

CHAPTER 4

EMPIRICAL RESULTS



Data can be sorted into 4 categories:

- (1) the general characteristics of data of diabetic outpatients;
- (2) the results of cost estimation for diabetic outpatient's treatment in the 3 kinds of diabetics: without complications, complications with hypertension and complications with heart disease in Health Card holders compared with the out of pocket. These 2 groups were selected on the basis of patients' age, that being between 40- 60 years old. The other group is the elderly, age over 60 years. The estimated costs consist of the average cost in terms of cost per visit from the Routine Service Cost, together with medical care costs: drug costs including laboratory;
- (3) analyze the average utilization rate in terms of visit per person per year among Health Card holders, the out of pocket and the elderly;
- (4) the total care cost incurred in a year at OPD, which the hospital provided for diabetes services to one person in term of cost per person per year.

The results of study are shown as follows:

4.1 General Characteristics of Data of Diabetic Outpatients

General characteristics of data of diabetic outpatients are gender, age, place of living, education and occupation. Data was collected from profiles of patients in medical records.

General characteristics of data among the 3 kinds of diabetic outpatients

are:

Table 4.1 Diabetic Outpatients' Age Characteristics

Age (years)	Health Card Holders				Out of Pocket Group				Elderly Group			
	1997		1998		1997		1998		1997		1998	
	cases	%	cases	%	cases	%	cases	%	cases	%	cases	%
41-45	17	8.2	16	5.3	7	10.5	4	8.0	0	0	0	0
46-50	54	26.0	78	26.0	27	40.3	20	40.0	0	0	0	0
51-55	66	31.7	97	32.2	22	32.8	18	36.0	0	0	0	0
56-60	71	34.1	110	36.5	11	16.4	8	16.0	0	0	0	0
>60	0	0	0	0	0	0	0	0	220	0	337	0
Total	208	100	301	100	67	100	50	100	220	100	337	100

-- The largest group of diabetics using Health Card was in the 56-60 years old range. This was 34.1% in 1997 and 36.5% in 1998. The 51-55 years old range was next, with 31.7% and 32.2% in 1997-98, respectively.

-- In contrast, among the out of pocket group, the largest group of 40.3% and 40.0% in 1997-98, respectively, were in the 46-50 years old range, followed by 32.8% and 36.0% in the 51-55 years old range.

During 1997-1998, the number of diabetic out of pockets in all age groups decreased. Over this period, the percentage of diabetics in the out of pocket age group between 51- 55 years old was increasing, but the other age groups were decreasing. One reason is that of 67 cases of diabetic outpatients in the out of pocket group in 1997, 28 began using cards in 1998. Their income level had decreased as a result of age-related lower potential to find work and a consequent decreased ability

to pay for medical care, especially for a chronic illness like diabetes. Those of increased age also have a propensity to increasing episodes and more chronic illness.

Table 4.2 Diabetic Outpatients' Gender Characteristics.

Gender	Health Card Holders		Out of Pockets		Elderly	
	Total	%	Total	%	Total	%
Male	95	31.6	9	18.0	57	16.9
Female	206	68.4	41	82.0	280	83.1
Total cases	301	100	50	100	337	100

-- Among Health Card holders, 68.4% of diabetic outpatients are female and 31.6% are male. Of the 247 non-elderly females analyzed, 206, or 83.4% are Health Card Holders.

-- Among the out of pocket group, 82.0% of diabetic outpatients are females and 18.0% are male.

-- Among the elderly group, 83.1% of diabetic outpatients are female and the remaining 16.9% male.

Females appear to be 2-4 times more at risk of having diabetes than males. One reason is because of their behavior related to irregular eating and lack of exercise. Another is that females take more care their health and are more inclined to see a doctor, so have more opportunity to be diagnosed and treated for diabetes than males.

Table 4.3 Diabetic Outpatients' Places of Living.

Place of living	Health card holders		Out of pocket		Elderly	
	Total	%	Total	%	Total	%
Sena District	185	61.5	28	56.0	184	54.6
Other district	116	38.5	22	44.0	153	45.4
Total cases	301	100	50	100	337	100

Of diabetic outpatients among the 3 categories, the study found that most patients live in the Sena District: 61.5% of Health Card holders, 56.0% of the out of pocket and 54.6% of the elderly. The rest live in the districts around Sena District, at 38.5%, 44.0% and 45.4% respectively of the three categories.

The number of patients from outside the Sena District is quite high because Sena Hospital is a general hospital famous for its health care services, the high capacity of its health personnel and its medical care resources.

Table 4.4 Diabetic Outpatients' Education Level

Education level	Health card holders		Out of pocket		Elderly	
	Total	%	Total	%	Total	%
Primary school	175	58.1	26	52.0	287	85.2
Secondary school	114	37.9	20	40.0	30	8.9
Bachelor degree	4	1.3	4	8.0	2	0.6
Non- education	8	2.7	0	0	18	5.3
Total cases	301	100	50	100	337	100

– Among Health Card holders, the study found that 58.1% of diabetic outpatients had primary education, 37.9% secondary education, 1.3% had bachelor degrees and 2.7% did not attend school.

– Among the out of pocket group, the study found that 52.0% of diabetic outpatients were primary educated, 40.0% attended secondary school, and 8% held bachelor degrees.

– Among elderly group, the study found that 85.2% of diabetic outpatients attended primary school, 8.9% attended secondary school, 5.3% did not attend school and 0.6% had bachelor degrees.

They are the older generation, above 40 years old finished only primary school. The Sena District is located in a rural area and people tend to have lower education levels than those in the urban areas. When comparing the education level of health card holders and out of pocket patients, the out of pocket groups are higher educated, and tend to have a higher income, enable to pay for their medical care.

Table 4.5 Diabetic Outpatients' Occupation

Occupation	Health card holders		Out of pocket		Elderly	
	Total	%	Total	%	Total	%
Agriculture/ farmer	204	67.8	25	50.0	65	19.3
Housekeeper/ Retiree	23	7.6	13	26.0	246	73.0
Self employed/ merchant	74	24.6	12	24.0	26	7.7
Total cases	301	100	50	100	337	100

– Among Health Card holders, the study found that 67.8% of patients are farmers, 24.6% are self employed/ merchant and 7.6% are house keeper/ retirees.

-- Among the out of pocket group, the study found that 50% of patients are agriculture/ farmer, 26% are housekeeper/ retirees and 24% are self employed/ merchant.

-- Among the elderly group, the study found that 73% of patients are housekeeper/retirees, 19.3% are agriculture/ farmer and 7.7% are self-employed/ merchant.

When comparing the occupation of health card holders and the out of pocket, 67.8% health card holders were farmers who have lower and more unstable income.

This study found that the general characteristics of the usual health card diabetics outpatient was that she was female, in the age group between 56–60 years old, primary educated, a farmer and lives in Sena District. The general characteristics of the out of pocket was that she was female, in the age group between 46–50 years old, primary educated, a farmer and lives in Sena District. The general characteristics of the elderly group were females, age group over 60 years old, primary educated, farmers and live in Sena District.

Age characteristics of 3 kinds diabetic outpatients appear to be the only difference, as discussed further in the conclusion and discussion.

4.2 The Results of Average Cost Estimation of Treatment of Diabetic Outpatients

The study was conducted on the 3 main kinds of diabetics (without complications, complication with hypertension and complication with heart disease) in order to calculate the average cost of providing diabetic services from the providers' perspective.

The 3 groups were:

- (1) Health Card holders.
- (2) the out of pocket group.
- (3) the elderly group.

Average cost, in terms of cost per visit, consist of Routine Service Costs (RSC), together with medical care costs and drug costs, including the laboratory.

(a) Routine Service Cost (RSC) or Overhead Cost

Routine service costs were obtained from the direct cost at the DM clinic, together with indirect costs from the other cost centers (the NRPC and the RPCC) concerned with diabetes services. The share of costs to diabetic outpatients at the DM clinic are allocated as:

◆ ***The Direct Cost from the DM Clinic at OPD:***

Direct costs consist of capital recurrent costs, which are provided directly to patient services.

1. The Capital Cost

1.1 The Building

The annual costs of the DM clinic building can be calculated as:

- Making cost of the DM clinic building at OPD (C_{bo}) = 100,000 baht.
- The first year of use of the building (t_0) = 1979
- The study period = 1998
- Interest rate during the period of study (r) = 10% per year
- Life time of DM clinic building (n) = 50 years*

The average annual cost of the of DM clinic building can be calculated as:

$$\begin{aligned}
 AC_k &= \{C_{bo}(1+r)^{1998-t_0}\} / n = \{100,000(1+0.1)^{1998-1979}\} / 50 \\
 &= \{100,000(1+0.1)^{19}\} / 50 \\
 &= \{100,000(6.11590)\} / 50 \\
 &= 612,000 / 50 \\
 &= 12,224 \text{ baht.}
 \end{aligned}$$

* The lifetime of the building was acquired from a Research Project on the Economic Remuneration Rate of Investment in Education.

1.2 Land Cost

The value of land can be estimated from information about the 1998 real-estate market price for housing in the neighborhood of Sena Hospital. The price of 100 square meters of land was 250,000 baht, as the square meter price was 2,500 baht. As the total land area of the hospital is 60,800 square meters, the value can be calculated as: 60,800 sq. m. X 2,500 baht = 152,000,000 baht.

This amount has to be multiplied by the interest rate of about 10%. This figure was the permanent deposit saving rate from the bank in 1998 and was used by

Bank of Thailand in 1998. Therefore, The opportunity cost of land per year could be calculated as:

$$= 152,000,000 \times 10\%$$

$$= 15,200,000 \text{ baht.}$$

From this amount of money, how the opportunity cost allocated to each department / unit, should be distributed depends on the utility space used for cost shares.

The total utility space in the hospital is 6,819.57 square meters. At the DM clinic, the total utility space is 40 square meters. The opportunity cost of land allocated as a cost share to the DM clinic can be calculated as:

$$= 15,200,000 \text{ baht} \times 40/6,819.57$$

$$= 89,155.18 \text{ baht}$$

1.3 Equipment Cost

Medical equipment used in the examination process and treatment for diabetic outpatients and other equipment can be allocated from annual average of costs and cost shares allocated, as follow:

Table 4.6 The Average Annual Cost of Capital Cost Items for the DM Clinic at 1998 Prices

Capital items	Life time (year)	Making/ Buying Year	Cost at Buying year (Baht)	Interest Rate (%)	Value at 1998	Average annual cost at 1998 price (Baht)
1	2	3	4	5	6	7
Blood pressure instrument (#1)	10	1997	3,200	10	3,520	88
Heart examination instrument (#1)	10	1990	2,500	10	5,358.97	267.95*
Weight instrument (#1)	10	1995	9,800	10	13,043.80	326.10**
Telephone (#2)	10	1995	5,400	10	7,187.40	179.69**
Furniture (#1)	10	1994	40,000	10	58,564.00	1,464.10**
Refrigerator (#1)	10	1990	5,500	10	11,789.74	1,178.97
Air-conditioner (#1)	10	1994	26,600	10	38,945.06	3,894.51
Television (#1)	10	1994	12,000	10	17,569.20	439.23
TOTAL						7,838.55

Note: column 6 = column 4 x (1+ column 5)^{life time of the capital item used}

column 7 = column 6/ column 2

column 7* = column 6/ column 2, then divided by 4 (share used equally in 4 clinics)

column 7** = column 6/ column 2, then divided by 2 (share used equally in 2 clinics)

The capital costs of the DM clinic consist of the building and land costs, including major equipment. The share for diabetes patients services at OPD in the hospital, can be summed up as:

= 12,224 baht. (building cost) plus 89,155.18 baht (land cost) plus 7,838.55 baht.
(equipment cost) equal 109,217.73 baht.

2. The Material Cost

From the hospital records collected in 1998, utility costs consumed at OPD totalled 364,642.59 baht.

At OPD, the total utility space is 675 square meters. The utility cost to cost shares for each cost center or department/unit are allocated according to the proportion of utility space used.

The utility space used in the DM clinic is 40 square meters or 5.93% of OPD, so the utility cost share allocated to the DM clinic was:

= 364,642.59 baht. X 5.93 %

= 21,623.31 baht.

2. The Labor Cost or Personal Cost

The eight personnel who work in and take responsibility for the DM clinic are: 4 general physicians, 2 professional nurses, 1 technical nurse and 1 nurse's aid.

Their salaries have to be allocated to cost shares for patients' services.

Table 4.7 Labor Cost from the DM Clinic for Cost Share allocated to Diabetes Care Service in 1998

Type of Personals	Total salary/ year (Baht)	Time spent/ year for OPD	Time spent/ year for DM clinic	Salary cost share to DM
Physician 1	201,604.33	0.15	0.05	10,080.22
Physician 2	233,079.33	0.3	0.06	13,984.76
Physician 3	75,405.00	0.3	0.01	754.05
Physician 4	282,759.33	0.2	0.05	14,137.97
Nurse 1	125,628	1.0	0.2	25,125.60
Nurse 2	136,560.00	1.0	0.2	27,312.00
Nurse 3	143,620.00	1.0	0.2	28,724.00
Nurse-aid	61,500.00	1.0	0.1	6,150.00
Total			1	126,268.60

From the method of cost calculation for the DM clinic, as noted above,

it can be concluded that:

Total capital cost = 109,217.73 baht.

Total material cost = 21,623.31 baht. (excluding drugs and lab cost)

Total labor cost = 126,268.60 baht.

The total direct cost of the DM clinic = capital cost + material cost + labor cost

$$\text{TDC} = (\text{CC}) + (\text{MC}) + (\text{LC})$$

$$= 257,109.64 \text{ baht.}$$

◆ **The Indirect Cost from NRPCC and RPCC**

Information about these total costs in each cost center was collected from the records of Sena Hospital in 1998. They were collected by the method explained above. This was the direct distribution method and is summarized in the following table, as:

Table 4.8 Total Cost from NRPCC and RPCC

Cost center	Capital cost (CC) (baht.)	Recurrent cost (MC)+(LC) (baht.)	Total cost (TC) (baht)
Admin.	2,177,362.9	9,676,016.10	11,853,378.00
Med. Records	47,357.51	1,004,438.12	1,051,795.60
Education	25,321.46	766,031.56	791,353.02
Pharmacy	564,007.94	3,743,123.53	4,307,131.47
Laboratory	1,333,605.26	6,278,345.88	7,611,950.00

The cost share allocation of indirect costs provided for diabetic services at the DM clinic.

a. Administrative

(Criteria used: number of staff and the volume of outputs)

Total hospital staff = 427 and DM clinic staff = 8, portion = 0.0187

Total OPD patient's visits = 157,009 and DM visit = 6,493, portion = 0.0414

The proportion used: the average of number of staff and the volume of patients

$0.06 \text{ divided by } 2 = 0.03$

The distribution costs to the DM clinic = $0.03 \times 11,853,378 = 355,601.34$ baht.

b. Medical record

(Criteria used: the proportion of outpatients' number of visits = 0.04)

The distribution costs to the DM clinic = $0.04 \times 1,051,795.6 = 42,071.82$ baht.

c. Health education

(Criteria used: the proportion of outputs = 0.0037)

The distribution costs to the DM clinic = $0.0037 \times 791,353.02 = 2,928.06$ baht.

d. Pharmacy

(Criteria used: the proportion of number of visits = 0.04)

The distribution costs to the DM clinic = $4,307,131 \times 0.04 = 172,285.24$ baht.

e. Laboratory

(Criteria used: the proportion of number of visits = 0.04)

The distribution of costs to the DM clinic = $7,611,950 \times 0.04 = 304,478$ baht

Total cost determination by indirect cost allocation is added to the direct cost by: the total routine service cost (RSC) = direct cost (DM clinic) + indirect cost
(NRPCC+ RPCC)

Finally, the average routine service cost can be calculated as (excluding drugs and lab costs): Total routine service costs/ # of DM visits = $1,134,474.10 / 6,493$. The average routine service cost is 174.72 baht.

(b) The Medical Care Cost

the cost of drugs per visit was calculated by the cost to charge ratio method for diabetes outpatients, summarized in the following table:

Table 4.9 Cost to Charge Ratio Method for Calculating Drug per Visit

DM outpatients	10% of Health card holders				10% of out of pockets group				10% of elderly group			
	# visit (receipt)	Charge (+10%)	Cost	DrugCost/ visit	# visit (receipt)	Charge (+10%)	Cost	DrugCost/ visit	# visits (receipt)	Charge (+10%)	Cost	Drug Cost/visit
1	2	3	4	5	6	7	8	9	10	11	12	13
W/o complication	80	11132.44	10019.2	125.24	8	1066.67	960	120	100	16777.77	15100	151
With hypertension	154	59916.27	53924.64	350.16	21	8054.66	7249.20	345.20	177	82643.33	74379	420.22
With heart disease	24	12340.53	11106.48	462.77	13	6655.28	5989.75	460.75	44	22733.82	20460.44	465.01

Source: the data of charge rate for the medical bills were obtained from the interview with Dr. Yutthapong Potduang who responsible for information management including hospital financial information.

Note: Column 4 = column 3 X 90/100
 Column 5 = column 4/ column 2
 Column 8 = column 7 X 90/100
 Column 9 = column 8/ column 6
 Column 12 = column 11 X 90/100
 Column 13 = column 12/ column 10

Remark : (1) # visit (receipt) in column 2,6 and 10 = of the total receipts in a year. As a representative sample, 10% of diabetics in each group was taken to calculate the cost of drugs per visit.

(2) 10% of the sample sizes, between Health Card holders (31 cases with 258 receipts) and the out of pocket group (5 cases with 42 receipts) was very different. These might effect the accuracy of average drug cost per visit. Especially in the out of pocket diabetics that the results in this study is less than Health Card holders, may not generalize the whole pictures. If the total cases or sample of out of pocket diabetics is big enough, the average drug cost will be more accurate and reliable.

Table 4.10 List of Laboratory Tests for Diabetic Outpatients Services

Lab test	Cost/ test (baht)
1. Fasting Blood Sugar (FBS)	40
2. BUN	40
3. Cretinine	40
4. Cholesterol	40
5. Tri-glyceride	70
6. HDL chol	60

When diabetic outpatients come to use hospital services, They need to a Fasting Blood Sugar (FBS) test, every visit.

- For the first group, diabetes without complications, who have only the FBS lab test, the cost is 40 baht/ visit.

- For the other 2 groups, of complications with hypertension and heart disease, all have to be tested, but only once a year with BUN, Cretinine, Cholesterol, Tri-glyceride and HDL chol. The total lab costs obtained from FBS test at 40 baht/ visit were, together with the average lab test (no.2 – 6 above), as follows:

$$\begin{aligned} \text{average lab test (no.2 – 6)} &= \text{total cost/ \# visit} \\ &= 250/ 8 = 71.25 \text{ baht /visit} \end{aligned}$$

$$\text{Lab costs for these 2 groups} = 40 + 71.25 = 111.25 \text{ baht/ visit.}$$

The cost/ visit of the DM clinic can be estimated from: Routine Service Cost/ visit + Drug/ visit + lab/ visit.

Table 4.11 Cost per Visit for the 3 Kinds of Diabetes.

Type of DM patients	Health card holders				Out of pockets				Elderly group			
	Average RSC/ visit	Drug/ visit	Lab/ visit	Cost/ Visit	Average RSC/ visit	Drug/ Visit	Lab/ visit	Cost/ visit	Average RSC/ visit	Drug/ Visit	Lab/ visit	Cost/ visit
1	2	3	4	5	6	7	8	9	10	11	12	13
Without complication	174.72	125.24	40	339.96	174.72	120.0	40	334.72	174.72	151	40	365.72
With hypertension	174.72	350.16	111.25	636.13	174.72	345.20	111.25	631.17	174.72	420.22	111.25	706.19
with heart disease	174.72	462.77	111.25	748.74	174.72	460.75	111.25	746.72	174.72	465.01	111.25	750.98

Note: column 5 = column 2+3+4
column 9 = column 6+7+8
column 13 = column 10+11+12

4.3 The Average Utilization Rate Analysis

Table 4.12 Three Kinds of Diabetes at OPD.

DM outpatients	Health card	Out of pocket	Elderly
Without complication	95	14	87
With hypertension	176	29	218
With heart disease	30	7	32
Total Cases	301	50	337

The analyzing of the average utilization rate of 3 kinds of diabetic among health card holders is summarized in the following table:

Table 4.13 Average Utilization Rate for the 3 Kinds of Diabetics
in Health Card Holders

Kinds of DM	Total DM case	Total utilization	Average utilization
Without complication	95	688	7.24
With hypertension	176	1,441	8.19
With heart disease	30	253	8.43
Total	301	2,382	7.91

For Health Card holders, the average utilization rate in the 3 kinds of diabetic outpatients was about 7.91 visit/ person/ year. This was about 3.88 times more than the general outpatients among Health Card holders. The average utilization rate is 2.04 visit/ person/ year (Dr.Samrit Srithamrongsawad, 1996). The average utilization rate varied with the severity of the disease. Diabetics without complications consume the lowest number of services and diabetics with heart disease the highest.

To analyze the average utilization rate of the 3 kinds of diabetics among non-Health Card holders, details are summarized as:

Table 4.14 Average Utilization Rate of the 3 Kinds of Diabetics
of the Elderly Group.

Kinds of DM	Total DM case	Total utilization	Average utilization
Without complication	87	632	7.26
With hypertension	214	1,814	8.32
With heart disease	32	272	8.50
Total	337	2,718	8.07

It is shown that the utilization rate in the 3 kinds of diabetic outpatients in the elderly group is about 8.07 visit per person per year. The utilization rates are similar to those who are in Health Card holders. The severity of complications of the disease in older people resulted in a higher utilization rate than among the younger people, especially as a chronic disease like diabetes needs long term care and frequency of follow up or visits to doctors.

Table 4.15 Average Utilization Rate for the 3 Kinds of Diabetics
in the Out of Pockets Group.

Kinds of DM	Total DM case	Total utilization	Average utilization
Without complication	14	101	7.21
With hypertension	29	237	8.17
With heart disease	7	59	8.43
Total	50	397	7.94

The utilization rate in the 3 kinds of diabetic outpatients in the out of pockets group, in the age range of 41- 60 years old, is about 7.94 visits per person per year.

As a result of this, the utilization rate among the 3 groups of diabetic outpatients both in Health Card holders and non-Health Card holders (the out of pocket and the elderly) was high. There was a difference among the 3 groups of diabetic outpatients where the average utilization rate of diabetics with heart disease was the highest and lowest was for diabetics without complications. Diabetics with hypertension used a moderate level. The severity of diseases or complications, like hypertension and heart disease, resulted in a higher volume of health care services per visit.

The average utilization rate of the elderly group is higher than Health Card holders and the out of pockets group among the 3 kinds of diabetic outpatients, because the elderly are in worse health than those younger and need closer care.

Diabetic outpatients had a utilization rate of about 8 visits/person/year, whether they were elderly or not. Of those who had not reached 60 years old, most were members of Health Card Schemes. Unavoidably, the high utilization rate of these 3 groups results in a higher health care cost from the providers.

Utilization rate for the 3 main kinds among the Health Card holders, out of pocket group and the elderly group were not very different: about 7-8 visit per person per year. The reason for this is the characteristics of the disease. The age factor is a dependent variable.

The utilization rate is also dependent on the physician who usually expects Health Card holders to use their card more. One explanation for this is the physician's influence over and request for further and more frequent follow-up visits.

When the average utilization rate of diabetics among the 3 types of diabetic outpatients were: (1) diabetics without complications, (2) diabetics with hypertension, (3) diabetics with heart disease in Health Card holders, out of pocket and elderly group were analyzed and the average cost of care was calculated, the total care costs provided to one person in a year were then estimated by the total care cost (cost /person/ year) to equal the average cost (cost/ visit) x average utilization rate (visit/ person/ year).

4.4 Average Annual Cost

Table 4.16 Total and Average Cost, Average Utilization Rate of Diabetic Outpatients in Sena Hospital in 1998

Diabetes Outpatients	Health card holders			Out of pockets			Elderly group		
	Cost/ visit	U rate	Cost/ year	Cost/ visit	U rate	Cost/ year	Cost/ visit	U rate	Cost/ year
DM w/o Complication	339.98	7.24	2,461.31	334.72	7.21	2,413.33	365.72	7.26	2,655.13
DM with Hypertension	636.13	8.19	5,209.90	631.17	8.17	5,156.66	706.19	8.34	5,889.62
DM with Heart disease	748.74	8.43	6,311.88	746.72	8.43	6,294.85	750.98	8.50	6,383.33
1	2	3	4	5	6	7	8	9	10

Notes: The costs in column 2,4,5,7 in unit of baht

The average utilization rate in column 3,6 in units of visit/ person/ year

Column 4 = column 2 x column 3

Column 7 = column 5 x column 6

The costs in column 8, 10 in units of baht

The average utilization rate in column 9 is in units of visit/ person/ year

Column 10 = column 8 x column 9

The total care costs for one person in a year that the hospital provided for diabetics in Health Card holder, the out of pocket and the elderly was 2,461.31–6,311.88 baht, 2,413.33 – 6,294.85 baht and 2,655.13 –6,383.33 baht, respectively.

Cost per visit for the Health Card group is higher than the out of pocket group. while this study focussed on the age group between 40 – 60 years old. But

68.7% of Health Card diabetics were in the range of age 51– 60 years old while the out of pocket diabetics were 52% in 1998. So, those of increased age group also have a propensity to more and severity illness.

Cost per visit of the elderly group, where age is above 60 years old, is higher than the out of pocket and Health Card holders. The important variable with the age factor is the severity of the disease, which leads to higher cost, particularly drug cost per visit.

4.5 Discussions

The most significant characteristic of diabetic outpatients who are the Health Card holder is age. The increased age of diabetic outpatients is related to the severity of disease. After studying the utilization patterns between Health Card holder and the out of pocket of the diabetics during 1997-1998, it was found that 41.8% of diabetics in the out of pocket group began using Health Card in 1998. This is related to the selection bias and the problem of presence of illness. Supakankunti's 1997 study found that presence of illness was one of the significant factors of Health Card use. In comparison, the study found that the age factor can explain increasing health Card use by the increasing presence of illness and severity of the disease. these, in turn, result in higher costs per visit and annual costs among Health Card holders than in the out of pocket group.

The price of a Health Card is set at 1,000 baht and provides free of charge services for a year. This is not suitable for diabetes care service at OPD. This study shows that the cost per visit for diabetics was about 334.72 – 750.98 baht and the annual cost (cost per person per year) was about 2,413.33 – 6,383.33 baht varying with disease's complications. This is 2-6 times higher than the Health Card

price. When compared with the average medical expenditure on general outpatients of 1,523 baht per card (Srithamrongsawad 1996), the diabetes annual cost is double or triple. The service utilization rate of diabetics in this study found that the average utilization rate of a Health Card holder was about 7.95 visits per person per year, about 3.88 times higher than the average general outpatient who consumed 2.04 visits per person per year (Srithamrongsawad 1996).