty alleviation and community development. Therefore, research focusing on evaluating the rural health care system in the context of community development is needed.

1.2. RESEARCH QUESTIONS AND OBJECTIVES OF THE THESIS

1.2.1. Research questions

This thesis is an attempt to contribute further evidence for policy-making on health care reform at the meso-level, i.e., the provincial level. The research aims to provide insights into the provincial rural health system ten years after the health sector reform was launched, by assessing the availability of health care services, patterns of access of health care services when people become ill, the costs of care and the performance of public and private providers. The following questions will be addressed:

1. Which health care providers, i.e., public and private providers, are dominant in providing curative services to rural people when they are ill? How can the differences be explained?
2. How significant is the inequality between the poor and the better off in terms of access to any health care services, and in particular the use of public health care services, when people are ill? Which factors explain the gap in access to health care services between the poor and the better off?
3. What policy and strategies should Vietnam consider implementing in order to obtain the goals of better equity and quality of care for rural populations?

These research questions will be addressed using community-based survey data from Hung Yen province in which three components of the system: user, provider, and community context will be described and linked in analysis. In addition, a health care

provider survey conducted as part of a 1999 health system research project in three other provinces in various regions of Vietnam (Thai Binh, An Giang and Binh Thuan) will be used to provide further evidence on the availability of health care services in general and of private health care providers in particular.

1.2.2. Research objectives

Specifically, the objectives of the thesis are:

1. To measure the availability of private and public health care services in rural Vietnam;
2. To evaluate the quality of clinical performance and estimate the relative role of each group of healthcare providers in service delivery in rural areas;
3. To estimate rural people's patterns of access to and utilization of health care services, and the costs related to various healthcare options;
4. To forecast the development of the private health care sector in rural areas and identify conditions for reaching the goals of health sector reform in Vietnam. Namely: strengthening of the quality of the public health sector and improving equity and efficiency.

1.3. STRUCTURE OF THE THESIS

The thesis consists of nine chapters and is divided into two parts. Part A concerns research issues and methods presented in Chapters 1-4. *Chapter 1* presents and justifies research objectives. *Chapter 2* describes the historical development of the rural health care system in Vietnam. *Chapter 3* provides frameworks for analysis of availability, accessibility, quality and efficiency of the rural health care system, and inequality of healthcare service utilization. *Chapter 4* provides detailed descriptions of the data sources and strategy of use for addressing the research questions stated in the thesis. Part B has five chapters (5–9) and presents research findings and policy-oriented

recommendations. *Chapter 5* assesses the availability of the commune health care system in rural areas of Vietnam using empirical data from all four provinces. *Chapter 6* estimates perceived needs of care by measuring the burden of non-fatal health problems using data from 3498 people in 900 households randomly selected in Hung Yen province. *Chapter 7* describes patterns of use of health care services when people are ill, by provider, type of illnesses, and poverty ranking level using the same data source as Chapter 6. Descriptive analysis and multivariate analysis are used to clarify perceived needs of care, pattern of use of health care services and costs of care, in combination with constructing concentration curves and Oaxaca decomposition to identify and to explain inequality in non-fatal health burden and in access to health care services when people were ill. *Chapter 8* compares the quality of private and public health services using the Hung Yen survey database, and *Chapter 9* summarizes results from chapters 5-8 to identify the main characteristics of the rural health system with a view to system sustainability within a community development perspective. Policy and strategies for strengthening of the quality of the public health sector and improving equity and efficiency are proposed.

1.4. SIGNIFICANCE OF THE THESIS

The thesis provides evidence to explain the current provincial health care system in rural Vietnam. The private provider sector is assessed in comparison with the commune health center in the same environmental context and is linked with use of services and cost of care as perceived by the community. Inequalities in use of health care services are identified and explained in connection with inequality in need of care. Therefore, this thesis provides a community-based and systematic explanation of the current public-private mix health care system in rural Vietnam. This information will provide health system policy makers at national, regional and provincial levels, with the rationale for strategies to build a health system that is affordable, available, and is of an acceptable quality to rural people.

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CHAPTER TWO

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2. CHAPTER TWO: RURAL HEALTH CARE SYSTEM IN VIETNAM

This chapter describes the process of development of the rural health care system in Vietnam in the general context of rural changes during the 20th century, followed by a discussion on the community-level health sector and community development.

2.1 RURAL VIETNAM- OVERVIEW OF SOCIAL CHANGES IN THE 20TH CENTURY

2.1.1 Revolution and wars

Located in the center of South East Asia, Vietnam forms an S-shaped strip on the eastern seaboard of the Indochinese Peninsula, linking to the Asian continent and looking out on the Pacific Ocean. Its land area is about 331668 km² and total population is 77,686 million (GSO, Statistical Yearbook 2000). The agricultural sector accounts for 70% of the labor force. With Gross Domestic Product (GDP) per capita in 1998 at 352 USD, 37% of the population were living under the poverty line (United Nations 2000). Vietnam has remained a poor agricultural economy ever since the country obtained its independence in 1945. Approximately 80% of total population and about 90% of all the poor in the country live in rural areas (The Government of Vietnam-Donor-NGO Poverty Working Group 1999).

Political and social forces caused radical changes in rural Vietnam during the second half of the 20th century. These changes went far beyond those in the earlier history of the country and have forced dramatic changes in rural Vietnam compared to other neighboring countries. First, the two Indochina wars caused mass destruction of the natural environment and physical life and placed Vietnam to some extent “*back to the stone age*” as stated by the Americans when they launched their bombing raids. The available statistics can only partly describe the war toll that Vietnam suffered in the period 1955-75 (see Figure 2.1). Second, the national independence revolution mixed with socialist ideology (lasting for almost 50 years from when the Communist Party was established in Vietnam in 1930) has removed traditional community organizations and

replaced them with a totally new administrative system. The two Indochina wars forced Vietnam to use problem solving and community-based approaches to running government systems and left Vietnam rich with experience in organizing community campaigns for development goals (see (McMichael 1976; Tuan 1995).

Figure 2-1. The impact of the 1955-1975 war on Vietnam¹

Environment and Infrastructure (Allukian and Paul 1994)

- 5 million tons of bombs detonated
- 7.4 million tons of artillery shells discharged
- 150,000 to 300,000 tons of unexploded bombs and land mines across Vietnam at the end of the war
- 19 million gallons (72 million liters) of herbicides sprayed over 3.6 million acres of farmland and forest (over one-third of the total land mass in South Vietnam)
- In South Vietnam: 9,000 of 15,000 rural villages were destroyed or damaged, 12 million population (63%) displaced
- In the North: all five industrial centers were demolished; all 29 provincial capitals were bombed, as well as 2,700 of the 4,000 communes. Virtually every railway and highway was destroyed; 533 (9.5%) of the commune health stations, 94 (27.5%) of district hospitals, 28 (60%) of provincial hospitals, and 24 research and specialized hospitals were destroyed or damaged badly.

Human casualties (The Boston Globe 1995)

- 3.1 million dead; nearly 2.6 million wounded; 300,000 missing in action (MIAs)
- 50,000 born deformed (allegedly as a result of the chemical defoliant Agent Orange)

¹ Figure 2-1 is based on Table 2 of the Takemi Research Paper No.102 (Table 2, page 6) (Tuan.T, 1995. Historical development of primary health care in Vietnam: Lessons for the future ; Department of Population and International Health, Harvard School of Public Health, Boston, MA). Further related information on the Vietnam war could be seen in Levy & Sidel's book ' War and Public Health' (Barry S. Kevy, Victor W. Sidel (Eds.), Oxford University Press, 1997), or from the internet sources such as <http://biology.beloit.edu/emgdis/2001pages/war/vietnam.html>

Moving into and out of the cooperative farm economic model

Another crucial impact on rural society resulted from thirty years of building a rural socialist society (for the South it was only 10 years, 1975-1985). This society was characterized by collective economic activities, strict control of labor exploitation and the private economy, strict control of social crimes (such as drug abuse, drinking alcohol, commercial sex) and free education and health care to everyone. While positive achievements were gained in education, health care and control of social crimes, the cooperative farm economic model was so inefficient economy that it threatened the sustainability of the whole system. After almost 30 years of pursuing the cooperative farm economic model, Vietnam moved to a market-oriented economic approach with the household farm as the key production unit in rural areas (Timmer 1993).

It is not clear as to whether the market-oriented socialist model Vietnam has pursued since 1986 is the most suitable approach for national development. However, ten years after the cooperative farms were abandoned in 1989, the rural economy of Vietnam is now linked with world markets and is prospering. Privatized land-use rights and liberated decision making regarding farming, and the purchase of and sale of agricultural inputs have been firmly established. The economy, measured by GDP, has grown by 8 to 9% annually (United Nations 2000). This rapid economic change has impacted on the quality of life: the poverty rate has halved; the malnutrition rate has dropped from about half the child population under five in the late 1980s to a third; literacy rates, coverage by preventive health programs, and life expectancy have all increased (Table 2.1).

Table 2.1. Socio-economic data of Vietnam 1985-1999

Indicators	1980s	1993	1999
GDP per capita \$(UNICEF Vietnam 2000)	157 (1991)	176	352 (1998)
% of people under poverty line (2100 Kcal) (General Statistics Office 2000)	NA	58.1%	37.4%
Malnutrition rate in under five children * (Food and Agriculture Organization of the United Nations 1999)			
➤ <i>Height for age (stunting) <-2SD</i>	59.7%	46.9%	35.9%
➤ <i>Weight for height (wasting) <-SD</i>	7.0%	11.6%	10.3%
➤ <i>Weight for age (underweight) <-2SD</i>	51.5%	44.9%	39.8%
% of access to safe water (General Statistics Office 2000)	NA	10.7%	14.6%
Life expectancy (years) (WHO 2000a)			
➤ <i>Male</i>	63	NA	64.7
➤ <i>Female</i>	67.5	NA	68.8
Under five mortality (per 1000) (WHO 2000a; World bank, Sida et al. 2001)			
➤ <i>Male</i>		42.1	39
➤ <i>Female</i>		29.2	31
Literacy rate (Bhushan, Bloom et al. 2001)			
➤ <i>Male</i>	92.8	93.4	94.3
➤ <i>Female</i>	84.2	85.1	88.2

* Data for 1985, 1995, and 1998 from NIN surveys.

Nonetheless, Vietnam remains one of the world's poorest countries. Rural infrastructure (roads, waterways, irrigation and drainage, water supply facilities, ports, power, and communication) are underdeveloped. The gap in income between rural and urban areas has widened, while the safety net formerly provided by the collective system has disappeared, increasing the vulnerability of the rural poor. The "extremely poor with clean social environment" in the 1970s has been swept away, and modern life brings health threats in the form of smoking, HIV/AIDS, drug abuse, commercial sex, traffic accidents and suicide. These phenomena appear in every commune of Vietnam. In

addition, social changes resulting from the rapid economic transition are also creating new pressures. At the start of the 21 century, Vietnam was ranked at 108th of 174 countries according to the human development index of the United Nations Development Program (which combines health, education, and income indicators), and in 2000 it was ranked 176th out of 203 countries by World Bank's economic standards.

2.2 RURAL HEALTH CARE SYSTEM- FORMATION AND REFORM PROCESS

The modern health service system was established in Vietnam as early as the beginning of the twentieth century, under the French rule. The underlying colonial health policy was to develop medical services for the Europeans and their staff, although later services were extended to the general public in the urban areas. The legacy from the French in 1954 when the first Indochina war ended was a system similar to the French model- hospitals in the main cities, with an average of one hospital bed per 10,000 population, together with the three Pasteur institutes, and the Indochina Pharmacological Medical School established in 1902 (Tuan 1995). Approximately 95% of Vietnamese were not covered by these modern health care services (McMichael 1976). Self-treatment with traditional herbs and seeking health care services provided by traditional healers were the dominant patterns of health care in rural Vietnam.

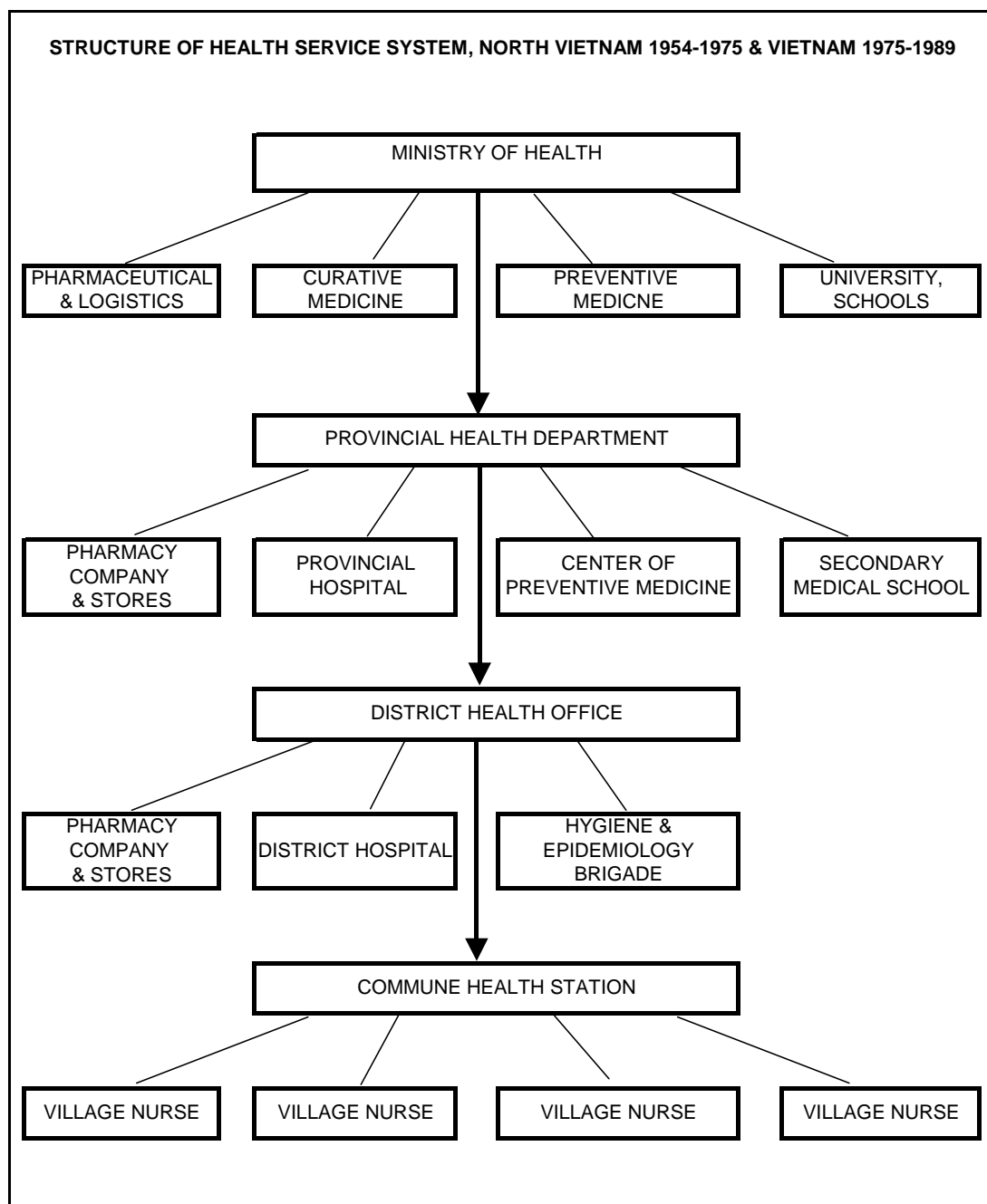
The development of the modern rural health care system in Vietnam was characterized by a strengthening of the national health care system, with the state as the sole provider, starting in 1954, followed by nationwide reform of the public-private mix from 1989.

2.2.1 Nationwide formation of single provider system

The end of the first Indochina war in 1954 resulted in Vietnam being divided into two parts: the North and the South. Different health policies were instituted in each area. In the North, Ho Chi Minh's government built an egalitarian society, where the health care system was state-led. The public health system was organized in line with the level of the administrative system with central, provincial, district and communal levels. Financing of the system originated from the corresponding administrative levels, and human resources for each level were based on certain norms across two dimensions: for

curative area, that is on the number of hospital beds; and for preventive activities, that is on the population to be served. The Ministry of Health (MOH) was responsible for the technical management of the health care system as well as research and training. At the district level and above, there was a distinction between curative and preventive medicine. The hospital system was responsible for curative medicine while the preventive medicine system was responsible for public hygiene, epidemiology, malaria, and leprosy control and other vertical health care programs such as family planning. The educational sector included medical faculties and pharmacy schools, and the pharmaceutical and logistics sectors provided drugs and supplies to the entire system. At the commune level, all branches were integrated into the primary health care system with the commune health station the basic provider of health care (Figure 2-2).

Figure 2-2. Structure of health service system North Vietnam 1954-1975 and Vietnam 1975 –1989



In the South, the American-supported government could not control the situation when low scale war started in the late 1950s and quickly escalated into a massively destructive war with the direct involvement of the American Army. Health policy in the South was therefore based on war-oriented services in a free market system mixed up with political conflicts. Public health services were virtually nonexistent, and private

providers dominated the civil health services. "... (South Vietnam) had one of the most severe doctor shortages in Southeast Asia. Of approximately 800 practicing physicians, some 500 served in the army, and another 150 were in private practice in Saigon. Thus about 150 doctors, or 1 about every 100,000 persons, were available for the rest of the country" (H.H. Smith et al., 1967, cited in *World Bank 1992*, page 86).

The second Indochina war ended in 1975 when the American-backed South Vietnamese regime was overthrown and Vietnam was reunited. The health policy launched successfully in the North during 1954-1975 expanded rapidly through out the whole country. The private health services that dominated in the South before 1975 were merged into the national health system (Dung 1996). Figure 2 shows the structure of the health system in Vietnam for the period 1954-1975 in the North, and 1975-1989 in the whole country.

By the end of the 1980s, the basic health facilities (ambulatory and hospital) in Vietnam were almost complete with 167 health centers per million population: a level much higher than that in China (32) or Indonesia (32), and slightly higher than that in Thailand (141 health centers per million population) (World Bank 1992). Similarly, Vietnam had an infant mortality rate that was half that predicted for its income level (45%). Life expectancy in 1980 at 63 years for males and 67.5 years for females, was also much better than predicted from its income level (World Bank 1992). This achievement should be seen in the context of the tremendous consequences of the Indochina wars on public health and the national health care system of Vietnam, accompanied by a continued US embargo leaving the country almost totally without international support (Dapice 1993; Ljunggren 1993).

2.2.2 Health sector reform 1989 and the rural public-private model for health care

2.2.2.1 Setting

The victory in 1975 fueled the Vietnamese government to launch an ambitious five year plan (1976-1980) where models of the cooperative farm in agriculture, the subsidized

state factories in industry, public health and education networks in line with the administrative system were to be expanded to the whole country. Despite the strong political will to implement this massive plan, the lack of resources after several decades of war soon led to an economic crisis. These difficulties became more acute with when an American embargo was sanctioned by most Western countries and Chinese aid ceased after Vietnam's ouster of the Pol Pot's regime in Cambodia in January 1979. As a consequence, Vietnam stood at the edge of an overwhelming economic crisis by 1980.

The failure of the 1976-80 five year plan forced Vietnam to reassess its performance and direction. A change towards market based economy had emerged gradually at the community level soon after the country was united and was seen as an outcome of '... the war, the inefficiencies of the cooperative system, and the inability of agriculture to generate surpluses...' (Fforde 1993). However, the initial steps away from a centrally planned system actually emerged in early 1980s. These steps included the introduction of the output-contract system which was formally launched in the agriculture sector in 1981, private classes for students studying for national examinations were informally accepted by the education sector; and the easing of restrictions on private health services and private pharmaceutical sales in Ho Chi Minh City (Dung 1996). In 1986, the government of Vietnam formally initiated a wide-ranging economic reform program, known as *Doi Moi*.

Doi Moi started with macroeconomic reforms that returned agriculture to a household-based farming system, removed restrictions on private sector activities in commerce and industry, and decentralized decision-making to managers of state-owned enterprises. All these reforms had an immediate impact on the health sector, but only at the communal level where the cooperative farms were no longer the main source of funds for the commune health system. The health sector remained a state-wide public health system until 1989, when more macro economic reforms were forcefully adopted. These included a devaluation of the official exchange rate to the parallel market rate, decontrol of prices, and an increase in real interest rates to positive levels (Dollar 1993). Many of these reforms applied directly to the health sector. Price decontrol included the introduction of user fees for health care, especially in hospitals. The removal of restrictions on private-sector activities included legalization of private medical practice

and the commercial sale of medicines, drugs and contraceptives. The decree on decentralized decision-making for state-owned enterprises extended to the manufacture of pharmaceuticals and condoms. As a result, after 1989, a public-private health care system had been formed in Vietnam.

2.2.2.2 Rural health care system after 1989

In Vietnam, rural health services are organized at three levels: province, district, and commune (Hung, Anderson et al. 2000). The principle organization for the delivery of health care is the Provincial Health Service, which is under the Provincial People's Committee and is responsible for managing and directing health care at the province level (Figure 2.3). The Provincial Health Service, while under control of the People's Committee, receives technical direction and monitoring from the Ministry of Health.

The District Health Center (DHC) is a unit of the Provincial Health Service under the direct technical management of the Director of Provincial Health Services with guidance and policy provided by the District People's Committee. The District Health Center is responsible for formulating and implementing a district health plan, including curative and preventive services, family planning and all services appropriate for care at this level including supervising and providing the technical support to the Commune Health Centers (CHCs).

The CHC is the first level of contact for health care in the public health system. The CHC is responsible for delivery of primary health care in the community including preventive care, normal obstetrics, the provision of drugs, family planning and overall health improvement in the community. The CHC is under the guidance of the district health center for technical matters and under the Chairman of the Commune People's Committee for supporting health development activities in the commune. This is the official explanation of the structure of rural health care system in Vietnam (Hung, Anderson et al. 2000; Ministry of Health 2002).

However, the rural health care system can be analyzed using a 'community-based' approach. In terms of functional management and sustainable development, the

commune health care system has three main components: user, health care provider, and local government which are connected not only by the market mechanism of ‘demand and supply’ but also by the government’s flow of policies: system decision/regulating flow, technical management flow, and monetary flow. On the provider side, the community health services have consisted of two parts since Vietnam accepted the public-private mix model of health care: the public part provided by CHC, and the private part provided by all private health care providers. Both the public and private health care services are under the supervision of the communal (local) government, named Commune People’s Committee (CPC), and the Provincial Health Service. Identifying the monetary flow, service management and control, and technical direction monitoring, within the components of the system and from outside systems to the commune health care system will demonstrate clearly how the rural health care services in Vietnam function. This will then highlight what policies should be developed to make the health care system a more equitable and sustainable one.

The structure of the rural health care system in Vietnam after 1989 and management lines for public and private providers under a ‘community-based’ view are illustrated in Figure 2.3.

Figure 2-3. Structure of rural healthcare system within the national healthcare system since 1989

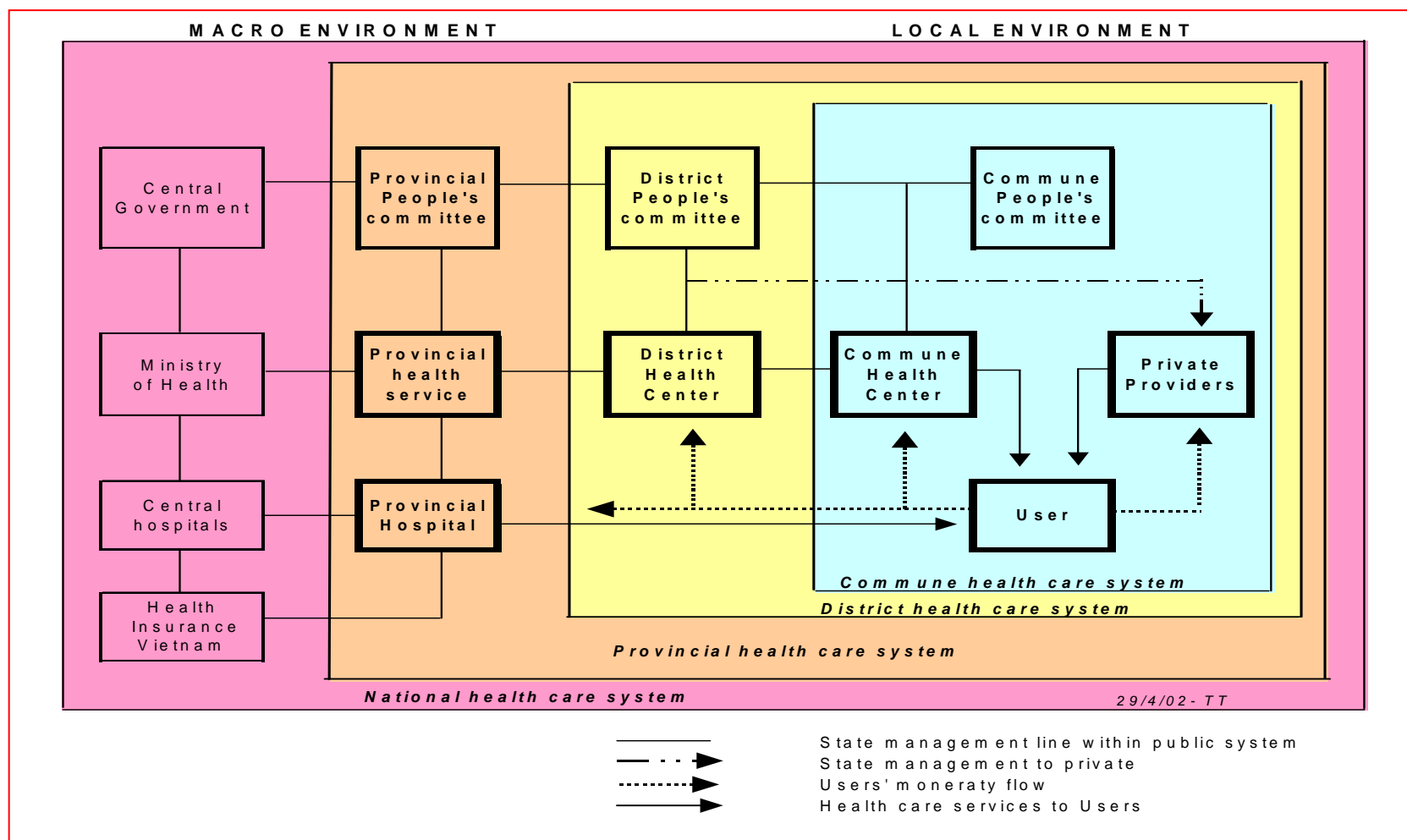


Figure 2.3 illustrates the rural health care system in Vietnam at four levels: national, provincial, district, and communal. The basic unit in the system is the commune health care system and this is the target system for analysis in this study. It consists of four components: (1) commune people's committee, a local government body that manages the commune health center as well as regulating private providers within the commune; (2) commune health center, a basic unit of the public health system that provides primary care to the users; (3) private providers, who are monitored by the commune people's committee or district government including district health center and district people's committee; and (4) users, who pay for services provided at the communal level (from commune health center or private providers) or from the district hospital or other medical facilities at higher levels.

Although the private health sector and the CHCs are monitored by local government and the district/provincial health departments, their sources of funds are very different. The funds for the private sector come from user fees alone, but the CHC has three sources of funding: central government funds allocated to the health sector (including government funds and international development assistance), local government funds, and user fees. Health insurance has been a source of funds for the hospital system since middle 1990s mostly through the compulsory health insurance scheme, but not for CHC services until recent years. Whether it will become a significant source of funds for the CHC system in the coming years is still in question.

It is worth mentioning here the role of the non-government organizations in health care system in Vietnam in general and rural health care in particular. Before the 1990s there were very few NGOs in Vietnam (World Bank, Sida, et al, 2001) and all of them were international NGOs working with the central government as a counterpart to deliver emergency relief, mostly medical equipment and medicines. Doi moi has brought a new context to facilitate international NGOs support to Vietnam. However, their contribution to health care in Vietnam is still limited to pilot interventions at various levels to improve the quality of public health programs. The absence of laws for local NGOs has limited the development of civil society organization in general and local NGOs in health care in particular. The role of civil organizations in the rural health system in Vietnam was not recognized by the Ministry of Health until the early 2000s.

Having described the rural health care system and its historical development, we now present the thesis research framework in Chapter 3 used in evaluating the health care system in rural Vietnam.

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CHAPTER THREE

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3. CHAPTER THREE: RESEARCH FRAMEWORK

This chapter describes the selective models for assessing the rural health care system in Vietnam

3.1. THE CONCEPT OF HEALTH CARE SYSTEM

“Health care systems involve those sectors whose primary function is to promote, restore, or maintain health” (WHO 2000a). The health care system has many dimensions. Administratively, it can be broken down into specific levels: central/national, provincial/regional, district and communal. In terms of function, the system can be divided into types of services provided, such as preventive services, curative services (primary, secondary and tertiary) or rehabilitation care services. In terms of provision of and investment in health services the system may be seen as a universal state-led model, a private-led model, or a public-private mix. The health care system examined in this research is the health care services (public and private) and their relationships with users in rural areas of Vietnam.

3.2. THEORETICAL MODELS FOR ASSESSING THE HEALTH CARE SYSTEM

Health system reform can cover the transition of the whole system as seen in most ex-socialist countries, or may focus on changing specific aspects of the system. Assessing the health care system is one phase in the health policy development cycle (Van Herten and Gunning-Shepers 2000). An evidence-based approach requires the measurement of the outcomes of health care together with possible explaining factors from all components of the system. For systems in transformation, as in the ex-socialist countries, assessments should be aimed at describing the emerging system and identifying the conditions for sustainability of this system.

Health system reform in Vietnam has been a radical process of transformation from state-led, universally free health care to fee-for-service based care in a public-private environment. The patient-provider relationship shaped by political and moral desire for

several decades as ‘free of charge’ has now moved to a ‘user pays’ system. Users have to adapt to this new environment and make their own choices about what health services they will demand, public or private, at the primary level or at a higher quality of care level. Providers also have to sustain their activities. Therefore, access to and use of health care services is a good measure of the impact of health sector reform. The adaptation of providers and users to new environments, together with various health policy interventions from the state, and in other related sectors, provides evidence as to the sustainability of the new system.

To optimally explain health system reform in Vietnam, a research framework is needed that provides estimates of access and utilization of health services and supports analysis of economic relationships between system components. In addition, the quality of care provided by public and private sectors should be measured, and the overall performance of the current community health system should be evaluated. Therefore, instead of seeking one framework that could describe all the system’s different dimensions, various research models are needed to guide the research and corresponding objectives. Presented below are five models that: (1) measure utilization of health services, (2) evaluate economic relationships between users and providers, (3) measure levels of quality of care, (4) assess the sustainability of private health care providers and the CHC system, and (5) evaluate the system’s performance toward serving the poor (World Bank model 2003). This section ends with a discussion on strategy of use of the models in this research.

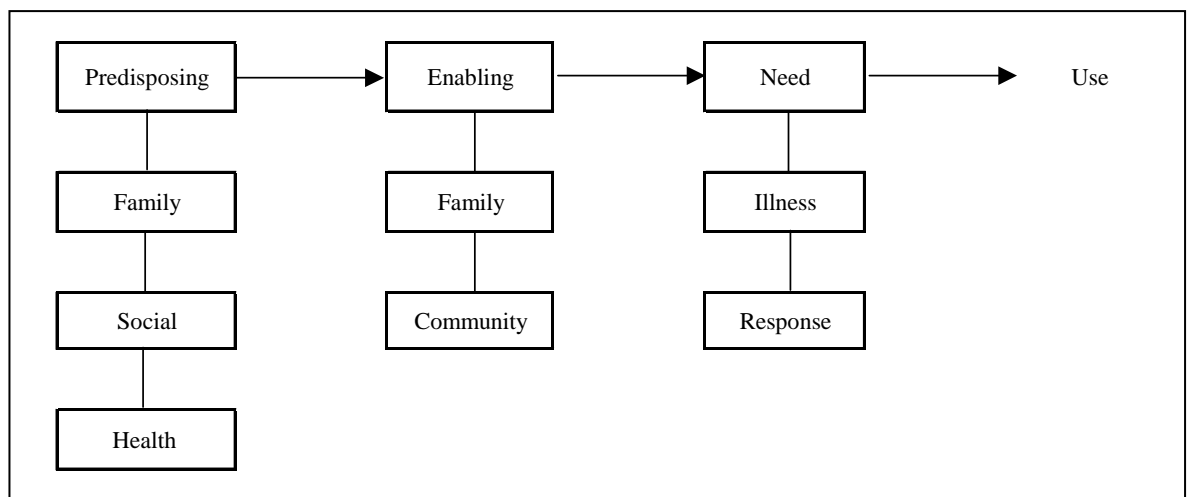
3.1.1. Framework used to describe access to and use of health care services:

Health services utilization model

The conceptualization and measurement of access has long been considered as the key to the understanding and formulating of health policy. Several models have been developed to explain the relationships between factors influencing access to and use of health services (Andersen 1968; Anderson and Bartkus 1973; Cummings, Becker et al. 1980; Penchansky and Thomas 1981). Of these, Andersen’s behavioral model of health service utilization is the most widely used.

Andersen's behavioral model of health services utilization (often referred to as the "health services utilization model") has provided a defining research agenda for the study of health care utilization since it was introduced in the late 1960s (Aday and Awe 1997). The model organizes and integrates an array of correlates of health and health care behaviors from the disparate disciplines of sociology, psychology, economics, and medicine into three key components: predisposing, enabling, and need predictors of families' use of physician, hospital, and dental services (Andersen 1968).

Figure 3-1. Andersen's behavioral model (Andersen 1968)



Andersen's model has subsequently been modified and applied to predictors of a range of health care behaviors. Approximately ten years after the original study, Andersen and Newman formulated an expanded model (Aday and Andersen 1974) elaborating on components to make them more responsive to societal and policy changes affecting health care, as well as to more fully reflect the increasing complexity of health care services. A further expansion of the model in 1974 included Aday and Andersen's access framework (Aday and Andersen 1974; Aday and Andersen 1981). This model was commonly used to design and analyze studies of health services utilization during the 1980s and 1990s (Phillips, Morrison et al. 1998). In 1995, Andersen systematically reviewed the development of the behavioral model of health service utilization and assessed its continued relevance (Andersen 1995). On the basis of this review, Andersen proposed an emerging model in which the characteristics of the healthcare delivery system and health policies were organized in the component of "environment

variables”. Then, in a paper published in 1998, Andersen, Phillips, Morrison, and Aday further adapted the 1995 model to describe in more detail the environment and provider-related variables (Figure 3.2) (Phillips, Morrison et al. 1998).

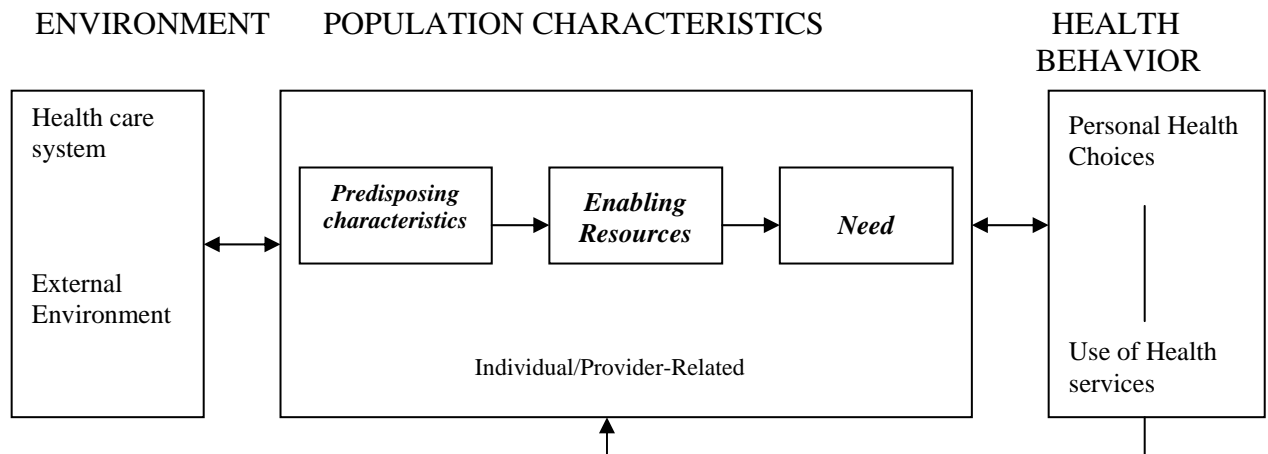


Figure 3-2. Utilization model

(K.A. Phillips, K.R. Morrison, R.M. Andersen, and L.A. Aday, 1998)

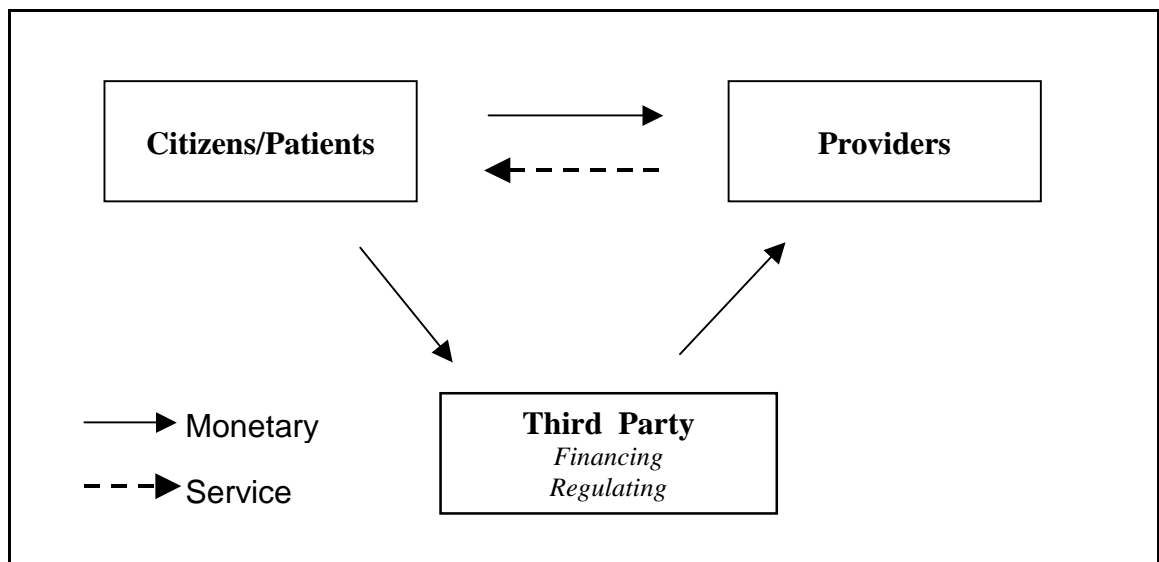
Andersen's behavioral model was used in this study for two reasons. First, it serves as a map or conceptual guide for selecting study variables in the design phase and for interpreting study results. Being guided by Andersen's expanded model, the study collected information not only user factors, but also provider factors and community context as well. For example, characteristics of public and private health services in the study area are described in terms of man-power, facilities (availability of drugs, medical equipment), and non-quantitative system characteristics (such as hygiene conditions, support and supervision). Characteristics of customers and families in the study area were selected in terms of predisposing, enabling, and needs of care (Chapter 5, Tables 5.1 & Chapter 6, 6.1). The community context is characterized by community socio-economic factors (Table 5.1). The study outcomes are measured by actual utilization of health services (stratified by type, site, purposes, and time intervals) and by patient's satisfaction with healthcareservices received. Second, the present study provides a chance to critically review the appropriateness of Andersen's model in research on health services utilization in a rural area of an ex-socialist, developing country.

3.1.2. Assessing economic relationship of the system: Triangular model.

A health care system can be composed of three factors linked through three economic interactions, the so-called “*triangular model*” (Christiansen 2002) (Figure 3.3). The three factors in this model are: (1) citizens or patients, who stand for the demand side; (2) health care providers, either public or private, who stand for the supply side; and (3) a third party, which regulates the financial relationships between the users and the providers.

These factors interact through three economic relationships: (1) financing based on compulsory tax or health insurance premiums; (2) remuneration of providers in the health care sector, i.e. hospitals and the primary care sector; and (3) health care services provided to the population together with any associated user payment. Quality and efficiency of services are the underlying factors that form these relationships. Therefore, the triangular model has a useful descriptive purpose which is to identify equality between individuals, effective use of health care resources and geographic equality (Christiansen 2002).

Figure 3-3. The health care triangle model (Christiansen 2002)



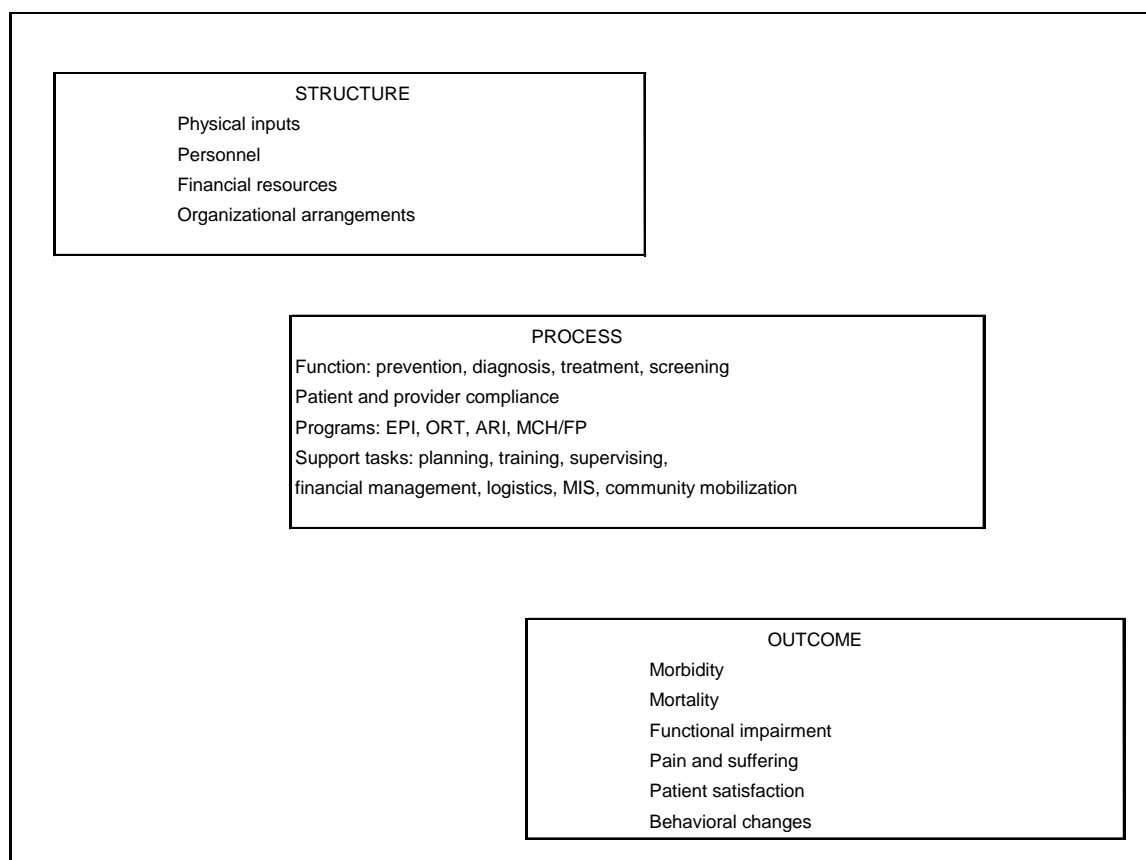
In this study, the triangle model will be used as a map to discuss the main economic relationships between the components of the rural health care system in Vietnam (i.e., relationships between users and providers; whether there is a third party in the

community health care system in Vietnam and if yes, who are they?) and based on those identified relationships, the quality and efficiency of services provided by commune health center or private provider will be assessed.

3.1.3. Model for improving quality of care

Improvement of the quality of care is an integral part of any health sector reform. Since quality of care is multidimensional, different perspectives lead to different definitions of quality and different measurement approaches (Donabedian 1988; Geyndt 1995; Blumenthal 1996; Petitti and Amster 1998). For the purpose of managing the quality of health care in developing countries, the World Bank has proposed the use of a model originally formulated by Donabedian (Donabedian 1980) that describes quality of care as having three dimensions: structure, process, and outcome of care (see Figure III.4) (Geyndt 1995). This is one of the most commonly used models to evaluate quality of health care (Geyndt 1995; Eisenberg 1997; Kahn 2002)

Figure 3-4. Quality of care model (Geyndt 1995)



In this model, structure denotes the attributes of the setting in which the provision of health care occurs. The major categories are: (i) physical inputs; (ii) staffing; (iii) financial resources, and (iv) organizational arrangements. The process consists of all systematic activities that transform structural inputs into outcomes. It is often referred to as a 'black box' concept in engineering (Geyndt 1995). Reviewing the process of care encompasses evaluating the functions carried out by health workers and how well they do them. Outcomes are the end results of the process of patient care, or the effects of care on the health status of patients and populations. they include a variety of changes which occur in the community and are measured using morbidity, mortality, functional impairment, patient satisfaction and behavioral changes indicators. Among the three components, structural inputs are the most visible, concrete, countable, and measurable. The degree of difficulty in measuring quality increases as one moves from structural variables to process measures and to patient care outcomes. As a result, most research on quality of health care, especially in developing countries, focuses mainly on structure, less on process, and much less on outcome (Geyndt 1995).

In this study, the quality of care model will be used for guiding study variables selected for evaluating and comparing quality of private and public health care services at the commune level. The selection of study variables from each of the three components is based on the criteria of being concrete, countable, and measurable for both CHCs and private providers (for more details, see Chapter 8).

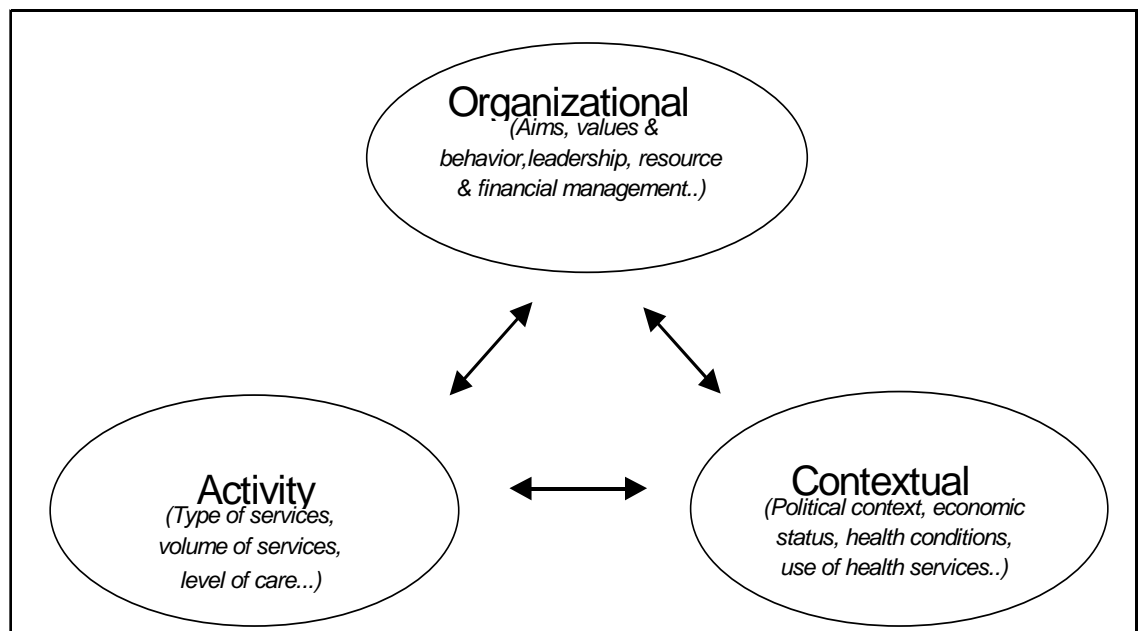
3.1.4. Framework for analysis of sustainability of a health care system: health care services as an open system

Considering the broader spectrum of sustainability, the health care system can be conceptualized to be *a system of organizations*, among various organizations in our societies, that are open to the environment and that have to adapt to survive. The environment can be understood in an epidemiological sense as the various factors that may have positive or negative relationships to the development of the health care system. Unlike many other services, the need and demand for health care, either from individuals or the public in general, is unlimited, and therefore, health care is continually adapting to the changing health environment. The process of adaptation

depends on the capacity of policy makers to analyze the strengths and weaknesses of, and opportunities and threats to the system, so that interventions will be selected appropriately. In viewing the health care system as a system of organizations, we can use the open system theory to develop a framework for such an analysis (Harrison 1994; Olsen 1998).

Under the open system theory, three clusters are defined to ascertain the sustainability of the health care system: (1) contextual factors, which form the task and general environment of the services; (2) an activity profile, which describes the services delivered and the activities needed to deliver them; and (3) organizational capacity, which shows the carrying ability of the organization in broad terms (Olsen 1998). These factors interact with each other in different ways. Changes in one set of factors must be met by changes in others in order to sustain the services. It is the ability to adjust to such changes that determines the sustainability of the health services. Examples of some selective factors in each group and the relationships among the three groups are illustrated in Figure 3.5.

Figure 3-5- Framework for analyzing sustainability of health care services as an open system (Adapted from (Olsen 1998))



Given the situation in Vietnam where health care sector reform of the public sector takes the dominant role, the private sector has to adapt to survive, this model seems to

be applicable particularly in analyzing the sustainability of the private services in rural areas. It helps explain the type of private services available and why they exist in relation to the availability of services provided by the CHC system.

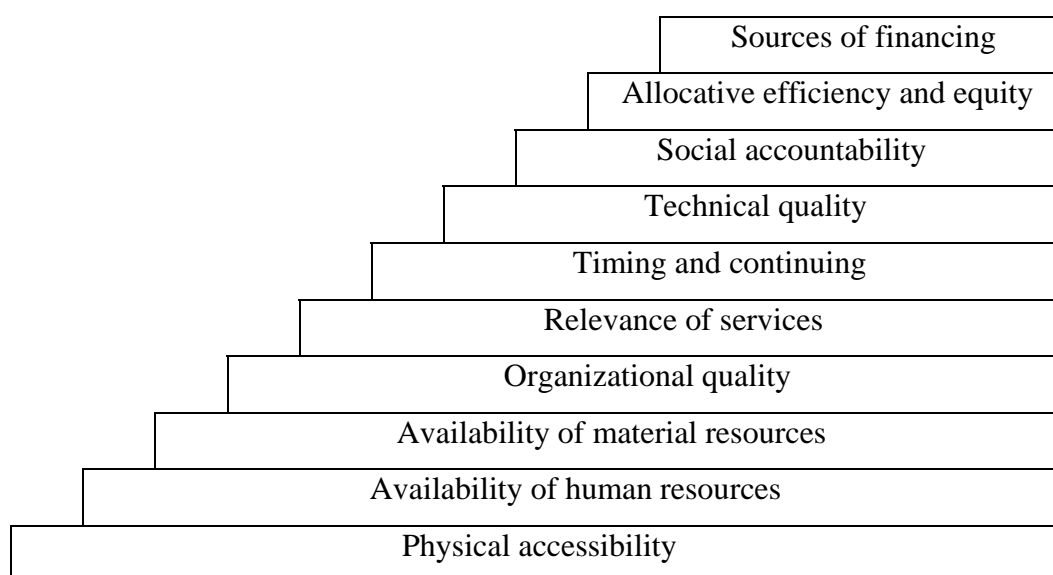
3.1.5. The World Bank's framework for assessing the performance of the health sector in serving the poor

The World Bank's view on strengthening the health sector in developing countries is through a reduction of poverty. *'Good health, nutrition, and reproductive policies, and effective health services, are critical links in the chain of events that allow countries to break out of the vicious circle of poverty, high fertility, poor health, and low economic growth, replacing this with a virtuous circle of greater productivity, low fertility, better health, and rising incomes'* (World Bank, 1997 Sector Strategy for Health, Nutrition, and Population). To the Bank, equity and efficiency should not be separated *"(1) improving the performance of health care systems by promoting equitable access to preventive and curative health, nutrition, and population services that are affordable, effective, well managed, of good quality, and responsive to clients; (2) secure sustainable health care financing by mobilizing adequate levels of resources, establishing broad-based risk pooling mechanisms, and maintaining effective control over public and private expenditure"*. These are the goals of any health sector reform the Bank requests their country clients - including Vietnam – commit to (World Bank 2002).

Figure 3-6 presents a framework of assessing how well the health system meets the needs of the poor proposed by the Bank. This framework is in fact a summary of all dimensions mentioned by this or any other way of viewing a health system and people's needs. However, it is distinguished from its precedents by the method of analysis: All analysis aims to answer the two questions (1) Whether the poor's health needs are significantly under served by the existing health system in both quantitative and qualitative dimensions; (2) How the system could be adjusted to serve the poor's health needs in a sustainable way.

The key analysis method is, therefore, to show distributions of the dimensions of the health system functions in Figure 3-6 by population groups stratified by living standard level¹, and to determine factors explaining disparities in a particular health variables (i.e. health status, usage of health services, payment for health care, or whatever) across people with different standards of living.

Figure 3-6. Summary of 10 dimensions of evaluating a health system's ability to effectively cover the poor and generate good health outcomes (Levine and Soucat 2002)



To the Bank, relative role of each dimension in evaluating the system performance is briefly described as follow (Levine and Soucat 2002) :

- *Physical accessibility*: The first question raised when assessing a health system serving the poor is whether health facilities and/or non-facility-based services are available and sufficiently accessible so the poor can make use of them. Distance and travel time to a public health care facility are the key measures of this dimension.

¹ Chapter 6 presents in details the techniques used in measuring living standards

- *Availability of human resources:* Services may be geographically accessible, but health professionals, public as well as private, may be unavailable or in short supply. Disparities in human resources distribution may vary depending on the category of personnel as some categories may have more difficulties wanting to accept work in remote/poor areas.
- *Availability of material resources:* If services are available users may not use them because of shortages and/or low quality of essential drugs, medical equipment, and consumables/materials.
- *Organizational quality:* Poor service management and lack of systematic participation by the community leads to increase waiting time, under-utilization of facilities, lack of respect of care or privacy and may deter patients from using services. In facility surveys, exit patient surveys, or household survey on perceived quality of care between public and private could help clarify organizational quality.
- *Relevance of services:* The question here is whether the sector provides services that are relevant to the diseases that affect the population, especially the poor. Basic information about services like the proportion of children immunized, the proportion of women using antenatal services, the number of inpatient and outpatient visits stratified by measures of poverty and health outcomes are some of indicators of relevance to services.
- *Timing and continuity of health services:* Continuity of health care services is an essential determinant of efficacy and outcome improvement. Certain key health services need to be delivered in a timely manner, such as emergency obstetric care, or epidemic control measures. Breakdowns in the system along this dimension typically result from lack of norms, inadequate application of norms that do exist, inadequate training and poor supervision.
- *Technical quality:* Assessment of this dimension is based on whether or not a basic service of reasonable quality is available to all? Are the services provided

to the poor of lower technical quality compared with those provided to the better-off population? The terms 'technical quality' is meant to capture the variation across providers or patients in the impact of a particular service on health status. Lack of use of practice guidelines, lack of 'technology assessment', poor training, and inadequate supervision are the typical reasons.

- *Social accountability*: To what extent are health systems and service providers accountable to their clients and communities and, in particular, to their poor clients? It is common in developing countries that the poor have no voice in service delivery or are not participating in planning and management of health services. Community and civil society participating in health care services become an essential dimension of health system performance.
- *Allocative efficiency and equity*: The essential question is whether the government is spending its resources on the types of services that most benefit society at large. Public expenditure review is needed in assessing this dimension. In addition, information about expenditures on specific services (per unit) and utilization by different income groups could allow estimation of equity of the distribution of the benefits of public spending.
- *Sources of financing*: Assessing various sources which finance the health sector help us to understand how health services are financed, what the poor pay out-of-pocket, who is covered by insurance, and what is covered by insurance.

Within this model determinants of health sector performance are divided into two groups. The first group consists of eight factors: accessibility, availability, organizational quality, relevance of services, timing and continuity, technical quality, and social accountability. They are considered the 'eight steps' to effective coverage for the poor. The second group consists of allocative efficiency, and expenditure equity to address the financing structure of the system. The Bank's framework emphasizes system equity and efficiency. It requires both quantitative and qualitative information from all three components of providers, users, and community context. In every dimension to be discussed, information on poverty is requested. Therefore, one of the

conditions for maximizing benefits using the Bank's framework is the availability of information on living standards in the study areas.

3.3. STRATEGY OF USING FRAMEWORKS IN ASSESSING THE RURAL HEALTH SYSTEM IN VIETNAM

Given the current situation of the health care system in Vietnam presented in chapters one and two, the research has focused on collecting community-based evidence related to the following dimensions of the rural health care system:

1. Availability and accessibility of health care services in rural areas;
2. Quality of services provided by public as well as private providers;
3. Utilization of health care services and costs of care, by living standards and type of health problems;
4. Financing for commune health center system.

Each research framework presented in this study brings a specific view of the health care system. For example, the models by Anderson were developed in the US, and have a very individual choice oriented focus. The framework developed by Christiansen in Scandinavia reflects the socialized funding of the health care services, and frameworks of the World Bank are heavily informed by economic liberal philosophies. The use of each research framework, therefore, depends on the specific dimension of the health care system that we evaluate.

While the Bank's framework is used to assess overall performance of the system for the poor and system efficiency, the other models are used for addressing more specific issues. Andersen's model serves as a map or conceptual guide for selecting variables in the design phase and interpretation of study results on health services utilization. The triangle model is used to recognize economic relationships within the system. The model of quality of care is used to assess dimensions of accessibility, availability, and quality of private services and the CHC system. The concept of an open system is used in discussing the development of private providers. Finally, all evidence regarding

availability, accessibility, quality of services, utilization of services and costs of care is used to evaluate the equity and sustainability of the health system in rural Vietnam.

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4. CHAPTER FOUR: DATA SOURCES AND STRATEGY OF USE

Data for this thesis was obtained from baseline surveys conducted as part of two provincial health systems development programs. The first was implemented in the provinces of Thai Binh, An Giang, and Binh Thuan (1999) and was supported by the European Commission. The second was implemented in Hung Yen province (2001) and supported by the Government of Luxembourg. The author was involved in all phases of these surveys, from the survey design to writing survey reports. As a result, the author gained the donors' permission to use the two databases for his academic purposes. This chapter describes in detail the research methods used in these surveys and the specific strategy of using information from each database for the thesis objectives. The chapter ends with a presentation of the overall strategy of data analysis.

4.1. INTRODUCTION OF THE TWO DATABASES

4.1.1. Thai Binh, An Giang, and Binh Thuan database

4.1.1.1. Introduction

The Health System Development Program (HSDP) was a health development assistance project funded jointly by the Vietnam Ministry of Health and the Commission of the European Community, and conducted in three provinces, Thai Binh, An Giang, and Binh Thuan, over the period 1998 – 2003.

The project sought to strengthen the health care system in the three provinces in order to provide equitable access to (and use of) low cost health services with a national standard of quality of care. The lack of available and adequate information regarding the provincial health care system and use of health care services in the provinces hindered effective planning for the project. As a result, a three component needs assessment was implemented in 1999-2000 in all three provinces. The components were (1) a situation analysis, conducted by Ministry of Health and EU consultants using participatory

appraisal methods; (2) a population-based survey, and (3) special studies that would be conducted to further clarify findings from the component (2).

As the national consultant to the project, the author designed, conducted, and analyzed the community-based surveys in the three provinces and prepared a research report (Tuan, Thach et al. 2000) for the Program Management Unit (PMU) within the Ministry of Health. During the design of the project, advice was sought from two short-term consultants from the French Center for Population and Development Studies (CEPED)¹ who were assigned to ensure the surveys met the specific project management objectives.

The baseline surveys were aimed at providing population-based data (on users and providers) to identify some of the main problems related to utilization and quality of care of both commune health care system and hospital system in the provinces. As this thesis focuses on the commune health care system, we will present the survey design for the commune health care system only, although in implementation, the hospital system survey and commune health care system survey were integrated.

4.1.1.2. Objectives of the surveys

The commune health care survey consisted of three main components:

1. A household survey, to investigate the use of health services and factors affecting use of these services;
2. A health care provider and community context survey, to investigate commune health center (CHC) infrastructure, the availability of private health care services, and local support for the public health services; and
3. An exit-patient survey at CHC to investigate patient opinions and level of satisfaction with the health services provided, and the costs of care.

¹Dr. Michel Garenne and Professor Rhainhorn from the French Center for Population and Development Studies, 15 rue de l'école de médecine, 725270, Paris Cedex 06, France.

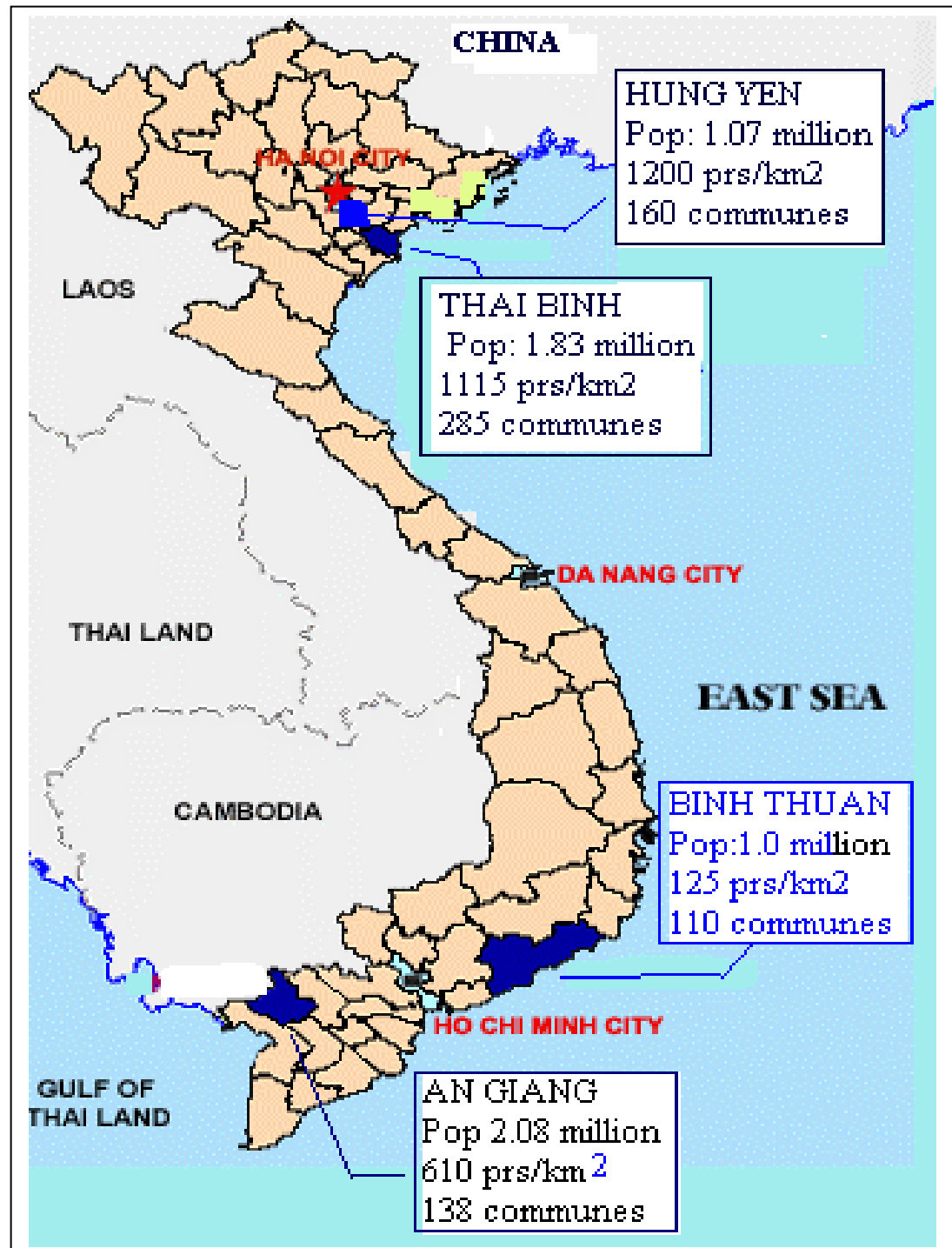
4.1.1.3. Study design

(a) Geographic area

The three provinces, Thai Binh, Binh Thuan, and An Giang, in which the surveys were conducted, have different geography, social history and historical development of the rural health care system (see Figure 4.1). Thai Binh is a plain, coastal agricultural province situated in the Red-River Delta in the north-eastern part of Vietnam, about 120 km south-east of Hanoi, and has a population of about 1,830,000 (1998). The population density is high at 1,115 people per km², ranging from 915 to 3,268. Binh Thuan is a typical coastal-mountainous province in south-central Vietnam with a population of about one million (1998). The population density is the lowest of the three province at 125 people per km², ranging from 73 to 1189. An Giang is situated in the Mekong River Delta and has a population of 2,077,434 (1998). The population density is 610 population /km², ranging from 171 to 2263. All three provinces are ranked by the Government as poor with an average income per capita below the national average (General Statistical Office 2000).

Thai Binh is typical of North Vietnam where the rural health care system has been developed since the 1960s with strong public health campaigns. Binh Thuan inherited the consequences of the Indochina wars and fighting in the province continued until the war ended in 1975. As a result, the health care system was a mix of two approaches in different parts of the province depending on which warring group was in control. An Giang was also affected by the wars, but less so than in Binh Thuan, and the health care system was characterized by capitalist development policy with a dominant role for the private sector. After 1975, when the second Indochina war ended, the CHC system started to develop in these two provinces based on the Thai Binh model.

Figure 4-1. Study areas: Thai Binh, Binh Thuan, An Giang (1999), and Hung Yen (2001)



(b) Sampling

The process of sampling was carried out independently in each province. The two main characteristics of the sampling design are as follows:

- (1) The design of the user survey, the provider and community context survey, and the patient exit survey were linked together through the commune chosen for the household survey.
 - (2) Probability sampling was used for household surveys, health care provider and community context surveys. Quota sampling was used for patient exit survey².
- *Probability sampling for household, health care provider and community context surveys*

Multi-stage cluster sampling was used. In the first stage, a sample of approximately 12% of communes was selected randomly using the probability proportional to population size (PPS) technique (Levy and Lemeshow 1991) (see Hung Yen survey, *section 4.1.2.3*, for detail of PPS method), resulting in 34 communes³ in Thai Binh, 15 in Binh Thuan and 15 in An Giang. The sampling frames were the lists of communes and population provided by the provincial health services. All CHCs and private health care providers practicing in the selected communes were identified through the public and private provider surveys.

In the second stage, a minimum of 600 households from the selected communes of each province were randomly identified for the user survey. Equal distribution of sample size to each surveyed commune in each province was applied resulting in 40 households being selected in each survey commune in Binh Thuan and An Giang provinces, and 20 households being selected in each survey commune in Thai Binh province. A simple, random sampling technique

² The patient exit survey using quota sampling was not used in this thesis. Therefore, the sampling method for the patient exit survey has not been described (more explanation given in the section of 'strategy of using the two databases to meet the objectives of the thesis')

³ See section 4.1.2.3.(b) for further information on sample size estimation for health care facility survey.

was used for selecting households in the surveyed communes. Sampling frames were the lists of households made by village health workers.

- *Rationale for the sample size of household survey*

The sample size was calculated to measure the prevalence of use of health care services by type of provider and the main factors explaining people's use of health services: type of health problem (acute-chronic), severity of health problem, wealth index, education, gender, distance to hospital, health insurance status. Other factors associated with utilization of health services, such as patient satisfaction, cost of care, availability of medical equipment and quality of care, were measured in the patient exit survey and the health care facility survey.

The sample size determination was an iterative process in which both the key program indicators to be measured, and the costs and logistic conditions, were equally important in forming a decision about the study sample size.

The process consisted of two steps: (1) statistical consideration for estimating a sample size that sufficient for estimating all of key variables with a given reliability; and (2) Cost-efficiency analysis (exploring the trade off between statistical consideration, key variables should be measured, and feasibility (i.e., budgets and logistic conditions, feasibility of fieldwork). These steps are detailed below:

Step 1: In the first step, the indicators to be measured in the survey were ranked in terms of importance for the survey aims, then a sample size estimate was calculated to determine: (1) the prevalence of care seeking among persons reporting illness in the preceding three months by private provider, CHC, and hospital outpatient service; and (2) the rate of use of public health care sector versus private provider in children under five with acute illness episodes in the preceding three months⁴.

⁴ Not like other health surveys in Vietnam where conventional recall period of 2 weeks (for acute health episode in children, such as diarrhea or acute respiratory infections) or one month (for general illness episode) were used, this study focused on health service utilization rather than morbidity and therefore, a

The sample size estimates were calculated using the following conventional sample size formula for proportions in cluster surveys (CCEB 1998):

$$n = n_1 * DEFF$$

Where:
$$n_1 = Z_{\alpha}^2 \frac{p * (1 - p)}{d^2}$$

n- sample size required for the cluster design

n₁- sample size required under the assumption of simple random sampling

DEFF- design effect adjusting for cluster design⁵

Z_α- Value of Z-score at the 100x (1-α)% confidence interval.

p- expected prevalence

d- absolute precision (% on the scale 100%)

In this study, Z=1.96 at the level of confidence of 95%. Prevalence of the indicator, level of absolute precision of estimate and a design effect were based on the results of four studies: the Vietnam Living Standards Survey 1993 (Prescott 1997); case-study on health care seeking by the poor in four communes of Quang Ninh 1992 and 1996-1998 (Truong Viet Dung, Nguyen Thanh Tam et al. 1994; Tipping and Segall 1996; Segall, Tipping et al. 2000); baseline survey of Vietnam-Australia Primary Health Care for Women and Children Project in Long An, Quang Ngai, and Ben Tre 1998 (Hassall & Associates Pty Ltd 1999); and baseline survey on nutrition and maternal childcare in five communes of Thanh Hoa 1998 (Tuan, Thach et al. 1998). The details of sample size estimation are reported in Table 4.1.

Step 2: In the second step, costs and logistics were considered in order to select a sample size that allowed measurement of the maximal number of

recall period of 3 months was used for capturing enough illness episodes to explore service use within a given sample size, a limited time and financial resources.

⁵ DEFF = 1+ ρ*(m-1), where m=number of subjects in a clustered study; ρ or intracluster correlation coefficient is the between-cluster variability divided by the sum of the within-cluster and between-cluster variabilities (Killip, S., Z. Mabfoud, et al. (2004). DEFF calculated from the referenced surveys range from 1.8-3.2. We used an estimated DEFF = 3 that was considered sufficient to provide adequate power for the study.

key study variables at an affordable cost. After adjusting the sample size estimate for each province⁶ for the expected drop-out rates including refusals, absentees, and ‘do not know’, the sample size for the household survey for Thai Binh was 680 households, for An Giang 600 households, and for Binh Thuan 600 households.

⁶ Sample size was expanded by 3% for Thai Binh, 5% for An Giang, and 7% for Binh Thuan (Provincial statistic offices, VLSS 1998).

Table 4.1- Sample size determination for household survey on health service utilization in Thai Binh, An Giang, and Binh Thuan

Key indicators to be measured	Expected prevalence (p)	Limits of precision (d)	Type of denominator	Naive sample size	Assumed Design effect (DEFF) [†]	Sample size for number of illness episodes	Sample size adjusted for persons interviewed for illness episodes in last 3 months	Total households to be contacted ^Δ		
								Thai Binh	An Giang	Binh Thuan
Rate of use of CHC per 100 illness episodes	20%*	±5%	Illness episode	240	3	720	2400 [‡]	585	471	462
Rate of use of private services per 100 illness episodes	15%**	±5%	Illness episode	192	3	576	1920	468	376	369
Rate of use of hospital outpatient services per 100 illness episodes	5%***	±2%	Illness episode	202	3	606	2020	493	396	388
Rate of use of public health care sector per 100 acute illness episodes in children under 5	30%****	±10%	Acute illness episode in children <5	80	3	240	2462 [¶]	600	483	473

*VLSS 1993 reported 13%; Quang Ninh case study 1996-98: 23%; Thanh Hoa small scale survey 1998: 20%.

** VLSS 1993: 18.2%; Quang Ninh case study 1996-98: 11%; Thanh Hoa small scale survey 1998: 14%

*** VLSS 1993: 8.6%; Quang Ninh case study 1996-98: 5%; Thanh Hoa small scale survey 1998: 4%

****Estimated from data on use of health services in children under 5 years in Long An, Ben Tre, and Quang Ngai survey 1998 (Hassall & Associates Pty Ltd 1999)

[†]DEFF is recommended from 2 to 3 in health and nutrition surveys using multi-stage cluster sampling (WHO, 1988).

[‡]Prevalence of illness episodes during last month in population was from 10% in Quang Ninh study to 15% in Thanh Hoa study. Adjusted for the 3 month-recall periods, it is equivalent to 30%. To have 720 illness episodes with recall period of 3 months, we would need to interview $720 \times 100 / 30 = 2400$ persons.

[¶]Prevalence of acute episode during last two weeks in children under 5 was approximately 25% (Tuan., Thach. et al. 1998; Hassall & Associates Pty Ltd 1999) or equivalent to 1.625 episode per child in 3 month-recall period; children under 5 accounted 6% of the population. Therefore, to have 240 acute illness episodes in children under 5, we need a population of $(240 \times 1.625 \times 100 / 6) \sim 2462$ persons

^ΔHousehold size is 4.1 for Thai Binh, 5.1 for An Giang, and 5.2 for Binh Thuan (estimated from provincial statistic office data based on the Living Standard Survey 1998 conducted in each province.

(b) Measures⁷

- Household level
 - Individual socio-demographic characteristics and health insurance status
 - Household economic situation
 - Acute health problems over previous three months and use of health care services, by degree of severity of health problems
 - Current chronic health problems and use of health care services, by degree of severity of health problems
 - Accident, injury, poisoning in past 12 months and use of health care services, by degree of severity of health problems
 - Antenatal and delivery care for women delivering in last three years.
 - Preventive childcare for children under 36 months.
- Commune health center
 - Background information regarding human resources and qualifications
 - Availability of medicine, services, and medical equipment
 - Interviewer observations on hygiene conditions in CHCs
- Commune general characteristics
 - General characteristics of commune in terms of demographics, socio-economic, infrastructure and environmental issues.
 - Local government monitoring activities of the CHC and private health care providers
 - Local government financial support for the CHC and public health activities in the commune

⁷ For the thesis objectives, we used only the household, community context and health care provider survey sections from the Thai Binh-Binh Thuan-An Giang survey. Therefore, measures presented here are for these sections only. Exit patient section is omitted.

- Availability of private health care providers in the commune
 - Number of private health care providers and type of services provided
 - Status of registration with government

Information on general characteristics of the community and private health care providers was collected from interviews with the commune Chairman or Vice Chairman who are responsible for social, health and education activities in the selected communes. For the CHC survey, CHC staff interviews together with commune health facility and drugs checklist were conducted. Information from household level was collected through interview with the head of households

(d) Questionnaire development

Questionnaires were developed by an interdisciplinary group consisting of the author, the Ministry of Health PMU-Long Term Health Advisor, and a Specialist from National Institute of Sociology. In preparing the survey questionnaires, the following questionnaires were reviewed for possible questions, especially when an analysis of these questions was available:

- Vietnam Living Standard Survey 1997-98 (sections of general community characteristics, household income; demography, education, and health);
- Vietnam-Australia Primary Health Care for Women and Children Project baseline survey (section of antenatal care and delivery care) (Hassall & Associates Pty Ltd 1999);
- Demographic and Health Survey 1997 (sections of maternal and Child Health) (Vietnam: National Committee for Population and Family Planning 1999).

Face and content validity of the questionnaire was reviewed by experts from CEPED (France) for the English version and the Vietnamese version by a local expert panel from Hanoi Medical School, School of Public Health, and Government Statistics Office. The draft questionnaires were field tested and adjusted for local dialects.

(e) Fieldwork organization, data cleaning and management

The author and a survey team of 10 research assistants who conducted the fieldwork in all three provinces. This included selecting and training interviewers, organizing and supervising data collection and data management including data entry and cleaning.

The survey was implemented sequentially, province by province: Thai Binh in June-July, 1999, An Giang in July, and Binh Thuan in August - September, 1999. In each province, the survey started with a week of training for interviewers, local supervisors and facilitators. For Thai Binh, interviewers were teachers of upper-elementary schools within the survey areas. For Binh Thuan and An Giang, interviewers were final year students of An Giang/Binh Thuan Secondary Medical Schools.

Interviewers were organized into teams of two. Six teams for the household survey, six teams for the community and health care provider survey. Each team worked under the supervision of one research assistant from a local non-government organization that specialized in conducting field research and training for community health and nutrition (Research and Training Center for Community Development, Hanoi (RTCCD)). In addition, two provincial health department staff in each province, and one district health department staff in each surveyed district, worked on the survey in their province/district as local supervisors and facilitators. They assisted the survey team to communicate with provincial and district authorities to guarantee that the surveys in each province were implemented smoothly. They also assisted the field team in designing fieldwork schedule and in conducting fieldwork preparation before the surveys were launched in each commune.

The average number of household interviews per day per team was 5.5 for Binh Thuan, 6 for An Giang, and 7 for Thai Binh. Total days of fieldwork interviews were 19 for Thai Binh, 20 for An Giang, and 22 for Binh Thuan.

After checking by field supervisors, all forms were numbered and packed by cluster. Epi-Info computer software version 6 (Vietnamese version) with check file was used for data entry. Data entry and management was conducted at RTCCD by the those involved in fieldwork surveys in these provinces.

4.1.2. Hung Yen Database

4.1.2.1. Introduction

Hung Yen is a typical agricultural province situated in the Red-River Delta, about 60 km east of Hanoi (see Figure 4.1). The population was 1,069,000 (1999) (World Bank, Asian Development Bank et al. 2000). During the period of the central planning system 1960s-1980s, Hung Yen was merged with Hai Duong province to make Hai Hung province. It was returned to the original province of Hung Yen in 1997 as a result of reform of governance in Vietnam. Consequently, the health service system in Hung Yen inherited all the recent administrative reforms applied to provincial government. Within this context, Hung Yen provincial government started a project on health system development which was supported by the Vietnam Government and the Government of Luxembourg. Key questions that needed to be answered in the project proposal were: What was the current provincial health system? How did it function? And, What was expected of the health system at the end of the project?

In early 2001, Lux-Development S.A., an agency for collaboration and development of the Government of Luxembourg, and the provincial health department had undertaken assessments of all health facilities at the provincial and the district levels using information from the routine health reporting system. Then a community-based survey was planned to collect information that was not available from any secondary data sources related to health system development in Hung Yen province, and to provide baseline information for project development, monitoring, and intervention efficiency evaluation in the coming years (Hong and Neu 2001). From June 2001, the research team that conducted the health system surveys in Thai Binh-Binh Thuan-An Giang, with the author as team leader, was invited to design and conduct a community-based assessment of the health system, including the infrastructure of the communal health system, private health care providers, people's needs and health seeking behaviour as well as the burden of costs of health care. A report on survey results for the purpose of planning and project development was completed in November 2001 (Tuan, Thach et al. 2001).

4.1.2.2. Survey objectives

There were two sets of survey objectives (Hong and Neu 2001). The first was to gather information from the catchment areas of all district hospitals and a representative number of CHCs regarding the public health system and the use of private healthcare providers. Specifically the first part of the survey aimed:

1. To obtain information regarding the problems/constraints of people living in Hung Yen province in accessing the existing public health services (transportation, infrastructure, skills of human resources, limitations of buildings and equipment, attitude of staff, etc.);
2. To obtain information about the needs of the population regarding the future development of health facilities;
3. To obtain information about the use of private health services (both modern and traditional) versus public health services;
4. To obtain the community ideas on how to strengthen public health services.

The second aim was to gather information about existing private health services and the potential for future development of this sector.

Specifically the second part of the survey aimed:

1. To obtain information about existing private health services, including numbers, kind of services, human resources, equipment and financing structure;
2. To obtain information about the evolving problems for private healthcare providers in the event of support being given to the public sector (CHC, etc.);
3. To assess the future development potential of the private healthcare sector in Hung Yen province.

4.1.2.3. Study design

(a) Sampling

This survey consisted of four components: a household survey, a private healthcare provider survey, a CHC survey, and a communal characteristics survey. All were linked through a strategy of two-stage cluster sampling.

Clusters were defined as the commune. In the first stage, 30 communes⁸ were chosen from 160 communes of Hung Yen using the PPS method. Initially all the communes were listed together with their population and cumulative population. A sampling interval K was calculated ($K = \text{total population of 160 communes} / 30$), then 30 communes were selected based on whether or not their cumulative population contained a value of (X):

$$X = R + (M-1) \times K$$

where

R – Random number, within the range of K

M – Ordinal number of cluster (from 1 to 30)

K- Sampling interval.

In the second stage, a sample of 30 households was chosen in each selected commune using simple random sampling from a sampling frame of commune households prepared by the people's committee of the commune and a random numbers table.

The study samples included:

- All members in 900 households selected;
- 30 CHCs, and
- All private health care providers found in the 30 study communes.

(b) Sample size rationale

⁸ Determination of sample size of 30 communes was rationalized using lot quality assurance sampling. See the section of sample size rationale.

- Health care facility survey

For the public health facility survey, a sample of 30 CHCs was considered adequate for estimation of the quality performance characteristics of all 160 communes and their CHCs in Hung Yen. From these 30 communes, it was estimated that at least 150 private health care providers would be found (survey in Thai Binh 1999 revealed an average of six private practitioners per commune), which was considered sufficient to estimate the main characteristics of the communal private health care providers and their service quality performance in Hung Yen.

The basis of determination of 30 communes for evaluating quality of health care services of private and public health facilities is from quality assurance sampling techniques with small samples for monitoring performance of health services in small health areas, and of identifying areas with poor performance in which remedial actions need to be targeted (Lanata, Stroh et al. 1990; Lemeshow and Taber 1991; Valadez 1991; Valadez, Brown et al. 1996; WHO 2001). In this study, the Lot Quality Assurance Sampling method (LQAS) was used to identify the number of communes (i.e. a commune is a *Lot*) needed to assess the quality of performance of all CHC staff who provided curative care (each staff is a ‘unit’ of the CHC curative system) and all private providers (each private provider is considered a ‘unit’ of private sector) practicing in the communes. Although the LQAS method is not generally associated with overall population estimates, the combined samples from all the lots can be treated as a stratified sample (MEASURE Evaluation 1998; WHO 2001; Espeut 2003) and the overall (population) proportion of a specific quality of care (for example, clinical performance in treatment of a child with diarrhea or acute respiratory infections; see Chapter 8) or specific characteristics of private providers (for example, private service registered to the local government or not; see Chapter 5) or CHC curative care provider staff (for example, involving in private practice or not; see Chapter 8) can then be estimated. Thirty communes, or 30 lots, have been used by WHO (2001) to assess both coverage and quality of immunization services. In addition, the selection of 30 communes for evaluating availability and quality

of health care services at commune level fitted with the two-stage cluster sampling method used in household survey in this study.

- Household survey

For the health care utilization survey, a sample size of 900 was chosen based on three factors - statistical estimation of sample size, logistical, and financial factors. The statistical calculation of the estimated 900 household sample size was based on assumptions taken from the Thai Binh survey 1999 (Table 4.2).

Given a sample size of 900 households, about 3,500 to 3,700 persons were expected to be surveyed about illness episodes and their utilization of health services. Assuming patterns of illnesses and use of health services in Hung Yen were not significantly different from Thai Binh, the sample size of 900 households would permit estimates of the key indicators on health service utilization and costs of care at a level of confidence of 95%.

Table 4.2- Main information from Thai Binh health system survey 1999 used to calculate the sample size for the household survey in Hung Yen 2001

Key indicators to be measured	Results of Thai Binh survey 1999 with 680 households using multi-stage cluster sampling	If 900 households selected in Hung Yen survey should yield (Total persons)
<i>Population surveyed</i>		
• Total (N; 95%CI)	2,724 [2,610, 2,795]	3,600 [3,510-3,700]
• Children under 5	189 (10%)	360
<i>Morbidity (N & % population)</i>		
• Having at least one acute health problem during study period	1,223 ⁹ 45% [41, 49]	540 ¹⁰ [490 – 590]
• Having chronic health problem	864 32% [29, 35]	1,152 [930, 1,250]
<i>Use of services among people with acute health problems (N & %)</i>		
• Use of CHC	252 (21%)	113
• Use of private providers	102 (8%)	43
• Use of hospital	156 (13%)	70
<i>Use of services amongst people with chronic health problems (N & %)</i>		
• Use of CHC	114 (13%)	150
• Use of private providers	53 (6%)	69
• Use of hospital	366 (42%)	480
<i>Utilization of inpatient services</i>		
Number & % of population with at least one time of using inpatient service (over-night) during previous 12 months	54 [38, 70] (2% ±0.6%)	72 [50-94]

⁹ For Thai Binh survey, recall period was 3 months.

¹⁰ For Hung Yen, recall period was 1 month.

(c) Measures

- *Household survey:*
 - Individual socio-demographic characteristics and health insurance status
 - In-patient episodes during the last 12 months; use of health care services; costs and patient satisfaction with services received.
 - Chronic disease, disability, mental illness and use of outpatient health services during the four weeks before the survey; costs of and patients' satisfaction with services received.
 - Acute disease, accidents, injuries, poisoning and use of outpatient health services during the four weeks before the survey; costs of and patients' satisfaction with services received.
 - Self-medication for chronic or acute episodes during the last four weeks and their costs.
 - Home visits by private healthcare providers for chronic or acute episodes during the last four weeks and their costs.
 - Antenatal and delivery care for women delivering in last three years.
 - Childcare for children under 36 months.
 - Household wealth status
- *Private health care provider survey:*
 - General characteristics; knowledge and practice; type of services provided; financing; monitoring and supervision; equipment; infrastructure.
- *Commune Health Center survey:*
 - Background information regarding human resources; qualifications; knowledge and practice; management and supervision, infrastructure; Interviewer observations on CHC hygiene conditions; equipment and drugs; financing; services; monitoring and supervision.
- *Commune general characteristics survey:*
 - General characteristics of commune in terms of demographics, socio-economic, infrastructure and environmental issues.

- Local government financial support to CHC.

(d) Questionnaire development

Questionnaires were developed, field tested by a multi-disciplinary field team which had previously implemented health system surveys in Thai Binh, An Giang, and Binh Thuan provinces. In preparing the survey questionnaires, the following sources were consulted for possible questions and for definitions used:

- Vietnam National Health Survey, version 22/06/2001 (Ministry of Health 2001)
Baseline Survey for HSDPme in Thai Binh, An Giang and Binh Thuan, 1999
(Tuan, Thach et al. 2001)
- Vietnam Living Standards Survey, 1998 (General Statistics Office 2000)

Face validity and content validity of both the English and Vietnamese versions was reviewed by selected experts from the National Health Survey project, the General Statistics Office, and Hung Yen health system development project.

The structure of the questionnaires used in the survey is presented in Table 4.3. Chapters 5, 6 and 7, and 8 present in detail the study variables used in this study. Annex 1 presents questionnaire components for each type of survey (i.e. household, health care provider, and community survey).

Table 4.3- Structure of questionnaires used in the Hung Yen survey 2001

<i>Form Title</i>		<i>Content</i>
Household	H1	Individual demographics and screening questions for H2, H3, H4 and H8
	H2	In-patient episodes during the last 12 months
	H3	Chronic disease, disability, mental illness and screening subjects with recurrent episodes during the last 4 weeks for H5, H6, H7 or reasons of not seeking health care services.
	H4	Acute disease, accidents, injuries, poisoning and screening subjects for H5, H6, H7 or reasons for not seeking health care services.
	H5	Use of outpatient health services during the last 4 weeks
	H6	Self-medication during the last 4 weeks
	H7	Home visits by private healthcare providers during the last 4 weeks
	H8	Antenatal and delivery care for women delivering in last 3 years; Childcare for children under 36 months.
	H9	Household economic situation
Private Healthcare Provider	P	General characteristics; knowledge and practice; type of services provided; financing; monitoring and supervision; equipment; infrastructure
CHC	CHC	Background information regarding qualifications, human resources, management and supervision, infrastructure; Interviewer observations; equipment and medicines; financing; services; monitoring and supervision.
Commune Leader Interview	CL	General characteristics of the commune in terms of demographics, socio-economic status, infrastructure and environmental issues.

(e) Fieldwork organization, data cleaning and management

Field work was conducted in July 2001. The interviewers were 14 trained researcher assistants and two supervisors who participated in developing the questionnaires. All of them were from RTCCD and twelve of them had been involved in the Thai Binh-Binh Thuan-An Giang surveys 1999 as fieldwork supervisors. The research staff were organized into two teams of seven interviewers, each with one supervisor. Each team was responsible for conducting surveys in 15 communes. Within each team, five interviewers administered the household surveys, and two interviewers administered the health care provider and general community characteristics surveys. The same team conducted data entry, data cleaning and management. A Vietnamese version of Epi-Info 6.04 was used for data entry, as in the Thai Binh, Binh Thuan, An Giang surveys 1999.

4.2. STRATEGY OF USING THE TWO DATABASES TO MEET THE OBJECTIVES OF THE THESIS

4.2.1. Comparison of the two databases in relation to the thesis objectives

All the surveys collected information suitable for analyzing the structure, functioning and performance of the provincial health systems. However, no single database was used to answer all the research questions in this thesis.

The first database allowed the investigator to make comparisons across the provinces as the three surveys (Thai Binh, An Giang and Binh Thuan) were conducted with the same research design. These surveys focused on information about the quality of the public health care system, both in CHCs and in the hospital system. However, it concentrated more on quality of care of public services, and less on quality of the private sector. Therefore, this study was more suitable for comparison on quality of care at various levels of the public same system for the same service (i.e. curative care at the commune level compared to the district and provincial levels in respect of the same services, such as antenatal care or outpatient care). It was a complicated study, using both probability and non-probability sampling designs, and therefore required a great amount of effort and time to link the four components (household survey, community context survey, exit patient survey, and provider survey).

The Hung Yen survey was designed and conducted by the same research team which conducted the surveys in Thai Binh, An Giang and Binh Thuan and, as a result, most of limitations from these surveys were resolved in the Hung Yen survey. The Hung Yen study purposively focused on the commune health system, and not on the quality of the hospital services. The strengths of the Hung Yen survey were that all components of the health system at the communal level were investigated in detail. The household survey covered recent illnesses and the associated use of health services including costs of use of health services, therefore allowing comparisons of differences between various household strategies in choice of health care services. The private health care provider survey described the health infrastructure and assessed the quality of services provided. The same questions on knowledge and management practice of common health problems were used in interviewing CHC staff and the private health care providers, thereby allowing comparisons of the quality of services delivered in rural areas by private health care providers with that of CHCs. In addition, the commune contextual factors survey included information about the financial support from local government to CHCs and an opportunity to assess the sustainability of the CHC system in a rural area.

In comparison to the Hung Yen survey, the Thai Binh, An Giang, Binh Thuan surveys were more limited when estimating the real costs of utilization of healthcare services. This was because the health care expenditure data were only collected from patients exiting public health care facilities and were not investigated in the household survey. Hence the costs of private providers was not known. Furthermore, the number and type of private health care providers were collected through local leaders, not by interviewing and surveying the private health care providers themselves. For utilization of healthcare, this survey did distinguish between the use of public and private health care providers, and self-treatment, but was not able to separate inpatient from outpatient service utilization. Therefore, it was not possible to estimate the relative role of each health care provider by type of services as in the Hung Yen survey.

4.2.2. Strategy for using the two databases

Regarding the thesis objectives, the analysis was to focus on the following data areas:

- Availability of private health care provider relative to public health facilities;
- Quality of care provided by private provider versus CHC;
- Utilization of health care services by health care providers and determinants of health service utilization patterns;
- Costs of care related to various health care options;
- Inequality in burden of health outcomes and in use of health care services between the poor and the better off.

The Hung Yen survey fulfilled the above requirements, while the Thai Binh, Binh Thuan, and An Giang surveys did not. The strategy for data analysis was to use the Hung Yen survey as a *case-study* of the provincial health care system, to illustrate in detail the relative role of each type of health care provider in service delivery in a rural area, the economic relationships between components of the provincial health care system, and the difference in quality of services provided by private and public sector systems. All three components of the Hung Yen database: household survey, CHC survey, and private provider survey, are used in this analysis.

A selective part of the Thai Binh, Binh Thuan, and An Giang survey data has been used to describe the availability of public and private health care services across rural health care systems in Vietnam and to build a model explaining the availability of private health care providers at the community level. Therefore, the variables selected from the Thai Binh, An Giang and Binh Thuan surveys are mainly from the health care provider survey, with some explanatory, community context variables such as community morbidity, geographic characteristics, population, and community poverty status. These variables from other components of the health system survey will be aggregated for the purpose of building a model to forecast the availability of private sector services in rural areas.

The main characteristics of the rural health care system are drawn from the community-based findings of all surveys in terms of availability, quality of services provided, a comparison between private and public health care provider at commune level, and equity of access to care. Based on these findings, recommendations for policy

adjustments to build a more sustainable and equitable rural health system in Vietnam have been proposed.

4.3. DATA ANALYSIS STRATEGY

The data analysis was conducted in two stages, either at the individual or the household level, or at the communal level.

In the first stage, bivariate analysis were conducted. Provincial characteristics were described with data aggregated from the individual, the household and the communal levels. Comparisons across provinces or between categories were made using Pearson Chi-square for categorical data and Student's t-test for normally distributed continuous data. Skewness/Kurtosis tests were used for testing normality of data and the Mann-Whitney test for comparison between medians. The 95% of confidence intervals for mean, proportion, or median were calculated using standard methods (StataCorp 2003).

In the second stage, multivariate linear regressions or logistic regressions were used to adjust for the effects of potential confounders to ascertain the relationships of various independent variables to the indicators of availability of private healthcare providers, quality of commune health facilities, utilization of health care services, or self-medication when people were ill. Strategy for model building goes through the following steps: (1) examining data, using summary statistics and graphs to determine data potential problem; (2) using specific research framework, together with results from previous studies, to develop theoretical hypothesis on relations between dependent variables and potential explanatory variables. For example, the Andersen model was used for selecting possible predictors of availability of private health care providers (Chapter 5) or selecting possible explaining variables in analyzing access to and utilization of health care services (Chapter 6); or combined with results from previous epidemiological studies (VLSS 93, 98, DHS) to select possible predictors of morbidity (Chapter 7), and (3) Model refinement and selection, using scatter plots and residual plots for determining relationships and their strengths. The process of model building was iterative starting with univariate models, running the full model with all variables suggested by hypothesis and research framework. The 'all-possible-regressions

procedure' was used for variable reductions. In addition, a step-wise approach to reduce variables was used as a reference for the all possible-regression procedure. Variables in the final models were those statistically significantly associated or were the key factors in the corresponding research framework. The consistency of association between the dependent and the selected independent variables was evaluated through checking any significant change of β -coefficient (or odds ratio for logistic regression) through the univariate, full and reduced multivariate models.

Analyses of inequality in health outcomes and in health service utilization between the poor and the better off have been carried out using the techniques proposed by the World Bank (The technique details are presented in Chapter six).

The health burden, the utilization of health care services, and the costs of care were analysed at the individual and household level. The availability of private providers and the quality of commune health system were analysed at the communal level. For analysis at communal level, each commune was taken as a single observation. All measurements originally counted on individual or household sampling units were aggregated to provide indicator values for the commune, either as proportions, means or ratios depending on the type of variables. Measurements originally counted at the communal level, such as the number of health care providers, were divided by the commune population size to provide a ratio estimate that accounted for difference in population size.

The data have been analysed using the survey commands in statistical software STATA version (8.0) to adjust for sampling weights, the cluster sampling design, and stratification of the sample (StataCorp. 2003).

For the Thai Binh, An Giang, and Binh Thuan survey; the strata were defined as the province; the primary sampling unit (PSU) were the commune clusters; and the sampling weight (pweight) was the inverse of the probability that the cluster was selected for the sample. The pweight was the total number of communes in each province divided by the number of communes selected for the survey (ie, 285/34 for Thai Binh, 138/15 for An Giang, and 110/15 for Binh Thuan)

For the Hung Yen survey, strata is equal to one and the primary sampling unit was the household. In this case, pweight is equal to total population in the province divided by total persons surveyed. A finite population correction (fpc) is equal to n_h/N_h , where n_h is number of households selected for the survey in commune h , and N_h is total households in the commune.

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