

CHAPTER 5



RESEARCH RESULTS

The results of the study in cost recovery of health care provision for foreign patients on health care provider's viewpoint are presented in five sections as follows aspect: (1) Characteristic of foreign patients in the study; (2) Cost of health care provision for foreign patients; (3) Revenue from health care provision for foreign patients; (4) Cost recovery of health care provision for foreign patients; and (5) Discussion of this study.

5.1 Characteristic of Foreign Patients

The number of foreign patients receiving services from health facilities of Nan province, during the period of fiscal year 2001 were 3,233 visits. Trends of foreign patient are decreasing from the past five years and decreased by 26.8% from year 2000.

The proportion of female foreign patients is higher than male with the sex ratio of male: female is 1: 1.23. About marital status of foreign patient, the highest is single (73.3%) while the most common occupation of these patients is farmer (79.5%). Most of foreign patient came from Chaiyaburi district (94.5%), which remains the same as previous year because, it is the closest district to Thai border (see Table 5.1).

Considering of the distribution of age and gender in foreign patient, results show that male patient range from age 0-86 years with the average of 32.3 and the age group that are most common is more than 60 years (13.0%). For the female patients, the age ranges from age 0-90 years and the group that is most common is 30-34 years (12.6%) with the average age of 31.3 years (see Table 5.2).

About 80% of these patients receive services mainly from 3 health facilities. These are Tungchang hospital (66.5%), Nan general hospital (13.7%) and Chondan health center (10.1%) (see Table 5.3). Relatively, Tungchang hospital is locate near international checkpoint which is convenient to receive services by mean of public transportation. Chondan health center is also locate

TABLE 5.1 Foreign Patients in Nan Province: Fiscal Year 2001

Characteristics	Number	Percentage
Age (years) Range	1 day - 90	
Age (years) Mean	31	
Number of Foreign Patients	3,233	
Sex Ratio (Male:Female)	1:1.23	
Gender		
Male	1,451	44.9%
Female	1,782	55.1%
Marital Status		
Single	2,369	73.3%
Married	863	26.7%
Divorce	1	0.03%
Occupation		
Farmers	2,571	79.5%
Students & Children	617	19.1%
Businessmen	11	0.3%
Monks	7	0.2%
Employees	5	0.2%
Unspecified	22	0.7%
Site of foreign patients come from		
Chaiyaburi	3,054	94.5%
Udomchai	52	1.6%
Laungprabang	23	0.7%
Vientiane	2	0.1%
Stay in Nan	6	0.2%
Unspecified	96	2.9%

Source: Nan Provincial Public Health Office (2001)

TABLE 5.2 Age Distribution of Foreign Patients: Fiscal Year 2001

Age (Years)	Male		Female		Total	
	Number	%	Number	%	Number	%
0-4	157	10.8	178	10.0	335	10.4
5-9	119	8.2	73	4.1	192	5.9
10-14	107	7.4	85	4.8	192	5.9
15-19	74	5.1	137	7.7	211	6.5
20-24	92	6.3	187	10.5	279	8.6
25-29	121	8.3	219	12.3	340	10.5
30-34	119	8.2	225	12.6	344	10.6
35-39	137	9.4	159	8.9	296	9.2
40-44	94	6.5	130	7.3	224	6.9
45-49	93	6.4	120	6.7	213	6.6
50-54	78	5.4	85	4.8	163	5.0
55-59	72	5.0	52	2.9	124	3.8
Over 60 Yrs.	188	13.0	132	7.4	320	9.9
Total	1,451	100.0	1,782	100.0	3,233	100.0

Source: Nan Provincial Public Health Office (2001)

TABLE 5.3 Foreign Patients Services in Nan Health Facilities: Fiscal Year 2001

Characteristics	Number	Percentage
Total number of visits	3,233	100.0%
Health facilities	3,233	100.0%
Nan General hospital	443	13.7%
Pua Crown Prince hospital	11	0.3%
Tungchang hospital	2,150	66.5%
Songkwae hospital	151	4.7%
Chondan health center	326	10.1%
Numripattana health center	130	4.0%
Pon health center	14	0.4%
Ngob health center	3	0.1%
Hauysatang health center	5	0.2%
Top Ten Cause of illness	3,233	100.0%
Upper respiratory systems diseases	297	9.2%
Diseases and disorders of the digestive system	199	6.2%
Low back pain	192	5.9%
Fever + PUO	179	5.5%
Abdominal pain	178	5.5%
Musculoskeletal system diseases	152	4.7%
Urinary tract infection	135	4.2%
Diseases and disorders of the skin and subcutaneous tissue	97	3.0%
Malaria	82	2.6%
COPD	65	2.0%
Other	1,657	51.2%

Source: Nan Provincial Public Health Office (2001)

near Banmaichaydan checkpoint which most foreign patients visits for health care services while Nan general hospital has the highest in-patient visits and provide tertiary support for other facilities.

According to health care services, foreign patients mainly visit the outpatient department (77.5%) while 22.6% were admitted in the in-patient department. For Nan general hospital, which mainly provides tertiary care in Nan province, in-patient services are higher in proportion than outpatient services for foreign patients which remain the same as previous year. Relatively, most of them were accepted referral case from health centers and community hospitals, especially from Tungchang hospital, which is first frontline hospital from the border.

For the cause of illness of foreign patients, the highest rank is upper respiratory diseases (URI) while infectious diseases such as, urinary tract infection, malaria, pyroxia of unknown origin (PUO) and fever are in the highs of the top ten ranks. Still, musculoskeletal system disease and disorder of digestive system are also one of the main problems. Relatively, chronic obstructive pulmonary disease (COPD) which is the highest cause of death of foreign patients in year 2000, is in the highs of top ten ranks in year 2001 also.

In addition, the common cause of illness in male group is communicable diseases and chronic diseases. For example, malarial infection, and COPD. While in female, most of them receive health promotion services in family planning, maternal and child health care services.

5.2 Cost of Health Care Provision for Foreign Patients

The results of the cost analysis are presented separately between hospitals and health centers while the result of cost estimation in both hospital and health center are described in two parts also. Firstly, when hospital and health center are public health facilities (on public wage or government salary). Secondly, when public health facility operated as private health facility by using market wage base.

5.2.1 Hospitals

From the results of cost analysis in the hospitals, the unit cost of hospitals in providing services for foreign patients are calculated only for the outpatient services and in-patient services. Outpatient service includes outpatient department, emergency room and dental health department. The details of unit cost and total cost of each service are shown in Table 5.4.

For the three community hospitals, unit cost of each department are similar but for Nan General hospital the unit cost is higher than the community hospitals in both outpatient department and in-patient department. For emergency room, Pua Crown Prince hospital has the highest unit cost. In addition, Songkwae hospital has the highest unit cost of dental health department (see Table 5.4).

Considering to the real market prices, the production cost of health care provision is estimate by public hospital act as the private hospital (perfect competitive market). These results represent the real market prices of health care provision for foreign patients. In cost calculation, it is assumed that all of the capital cost and material cost in both public and private hospitals are similar.

For the labor cost, private hospital (the private hospital in the northern part of Thailand) has higher labor cost than public hospital. The labor cost was compared and use the proportion of difference in labor cost for calculation of labor cost of public hospital while they operate as private hospital. In the hospital, the labor cost ratio of physicians in private hospital to those in public hospital is 3.5:1, 3:1 for dentists, 2:1 for pharmacists and laboratory technicians, 1.5:1 for nurse and 1.2:1 for other staffs.

Considering to the unit cost based on market wage, public hospital operates as private hospital the unit cost in each department increases higher than public wage about 32.2% (see Table 5.4).

For outpatient services, The average increase in OPD is 27.2% while Songkwae hospital has the highest increasing cost of 32.9%. The hospital with the least increasing cost is Nan General hospital of 22.4% while Pua Crown Prince hospital and Tungchang hospital increases 24.2% and 29.2% respectively.

TABLE 5.4 Unit Cost of Hospitals (Based on Public Wage and Market Wage): Fiscal Year 2001

Hospitals	Nan General (430-bedded)			Pua Crown Prince (90-bedded)			Tungchang (30-bedded)			Songkwae (10-bedded)		
	Public wage	Market wage	Market wage Higher than Public wage (%)	Public wage	Market wage	Market wage Higher than Public wage (%)	Public wage	Market wage	Market wage Higher than Public wage (%)	Public wage	Market wage	Market wage Higher than Public wage (%)
Outpatient Services												
OPD	604	739	22.4	165	205	24.2	154	199	29.2	161	214	32.9
Emergency Room	396	570	43.9	406	524	29.1	394	521	32.2	374	464	24.1
Dental Health	455	669	47.0	492	655	33.1	409	587	43.5	518	777	50.0
In-patient Services												
IPD	8,761	11,072	26.4	3,461	4,240	22.5	2,167	2,767	27.7	2,493	3,178	27.5

The average increase of cost in emergency room is 32.3% while Nan General hospital has the highest increase cost at 43.9%. Songkwae hospital has the least increasing cost of emergency room at 24.1% while Pua Crown Prince hospital and Tungchang hospital increases 29.1% and 32.2% respectively.

In addition, the average increase in dental health department is 43.4% while the highest increase in dental health department is Songkwae hospital 50.0%. The least increase is in Nan General hospital at 47.0% while Pua Crown Prince hospital and Tungchang hospital increases 33.1% and 43.5% respectively.

For in-patient services, the average increase in IPD is 26.0% while Songkwae hospital has the highest increase at 27.5%. Nan General hospital has the least increase cost at 26.4% while Pua Crown Prince hospital and Tungchang hospital increases 22.5% and 27.7% respectively.

Songkwae hospital has the highest increasing cost when estimated based on market prices. Relatively, Songkwae hospital is a small 10-bedded-community hospital when estimated based on market prices the percentage of labor cost increases higher than other hospital.

For the total cost and total charge of services in hospital, Pua Crown Prince hospital is the only hospital in which the total cost is less than the total charge (-1.9%). The average total cost in hospitals is 1,263.2 baht per visit while the average total charge is 962.5 baht per visit. The total cost in Nan general hospital, Tungchang hospital and Songkwae hospital are higher than the total charge 43.1%, 18.8% and 31.2% as follow (see Table 5.5).

When estimated based on market wage the average total cost increase to 27.1% of public wage (the average total cost is 1,605 baht) (see Table 5.6).

TABLE 5.5 Total Cost and Total Charge of Health Care Provision for Foreign Patients in Hospitals (Based on Public Wage)

Cost centers	Nan general hospital		Pua Crown Prince hospital		Tungchang hospital		Songkwae hospital	
	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)
Cost of Outpatient Services								
Outpatient department	205	123,820	11	1,815	1,486	228,844	77	12,397
Emergency room	23	9,108			189	74,466	17	6,358
Dental health department					17	6,953	1	518
Total	228	132,928	11	1,815	1,692	310,263	95	19,273
Cost of In-patient Services								
In-patient department	215	1,883,615			458	992,486	56	139,608
Total Cost	443	2,016,543	11	1,815	2,150	1,302,749	151	158,881
Charge of Outpatient Services								
Outpatient department	205	29,645	11	1,850	1,486	242,070	77	21,085
Emergency room	23	1,922			189	32,285	17	4,190
Dental health department					17	4,775	1	200
Total	228	31,567	11	1,850	1,692	279,130	95	25,475
Charge of In-patient Services								
In-patient department	215	1,377,937			458	817,294	56	118,379
Total Charge	443	1,409,504	11	1,850	2,150	1,096,424	151	143,854

TABLE 5.6 Total Cost of Health Care Provision for Foreign Patients in Hospitals (Based on Public Wage and Market Wage) in Nan Province

Hospitals Based on	Nan general hospital		Pua Crown Prince		Tungchang hospital		Songkwae hospital	
	Public wage	Market wage	Public wage	Market wage	Public wage	Market wage	Public wage	Market wage
Cost of Outpatient Services								
Outpatient department	123,820	151,495	1,815	2,255	228,844	295,714	12,397	16,478
Emergency room	9,108	13,110			74,466	98,469	6,358	7,888
Dental health department					6,953	9,979	518	777
Total	132,928	164,605	1,815	2,255	310,263	404,162	19,273	25,143
Cost of In-patient Services								
In-patient department	1,883,615	2,308,480			992,486	1,267,286	139,608	177,968
Total	2,016,543	2,545,085	1,815	2,255	1,302,749	1,671,448	158,881	203,111
Charge of Outpatient Services								
	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)
Outpatient department	205	29,645	11	1,850	1,486	242,070	77	21,085
Emergency room	23	1,922			189	32,285	17	4,190
Dental health department					17	4,775	1	200
Total	228	31,567	11	1,850	1,692	279,130	95	25,475
Charge of In-patient Services								
	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)
In-patient department	215	1,377,937			458	817,294	56	118,379
Total	443	1,409,504	11	1,850	2,150	1,096,424	151	143,854

5.2.2 Health Centers

The cost analyses in health centers are calculated for each service provided to foreign patients. The results show that the unit cost of Hauysatang health center is highest among other health centers in medical treatment services, maternal and child health care, family planning clinics and EPI (Expanded Program on Immunization) except for health education which is lower than Numripattana health center and Pon health centers (see Table 5.7).

While public health centers operated as private health centers by based on market wage which have both permanent and temporary staff working. The health personnel consist of nurses, community public health staff and their technician. When public health centers operate as private, the results of comparison shows that the labor cost ratio between public wage and market wage of nurses is 1:1.5 and 1:1.2 for other health personnel and temporary staff. For material costs and capital costs, these costs are remain the same as public health center costs.

The average unit cost increase is 11.0% while Chondan health center has the higher increase at 12.8%. Hauysatang health center, Pon health center and Ngob health center increases 11.3%, 11.2% and 11.0% respectively. In addition, Numripattana has the lowest increase at 8.5% (see Table 5.7).

Medical treatment in all health centers has average increase at 4.9% while Hauysatang health center has highest increase at 7.1%. Pon health center, Ngob health center and Numripattana health center increases 6.7%, 5.3% and 3.1% respectively while Chondan health center is the lowest at 2.6%.

For maternal and child health services, the average increase is 13.2% while Chondan health center has the highest increase at 18.8%. Hauysatang health center, Pon health center and Ngob health center increases 16.1%, 14.8% and 10.1% respectively while Numripattana health center has the lowest increase at 6.4%.

For family planning services, the average increase is 11.2% while Chondan health center has the highest increase at 15.3%. Pon health center, Ngob health center and Numripattana health center increases 12.1%, 10.5% and 9.6% respectively while Hauysatang health center has the lowest increase at 8.6%.

TABLE 5.7 Unit Cost of Health Centers (Based on Public Wage and Market Wage) Fiscal Year 2001

Health centers Based on	Chondan			Numripattana			Pon			Ngob			Hauyatang		
	Public wage	Market wage	Market wage Higher than Public wage (%)	Public wage	Market wage	Market wage Higher than Public wage (%)	Public wage	Market wage	Market wage Higher than Public wage (%)	Public wage	Market wage	Market wage Higher than Public wage (%)	Public wage	Market wage	Market wage Higher than Public wage (%)
MD treatment	38	39	2.6	32	33	3.1	45	48	6.7	38	40	5.3	85	91	7.1
MCH	144	171	18.8	125	133	6.4	169	194	14.8	139	153	10.1	224	260	16.1
FP	144	166	15.3	135	148	9.6	58	65	12.1	38	42	10.5	163	177	8.6
EPI	79	87	10.1	64	69	7.8	87	94	8.0	57	61	7.0	278	297	6.8
Health Edu.	622	728	17.0	1,039	1,199	15.4	3,217	3,689	14.7	384	468	21.9	701	828	18.1

Note: MD treatment is Medical treatment

MCH is Maternal and child health services

FP is Family planning

EPI is Expanded Program of Immunization

Health Edu. is Health education

For EPI, the average increase is 8.0% while Chondan health center has the highest increase at 10.1%. Pon health center, Numripattana health center and Ngob health center increase 8.0%, 7.8% and 7.0% respectively while Hauysatang health center has the lowest increase at 6.8%.

In addition, average increases in health education is 17.4% while Ngob health center has the highest increase at 21.9%. Hauysatang health center, Chondan health center and Numripattana health center increase 18.1%, 17.0% and 15.4% respectively while Pon health center has the lowest increase at 14.7%.

Considering about the total cost and total charge of services in health centers, comparison shows that the total costs of health care provision in Chondan health center equals to the total charge (user charge). In Numripattana health center and Hauysatang health center, the total cost are higher than the total charges (user charge) 162.7% and 18.7% respectively. For Pon and Ngob health center, the total cost of health care services is less than the total charge about -24.0% and -12.3%.

The highest total cost of health care provision for foreign patient in health centers is Numripattana health center about 10,835 baht while cost per visit is 83.3 baht. The average total cost in health centers is 54.9 baht per visit while the average total charge is 41.2 baht per visit (see Table 5.8).

For market wage, while public health centers operated as private health facility the total cost increase from 26,233 baht to 27,956 baht. Numripattana health center has the highest increase of 8.3% while Chondan health center has the lowest increase about 5.2%. The average increase was 6.8% (see Table 5.9).

TABLE 5.8 Total Cost and Total Charge (User Charge) of Health Care Provision for Foreign Patients in Nan Health Centers
(Based on Public Wage)

Health Centers Kind of Services	Chondan		Numripattana		Pon		Ngob		Hauysatang		Total	
	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)
Cost of Services												
Medical treatment	309	11,742	65	2,080	11	495	3	114	5	425	393	14,856
Maternal&Child Health services	10	1,440	2	250	-	-	-	-	-	-	12	1,690
Family planning	7	1,008	63	8,505	3	174	-	-	-	-	73	9,687
Total	326	14,190	130	10,835	14	669	3	114	5	425	478	26,233
Charge of Services												
Medical treatment	309	13,640	65	2,175	11	670	3	130	5	358	393	16,973
Maternal&Child Health services	10	310	2	60	-	-	-	-	-	-	12	370
Family planning	7	240	63	1,890	3	210	-	-	-	-	73	2,340
Total	326	14,190	130	4,125	14	880	3	130	5	358	478	19,683

TABLE 5.9 Total Cost of Health Care Provision for Foreign Patients in Health Centers (Based on Public Wage and Market Wage) in Nan Province

Health Centers Based on	Chondan		Numripattana		Pon		Ngob		Hauysatang		Total	
	Public wage	Market wage	Public wage	Market wage	Public wage	Market wage	Public wage	Market wage	Public wage	Market wage	Public wage	Market wage
Cost of Services												
Medical treatment	11,742	12,051	2,080	2,145	495	528	114	120	425	455	14,856	15,299
Maternal&Child Health services	1,440	1,710	250	266	-	-	-	-	-	-	1,690	1,976
Family planning	1,008	1,162	8,505	9,324	174	195	-	-	-	-	9,687	10,681
Total	14,190	14,923	10,835	11,735	669	723	114	120	425	455	26,233	27,956
Charge of Services												
	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)	Visit	(Baht)
Medical treatment	309	13,640	65	2,175	11	670	3	130	5	358	393	16,973
Maternal&Child Health services	10	310	2	60	-	-	-	-	-	-	12	370
Family planning	7	240	63	1,890	3	210	-	-	-	-	73	2,340
Total	326	14,190	130	4,125	14	880	3	130	5	358	478	19,683

5.3 Revenue from Health Care Provision for Foreign Patients

For the revenue of health care provision for foreign patients, user fee is the main source of revenue in which foreign patients paid the same rate as Thai patients. These user fees were set relative to the rate of Ministry of Public Health for control the public health facilities charge. The revenue of health care services in hospitals and health centers are shown in Table 5.10 – 5.11.

According to outpatient services, Pua Crown Prince hospital has the highest average revenue about 164.5 baht per visit while Songkwaee hospital has 130.3 baht per visit, Tungchang hospital has 124.6 baht per visit and Nan general hospital has the lowest average revenue about 103.9 baht per visit. The total average revenue was 130.8 baht per visit.

For in-patient services, Nan general hospital has the highest average revenue about 661.4 baht per visit while Tungchang hospital has 601.1 baht per visit and Songkwaee hospital has the lowest average revenue about 322.8 baht per visit. The total average revenue was 528.4 baht per visit. For Pua Crown Prince hospital, there no foreign patient admitted in in-patient services.

Comparison between revenue from outpatient services and in-patient services shown that average revenue per visit of in-patient services are higher than outpatient services. Relatively, production costs of in-patient services are higher than outpatient services. Hence, revenue of in-patient also higher than outpatient services.

In addition, revenue in health centers show that Pon health center has the highest average revenue about 35.7 baht per visit while Numripattana health center has 17.0 baht per visit, Chondan health center has 15.8 baht per visit, and Ngob health center has 13.3 baht per visit respectively. Hauysatang has the lowest average revenue about 9.0 baht per visit. The total average revenue was 18.2 baht per visit.

Ultimately, the comparison of total cost and total revenue shown that the total cost is higher than the revenue which means that the foreign patients pay less than the cost of providing.

TABLE 5.10 Revenue (User fee) of Health Care Provision for Foreign Patients
in Hospitals: Fiscal year 2001

Hospitals	Nan	Pua Crown	Tungchang	Songkwaee
Kind of services	general	Prince		
	(Baht)	(Baht)	(Baht)	(Baht)
Outpatient Services				
Outpatient department	21,832	1,810	182,225	10,835
Emergency room	1,860		25,880	1,340
Dental health department			2,680	200
Total Outpatient Services	23,692	1,810	210,785	12,375
Revenue per visit	103.9	164.5	124.6	130.3
In-patient Services				
In-patient department	142,196		275,285	18,075
Revenue per visit	661.4		601.1	322.8
Total	165,888	1,810	486,070	30,450

TABLE 5.11 Revenue (User fee) of Health Care Provision for Foreign Patients
in Health Centers: Fiscal Year 2001.

Health centers	Chondan	Numripattana	Pon	Ngob	Hauysatang
Health services	(Baht)	(Baht)	(Baht)	(Baht)	(Baht)
Medical treatment	4,800	420	290	40	45
Maternal&Child	160	50	210		
Health services					
Family planning	180	1,745			
Total	5,140	2,215	500	40	45
Revenue per visit	15.8	17.0	35.7	13.3	9.0

5.4 Cost Recovery of Health Care Provision for Foreign Patients

According to the magnitude of loss or uncovered cost, the comparisons (the volume of different between the total revenue and total cost) shown that the revenue of hospitals and health centers were uncovered cost (see Table 5.12 - 5.13).

For the estimated of cost recovery based on public wage, the data of cost recovery ratio of outpatient services shows that Pua Crown Prince hospital has the highest ratio about 1.0 while Tungchang hospital has 0.68, Songkwae hospital has 0.64 and Nan general hospital has the lowest about 0.18. The average cost recovery ratio in outpatient services was 0.54. It can be conclude that all outpatient services in hospitals suffer losses in providing health care services for foreign patients except Pua Crown Prince hospital which revenue could cover the production cost. The reason may be that Pua Crown Prince hospital has fewer foreign patients visits than others (only eleven foreign patients visits in OPD services) and total cost in OPD is cheaper than the amount that patients can pay for services. Ultimately, Pua Crown Prince hospital can manage recovery in health care services for foreign patients (cost recovery ratio is one).

According to in-patient services, Tungchang hospital has the highest cost recovery ratio about 0.28 while Songkwae hospital has 0.13 and Nan general hospital has the lowest cost recovery ratio about 0.08. The average of cost recovery ratio is about 0.16. This means that in-patient services for foreign patient suffer more loss especially in Nan general hospital which has the lowest ratio.

For health center, Pon health center has the highest cost recovery ratio about 0.75 while Hauysatang has the lowest about 0.11. The average cost recovery in health center is 0.30 which lower than outpatient services of hospitals. It can be conclude that revenue from health centers services could cover production cost more than outpatient services in hospitals.

According to situation of perfect competitive market (based on private wage), these production cost represent the real market prices of health care provision for foreign patients. The result shown that for outpatient services in hospitals the average cost recovery ratio decrease from 0.54 to 0.42 or about 22.2%.

TABLE 5.12 Cost Recovery of Health Care Provision for Foreign Patients
(Based on Public Wage)

Health Facilities	Total Visits (Visits)	Revenue (Baht)	Total Costs (Baht)	Uncovered Cost (Baht)	Cost Recovery Ratio
Hospitals					
<i>Nan general</i>					
OPD Services	228	23,692	132,928	-109,236	0.18
IPD Services	215	142,196	1,883,615	-1,741,419	0.08
Total	443	165,888	2,016,543	-1,850,655	0.08
<i>Pua Crown Prince</i>					
OPD Services	11	1,810	1,815	-5	1.00
IPD Services					
Total	11	1,810	1,815	-5	1.00
<i>Tungchang</i>					
OPD Services	1,692	210,785	310,263	-99,478	0.68
IPD Services	458	275,285	992,480	-717,195	0.28
Total	2,150	486,070	1,302,743	-816,673	0.37
<i>Songkwae</i>					
OPD Services	95	12,375	19,273	-6,898	0.64
IPD Services	56	18,075	139,608	-121,533	0.13
Total	151	30,450	158,881	-128,431	0.19
Total OPD Services	2,026	248,662	464,279	-215,617	0.63
Total IPD Services	729	435,556	3,015,703	-2,580,147	0.16
Health Centers					
Chondan	326	5,140	14,190	-9,050	0.36
Numripattana	130	2,215	10,835	-8,620	0.20
Pon	14	500	669	-169	0.75
Ngob	3	40	114	-74	0.35
Hauysatang	5	45	425	-380	0.11
Total health centers	478	7,940	26,233	-18,293	0.30

TABLE 5.13 Cost Recovery of Health Care Provision for Foreign Patients
(Based on Market Wage)

Health Facilities	Total Visits (Visits)	Revenue (Baht)	Total Costs (Baht)	Uncovered Cost (Baht)	Cost Recovery Ratio
Hospitals					
<i>Nan general</i>					
OPD Services	228	23,692	164,605	-140,913	0.14
IPD Services	215	142,196	2,308,480	-2,166,284	0.06
Total	443	165,888	2,473,085	-2,307,197	0.07
<i>Pua Crown Prince</i>					
OPD Services	11	1,810	2,255	-445	0.80
IPD Services					
Total	11	1,810	2,255	-445	0.80
<i>Tungchang</i>					
OPD Services	1,692	210,785	404,162	-193,377	0.52
IPD Services	458	275,285	1,267,286	-992,001	0.22
Total	2,150	316,070	1,671,448	-1,185,378	0.29
<i>Songkwae</i>					
OPD Services	95	12,375	25,143	-12,768	0.49
IPD Services	56	18,075	177,968	-159,893	0.10
Total	151	30,450	203,111	-172,661	0.30
Total OPD Services	2,026	248,662	596,165	-347,503	0.49
Total IPD Services	729	435,556	3,753,734	-3,318,178	0.12
Health Centers					
Chondan	326	5,140	14,923	-9,783	0.34
Numripattana	130	2,215	11,735	-9,520	0.19
Pon	14	500	723	-223	0.69
Ngob	3	40	120	-80	0.33
Hauysatang	5	45	455	-410	0.10
Total health centers	478	7,940	27,956	-20,016	0.30

Pua Crown Prince has the highest cost recovery ratio about 0.80 (decrease 20.0%) while Tungchang hospital has 0.52 (decrease 23.5%), Songkwaehospital has 0.49 (decrease 23.4%) and Nan general hospital has the lowest cost recovery ratio about 0.14 (decrease 22.2%). It can be conclude that outpatient services in hospital suffer more losses while operated as private hospital.

For in-patient services, when estimated based on market wage the average of cost recovery ratio decrease from 0.16 to 0.12 (decrease 25.0%). Tungchang hospital has the highest cost recovery ratio about 0.22 (decrease 21.4%) while Songkwaehospital has 0.10 (decrease 23.1%) and Nan general hospital has the lowest cost recovery ratio about 0.06 (decrease 25.0%). Conclusion can be drawn that when estimated base on market wage, the in-patient services of hospitals suffer more losses especially in Nan general hospital which mainly provide tertiary care and has higher production cost than other hospitals.

In addition, when health centers estimated production cost based on market wage these health centers also suffer loss in health care provision for foreign patients. The average cost recovery ratio decrease from 0.30 to 0.28 (decrease 6.2%). Pon health center has the highest cost recovery ratio about 0.69 while Chondan health center has 0.34, Ngob health center has 0.33, Numripattana has 0.19 and Hauysatang has the lowest cost recovery ratio about 0.10. It can be conclude that Hauysatang suffer more losses than other health centers in health care provision for foreign patients.

The consideration of cost recovery in health center shown that Hauysatang has the highest decrease about 9.1% while Pon health center decrease 8.0%, Ngob health center decrease 5.7%, Chondan health center decrease 5.6% and Numripattana has the lowest decrease about 5.0%. These means that Hauysatang has highest production cost increases when operated as private health facility or estimated based on market wage.

Ultimately, the comparison in cost of health care provision for foreign patients between public wage and market wage (perfect competitive market) shows that cost recovery ratio under market wage is less than when estimated on public wage (see Table 5.14). From this study, conclusion could be drawn that when estimated base on market wage, private health facilities incur loss more than public health facilities.

TABLE 5.14 Comparison of Cost Recovery of Health Care Provision for Foreign Patients (Based on Public Wage and Market Wage)

Health Facilities	Total Revenue (Baht)	Based on Public Wage			Based on Market Wage		
		Total costs (Baht)	Uncovered Cost (Baht)	Cost Recovery Ratio	Total costs (Baht)	Uncovered Cost (Baht)	Cost Recovery Ratio
Hospitals							
Nan general							
OPD Services	23,692	132,928	-109,236	0.18	164,605	-140,913	0.14
IPD Services	142,196	1,883,615	-1,741,419	0.08	2,308,480	-2,166,284	0.06
Total	165,888	2,016,543	-1,850,655	0.08	2,473,085	-2,307,197	0.07
Pua Crown Prince							
OPD Services	1,810	1,815	-5	1.00	2,255	-445	0.80
IPD Services							
Total	1,810	1,815	-5	1.00	2,255	-445	0.80
Tungchang							
OPD Services	210,785	310,263	-99,478	0.68	404,162	-193,377	0.52
IPD Services	275,285	992,480	-717,195	0.28	1,267,286	-992,001	0.22
Total	486,070	1,302,743	-816,673	0.37	1,671,448	-1,185,378	0.29
Songkwaee							
OPD Services	12,375	19,273	-6,898	0.64	25,143	-12,768	0.49
IPD Services	18,075	139,608	-121,533	0.13	177,968	-159,893	0.10
Total	30,450	158,881	-128,431	0.19	203,111	-172,661	0.15
Total OPD Services	248,662	464,279	-215,617	0.54	596,165	-347,503	0.42
Total IPD Services	435,556	3,015,703	-2,580,147	0.16	3,753,734	-3,318,178	0.12
Health Centers							
Chondan	5,140	14,190	-9,050	0.36	14,923	-9,783	0.34
Numripattana	2,215	10,835	-8,620	0.20	11,735	-9,520	0.19
Pon	500	669	-169	0.75	723	-223	0.69
Ngob	40	114	-74	0.35	120	-80	0.33
Hauysatang	45	425	-495	0.11	455	-410	0.10
Total health centers	7,940	26,233	-18,293	0.30	27,956	-20,016	0.28

5.5 Discussion

The results of this study are discussed in three parts, the first part is unit cost of health facilities, the second is total cost of health care services for foreign patients and then cost recovery of foreign patients services.

5.5.1 Unit Cost of Health Facilities

From the results of cost analysis in the hospitals, unit cost of each department in three community hospitals are similar except for Nan General hospital the unit cost is higher than the community hospitals in both outpatient department (OPD) and in-patient department (IPD). Especially for OPD which compose of many special clinic care such as cardiology, eyes, ears nose and throat (ENT) and have sophisticated equipment like ultrasound and bronchoscope which leads to high overhead fixed costs. For the IPD, since Nan general hospital is a tertiary care facility in which sophisticated chronic and intensive diseases are admitted, unit cost is then higher than community hospital.

For the health centers, unit cost of Hauysatang health center are highest among other health centers in medical treatment services, maternal and child health care, family planning clinics and EPI (Expanded Program on Immunization) except for health education which is lower than Numripattana and Pon health centers. Hauysatang health center is located in the rural hilltribe area far from the main community of the district and has high overhead fixed cost with less output resulting in higher unit cost. For example, in Expanded Program on Immunization (EPI) this facility has high cost in vaccination program but low coverage of target. Concerning about health education, the fixed cost or budgets is nearly the same in every health centers but some of them operate less activity than others health center, leads to higher calculation of unit cost for health education than some other health center.

When public health facilities in Nan province are assumed to operate as private health facilities (perfect competitive market based on market wage) by assumption that all of the capital cost and material cost in both public and private health facilities are

similar. For the labor cost, this study uses coefficient of comparison between the proportion labor cost of public and private hospitals in northern area.

In hospitals, the unit cost in every department is higher than when estimated based on public wage. The overall average unit cost increases 32.2%. When Songkwae hospital, in which the numbers of other staffs are nearly to other hospitals operates as private hospital, production cost increases the highest among other hospitals in all department. This is because it is a small 10-bedded-community hospital with high overhead fixed cost but low output services.

In addition, if health centers operate as private (based on market wage), although there are no professional staffs. The professional staff (physician, dentist, pharmacist and laboratory technician) are the group that were taken into consideration in comparison of labor cost in public and private facilities. The average production costs increases about 6.8%.

5.5.2 Total Cost of Health Care Provision for Foreign Patients

The results of total cost in hospitals shows that, Pua Crown Prince hospital is the only hospital with total cost less than total charge (-1.9%). However, there are only eleven foreign patients that receive services from this hospital and only in OPD. For other hospitals, the total costs are higher than total charge. These hospitals should be aware of this problem because they should set fee or user charge that can cover the cost, otherwise they will end up bankrupt. Since for Thai people there are some subsidies from the government in the various health scheme but for foreign patients they are not subsidized by Thai government.

For the health centers, total costs in Chondan health center are equal to the total charge (user charge). In Numripattana health center and Hauysatang health center, the total cost are higher than the total charges (user charge) 162.7% and 18.7%. For Pon and Ngob health center, the total cost of health care services is lower than the total charge about -24.0% and -12.3% respectively. Numripattana health center and Hauysatang health center should reconsider their policy in user charge to cover the cost.

5.5.3 Cost Recovery of Health Care Provision for Foreign Patients

According to the revenue of health care services, Nan province suffers loss from foreign patients because most of them cannot pay the whole amount of charge for services especially in in-patient services. The foreign patients are usually poor and vulnerable, health facilities cannot deny the services for them although they cannot pay since health services are merit good.

For the estimated cost recovery of hospitals, the average cost recovery ratio in outpatient services is about 0.54 while in inpatient services is about 0.16. In addition, average cost recovery ratio in health center is about 0.30. It can be conclude that all of health facilities suffer loss in providing health care services for foreign patients except Pua Crown Prince hospital which can manage recovery (cost recovery ratio is one). Significantly, cost recovery in health care services for foreign patients depend on number of visit, cost production in health facilities, kind of illness services and degree of illness as well.

However, these health facilities are still sustainable because the majority of the patients are Thai and receive subsidies budget from the government. In the long run these facilities have to reconsider their policy of user charge and consider more about efficiency of management.

According to estimation on market wage, health facilities are worse off in providing services to foreign patients. The average cost recovery ratio decrease 22.2% in outpatient services while decrease 25.0% in in-patient services. In addition, health center also incur loss while estimated based on market wage which average cost recovery ratio is decrease 6.7%. From this study, it can be conclude that while public health facility operated as private facility (based on market prices) they more suffers loss in health care provision for foreign patients.