

CHAPTER 1

INTRODUCTION



1.1 Background and Rationale

Diabetes Mellitus (DM) or diabetes is a non-communicable and chronic disease. It is a complex, serious and also costly disease. Diabetes can affect nearly every organ system of the body. People with diabetes are at increased risk for hypertension, heart disease, stroke, peripheral vascular disease, blindness, neuropathy and kidney failure. Diabetes is a costly disease, not only in terms of the economic burden it imposes, but also in terms of the human suffering imposed by the disease and its complications. The burden of diabetes and its complications is great. It disproportionately affects working-age adults and the elderly and is likely to increase, as people become older. Diabetes poses an enormous public health challenge in many countries.

The prevalence of diabetes worldwide is expected to double by 2010, creating costly public health problems for many countries. Especially, Types 2 diabetes appears to be epidemic in many regions of the world and with increasing longevity, change in age distribution, rising urbanization and modernization, the number of diabetes patients is rising steadily. The global prevalence of diabetes is predicted to grow from 2.1% to 3% up to 220 million people, by 2010. Currently in 1997, about 123 million people worldwide have diabetes . In Asia and Africa, experts forecast the prevalence could double or even triple in the next 12 years. If this tremendous growth occurs, the burden of complications and premature mortality

resulting from diabetes will institute a major worldwide public health problem (Zimmet, 1997).

The World Health Organization (WHO) reported that developed and developing countries' expenditure loss for diabetes treatment was about 10% of total direct expenditure for all kinds of treatment, or between 0.5% to 1% of GDP in the country. Both direct and indirect expenditures are high whether in developed or developing countries. Great Britain has estimated that the expenditure for diabetes treatment is about 4% to 5% of total direct expenditure for all kinds of treatment in the country (WHO, 1996).

In 1998, 16 million people in the United States, about one out of every 17 people has diabetes. Doctors diagnose about 1,800 new cases each day. Diabetes remains a leading cause of mortality and increased deaths rates are seen for all ages and races. In 1994, diabetes was the 7th leading cause of death in the United States. Diabetes care accounted for 15% of US health care costs in 1992. Total health care expenditure for diabetics was US\$45 billion. Health care for people with diabetes costs an average of US\$3,494 a year. (Journal of American Medical Association Diabetes Medicine [www.http://Diabetes.com/American](http://Diabetes.com/American), 1998)

Researchers with the northern California branch of Kaiser Permanente, the nation's largest and oldest health maintenance organization, compared the health costs for 1994 of the 85,209 members with diabetes and an identical number of non-diabetics, matched for age and gender. It costs Kaiser \$283 million more to care for diabetics during the year studied: almost US\$3,500 per person. A diabetic's medical bills were 2.4 times greater than a non-diabetic's. Nearly 38% of the extra health care cost was spent treating chronic diabetics' complications, predominantly heart

disease and kidney failure. Much of this extra cost is unnecessary prevent long-term diabetes complications (Diabetes Care, Sept. 1997).

In Thailand, 1995 health statistics indicated that the mortality rate from heart and cardiovascular diseases were 56,318 cases (95 cases per population of 100,000), which is the top cause of death Diabetes is the main cause leading to this disease problem. The prevalence of diabetes was estimated to be around 3.4% to 4% and continues to increase. Diabetic outpatients for the whole country were 2,056,212 cases or 3.7% of all kind of outpatients (38.7 per 1,000 population). The number of cases, when classified by region with statistics ordered by the number of cases and rate per 1,000 population in brackets, is: The North, 493,081 (41.56), Northeast, 915,352 (44.97), Central, 433,211 (32.39) and the South, 214,568 (28.44) (MOPH, Bureau of Health Policy and Plan, 1996).

Of the top ten causes of death in Thailand, diabetes was the ninth leading cause of death. Heart and cardiovascular disease were the number one causes of death. Diabetes's complications are one of the main risk factors for heart and cardiovascular diseases (MOPH Bureau of Health Policy and Plan, 1994). So, diabetes is a public health issue that causes a great burden to society. Expenditure for diabetes care was estimated at about 2% of GDP in developing countries, including Thailand (Thomson et al, 1993).

In terms of the Daily Adjusted Life Year (DALY), diabetes accounted for 216,923 DALY in 1993 (Samutarak et al, 1997). It was the 8th leading health burden. This is extreme and when its complications, hypertension and heart diseases, are considered it increased to 4 times greater than that of diabetes only. Diabetes became the second biggest health burden in Thailand as shown in table 1.1

Table 1.1 Top Ten Leading Health Burdens in terms of DALY

Rank	Disease	Year(1993)
1	Road accidents	1,589,952
2	Infection in children	357,892
3	Ischemic heart disease	347,521
4	AIDS	317,458
5	Cerebrovascular accident	280,253
6	Hypertension	245,595
7	Respiratory infection	244,782
8	<u>Diabetes Mellitus</u>	216,923
9	Cirrhosis of liver	197,042
10	Congenital anemalies	187,378

Source: Samuttarak (1997), A Study on Burden of Disease to Thai Society p.22.

Since 1993, the Ministry of Public Health in Thailand has had a promotion on health insurance for people to access health care services through government health, as well as private facilities. Several schemes of health insurance have operated under different conditions and for different target groups, such as low income cards for the poor, student cards for those aged 12 and under, social security schemes for laborers and public welfare for the disabled, veterans, monks and elderly, classed as those over 60 years old. The new, Health Card Scheme is known internationally as a voluntary health insurance scheme for farmers and workers in the Informal sector. The scheme receives matching funds from government revenue to increase cost recovery to health care providers. The price of the Health Card is set at 1,000 baht, half contributed by the user and the other half by the government.

Government health facilities that provide services in the Health Card Scheme face high expenditure and low cost recovery, especially at tertiary care level, such as a general hospital. The price set for the card which provides coverage to the whole family for a year, is rather low and does not provide full cost recovery for providers. The benefit package is very broad, with the number of visits, service utilization and the ceiling of expenditures for treatment unlimited. This scheme further serves for antenatal and postnatal care as well as child care. Inadequate risk sharing occurs, with the unhealthy or persons with chronic diseases more likely to be members of the Health Card Scheme, than the healthy, this phenomenon is called *adverse selection or selection bias*.

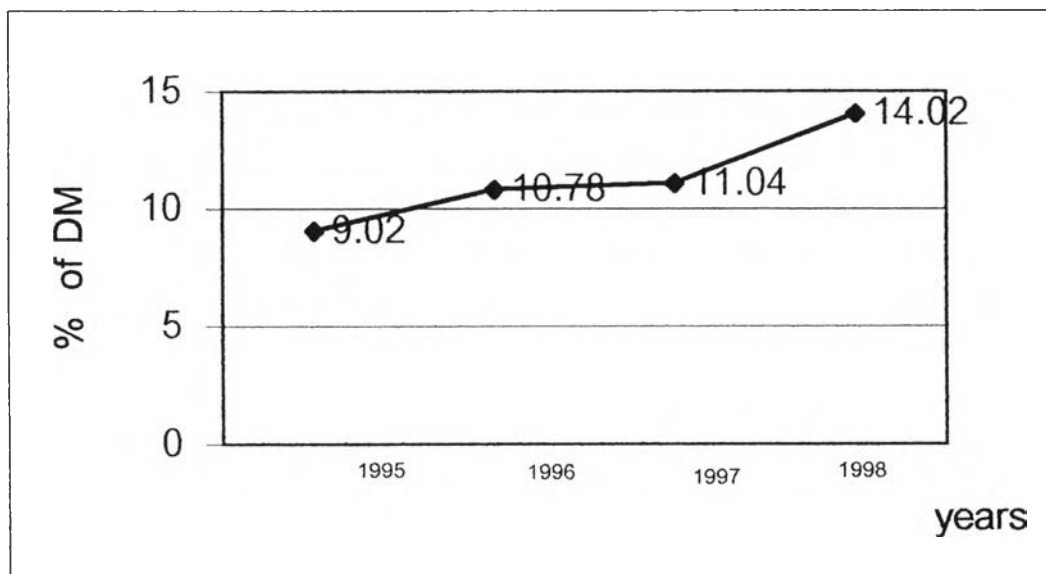
At Sena Hospital, a general hospital located in Sena district in Ayutthaya Province, the number of chronic illness patients has increased dramatically. Since 1993, after launching the voluntary Health Card Scheme with unlimited benefits to people, the hospital has faced crowds of the chronic illness patients, especially at the Out-Patients Department (OPD). Of all the chronic diseases, diabetes is significant in terms of burden of disease that rapidly increased to 51.47% or 927 cases in 1998 from 612 cases in 1996. Its complications are great, in terms of cost for health care providers as well. Most diabetic outpatients in Sena Hospital were members in the Health Card Scheme and in the elderly group. Unavoidably, a costly disease like diabetes will increase expenditure for treatment of which long term care is needed, so it is a great burden on OPD for Sena Hospital to provide the services.

For Health Card patients in the In-Patients Department (IPD), a burden leading to high expenditure is not diabetes, but pregnant women who form the largest group, followed by vehicle accident patients. Another reason of the crowded diabetic outpatients is that Sena Hospital has a DM clinic in OPD to provide services to people with diabetes. The DM clinic provides health education for the self-care

necessary for patients, which can block and also reduce the number of patients to be admitted in IPD. The burden of DM is incurred mostly in the OPD.

This study emphasizes Health Card holders in OPD. They are the main group of the chronic illness patients, especially as diabetes. Although there is not a big proportion of Health Card patients in OPD, there is huge expenditure about 43.9% of all expenditure for outpatients. As a result, this case has been passed onto the care providers in terms of greater costs at the Sena Hospital. Apparently, the trend of diabetic patients has been rapidly increasing. According to the statistics on the number of visits for diabetes patients who are in Health Card holders in OPD during the fiscal years 1995-98, there were 633 visits, 1,012 visits, 1,725 visits and 2,558 visits per year, respectively. (Figure 1.1)

Figure 1.1 Proportion of Number of Visits by Diabetic Health Card Holders Patients at OPD in in Sena Hospital



Source: Medical Records Unit in OPD at Sena Hospital, 1998.

Furthermore, Sena Hospital has joined in many hospital administration and health care projects. One was developing a pilot project under the health care reform policy of the Ministry of Public Health concerning holistic hospital management (TQM) and Hospital Accreditation (HA). Sena Hospital developed the Health Card Scheme to be more acceptable for health care providers and make resource allocation more efficient.

As diabetes is a significant burden in the Health Card Scheme and the trend appears to continue increasing in the Outpatient Department at Sena Hospital, the management of the disease, from the provider's side at general hospital level, has yet to be measured. Such estimation will be helpful for better understanding of provider costs and to re-plan patient services for efficient management of diabetes in the Health Card Scheme. It may also be helpful for introducing appropriate service and co-payment system in order to increase cost recovery.

1.2 Research Question

To compare the provider's costs for diabetic outpatients' treatment, both of Health Card holders and non-Health Card holders, in Sena Hospital.

1.3 Objectives of the Study

General Objective:

To estimate and compare the cost of the three kinds of diabetic outpatients: 1) diabetics without complications 2) diabetics with hypertension 3) diabetics with heart disease both of Health Card holders and non-Health Card holders, including analyzing patterns of utilization among these two groups of patients in Sena Hospital.

Specific Objectives:

1. To estimate the unit cost (cost per visit) of treatment of the three kinds of diabetic outpatients both of Health Card holders and non-Health Card holders.
2. To analyze average utilization rates (visits per person per year) of the three kinds of diabetic outpatients in Sena Hospital, both of Health Card holders and non-Health Card holders.
3. To estimate annual costs (cost per person per year) of the three kinds of diabetic outpatients for Health Card holders and non-Health Card holders.

1.4 Scope of the Study

The study uses the Sena Hospital as a case study for estimating costs for analyzing the utilization rates of operating and management of treatment for diabetics of Health Card holders and non-Health Card holders at the Out-Patient Department from a providers' perspective. This is a short-term retrospective study about cost analysis for management of a disease at general hospital level.

1.5 Expected Benefit

The study is expected to provide information on the unit cost per visit and annual cost per person per year of treatment for diabetics, who are Health Card holders or non-Health Card holders. It examines the utilization rate among those at general hospital level. This information could be beneficial for patient services planning for efficient management of this chronic disease, diabetes under the scarce public resources.