

CHAPTER 4

RESULTS

This chapter provides the results achieved regarding the situation of medical service utilization of the insured which consist of the utilization rate, the medical care cost , and patient satisfaction. The presentation of results of the study is divided into 4 parts.

Part 1 : The general information of the insured patients.

Part 2 : Characteristics of service utilization by the insured patients

Part 3 : The information about health care cost consumed by the insured patients.

Part 4 : The results about patient satisfaction and additional suggestion regarding the hospital services.

Part 1. The general information of the insured patients

1.1 Outpatient service

During the study period (May – October,1997) a total number of insured outpatient visits at Bor Por Bor Building was 22,556. Of these, a total number of insured outpatients was 8,707. The major group was female (4,898 insured , 56.25%). Most of them, the age was between 16-55 years old (7,900 insured, 90.73%). About 5,109 insured (58.68%) were the group of patients who used to receive the health services more than one years. About 3,598 insured (41.32 %) were new patients who had experience on CH medical care less than 1 year. Among them, their residences were in Bangkok (5,690 insured, 65.35%), about 314 insured (3.61%) were in the area nearby Bangkok and the rest (2,703 insured, 31.04%) were come from other provinces.(As shown in Table 4.1 - 4.4)

Table 4.1 Number of insured outpatients classified by sex

Sex	Number of insured outpatients	%
Male	3,809	43.75
Female	4,898	56.25
Total	8,707	100.00

Table 4.2 Number of insured outpatients classified by range of age

Range of age	Number of insured outpatients	%
<16 years	11	0.13
16-35 years	5,199	59.71
36-55 years	2,701	31.02
56-75 years	389	4.47
>75 years	9	0.10
No available data	398	4.57
Total	8,707	100.00

Table 4.3 Frequency distribution of number of insured outpatients classified by year of their experiences at Chulalongkorn Hospital

Year of experiences	Number of insured outpatients	%
> 1 year	5,109	58.68
< 1 year	3,598	41.32
Total	8,707	100.00

Table 4.4 Frequency distribution of number of insured outpatients classified by their residences

Residence	Number of insured outpatients	%
Bangkok	5,690	65.35
Provinces nearby Bangkok	314	3.61
Others	2,703	31.04
Total	8,707	100.00

1.2 Inpatient service

A total number of insured inpatient admissions at Sawas-Lorm Building (3rd floor) was 505 while a total number of insured inpatients was 427. The major group was male (249 insured, 58.3%). Most of them, the age was between 16-55 years old (398 insured, 93.2%). The mean of age was 34.95 (S.D. = 11.77). The ratio of insured patients who had experiences at Chulalongkorn Hospital medical care more than 1 year and less than 1 year were almost equal (49.6 : 50.4). Among them, the major group of 281 cases (65.8%) were lived in Bangkok. About 50 cases (11.7%) were in the area nearby Bangkok and the rest 96 cases (22.5%) were from other provinces.(Table 4.5 – 4.8)

Table 4.5 Number of insured inpatients classified by sex

Sex	Number of insured inpatients	%
Male	249	58.30
Female	178	41.70
Total	427	100.00

Table 4.6 Number of insured inpatients classified by age

Range of age	Number of insured inpatients	%
16 - 35 years	248	58.10
36 - 55 years	150	35.10
56 - 75 years	28	6.60
> 75 years	1	0.20
Total	427	100.00

Table 4.7 Frequency distribution of number of insured inpatients classified by year of their experiences at Chulalongkorn Hospital

Year of experiences	Number of insured inpatients	%
> 1 year	212	49.60
< 1 year	215	50.40
Total	427	100.00

Table 4.8 Frequency distribution of number of insured inpatients classified by their residences

Residence	Number of insured inpatients	%
Bangkok	281	65.80
Provinces nearby Bangkok	50	11.70
Others	96	22.50
Total	427	100.00

Part 2. Characteristics of service utilization by the insured patients

2.1 Outpatient service

2.1.1 Number of insured outpatient visits and average visits per one insured patient.

A total of 22,556 insured outpatient visits were obtained during 6-month in 1997 since May to October while a total number of insured outpatients was 8,707. About 90.15% of them made 1-5 visits (Table 4.9). The average value of insured outpatient visits for one insured patient during 6-month period was $22,556/8,707 = 2.59$.

Table 4.9 Frequency distribution of number of insured outpatients classified by number of insured outpatient visits

No. of insured outpatient visits	No. of insured outpatients (%)
1-5 visits	7,849 (90.15)
6-10 visits	731 (8.40)
11-15 visits	102 (1.17)
16-20 visits	21 (0.24)
> 20 visits	4 (0.05)
Total	8,707 (100)

From 22,556 insured outpatient visits, there were 21,503 visits (95.33%) which the insured used only 1 consultation clinic and 1,053 visits (4.67%) were used more than 1 consultation clinics (Table 4.10).

Table 4.10 Frequency distribution of number of outpatient visits classified by number of consultation clinics

No. of consultation clinics	No. of outpatient visits (%)
1 clinics	21,503 (95.33)
≥ 2 clinics	1,053 (4.67)
Total	22,556 (100.00)

2.1.2 Type of consultation clinics

From 22,556 insured outpatient visits, most of them were from social security general medicine clinic on the 13th floor (37.62%) which ranked first, followed by general medicine clinic on the 1st floor (7.15%), surgery unit (7.15%), overtime general medicine clinic (6.6%), orthopedic & rehabilitation clinic (6.42%), specialized medicine clinic on 3rd floor (5.56%), otolaryngology clinic (5.34%), ophthalmology clinic (5.14%), skin and preventive and social medicine clinic (4.87%), emergency room unit (3.48%), dental and psychiatry clinic on 12th floor (1.33%), and others (4.24%) (Table 4.11).

2.1.3 Health problems or group of diseases

Among 8,707 insured outpatients and 22,556 insured outpatient visits, the 10 leading group of diseases which were the most health problems of the insured as outpatients (78.82%) were disease of respiratory system, musculoskeletal and connective tissue, endocrine and metabolic system, circulatory system, skin disease, genitourinary system, digestive system, infectious & parasitic disease, eye, and neurological system (Table 4.12).

Table 4.11 Percentage distribution of number of insured outpatient visits in descending order classified by consultation clinics

Consultation clinics	Number of visits (%)
13 th floor : for Social Security general medicine clinic	8,486 (37.62)
1 st floor :General medicine clinic	1,613 (7.15)
6 th floor : Surgery clinic	1,613 (7.15)
Overtime general medicine clinic	1,502 (6.66)
5 th floor : Orthopedic and Rehabilitation clinic	1,448 (6.42)
3 rd floor : Specialized medicine clinic	1,254 (5.56)
10 th floor : Otolaryngology clinic	1,205 (5.34)
11 th floor : Ophthalmology clinic	1,159 (5.14)
7 th , 8 th floor : Obstetric and gynecology clinic	1,135 (5.03)
2 nd floor : Skin clinic	1,022 (4.53)
Preventive and social medicine clinic	78 (0.34)
Others	956 (4.24)
Emergency room unit	785 (3.48)
12 th floor : Dental clinic	171 (0.76)
Psychiatry clinic	129 (0.57)
Total	22,556 (100.00)

Table 4.12 Percentage of insured outpatient visits classified by group of diseases

Group of diseases	No. of insured outpatient visits (%)
Respiratory System	2,968 (13.16)
Musculoskeletal and connective tissue	2,605 (11.55)
Unclassified symptoms e.g. fever, cough, abdominal pain, chest pain	2,416 (10.71)
Endocrine and Metabolic System	2,244 (9.95)
Circulatory System	1,845 (8.18)
Skin Disease	1,626 (7.21)
Genitourinary System	1,615 (7.16)
Digestive System	1,362 (6.04)
Infectious and Parasitics	1,362 (6.04)
Eye	1,175 (5.21)
Neurological System	974 (4.32)
Accident	717 (3.18)
Mental and Behavioral System	568 (2.52)
Ear and Mastoid Process	456 (2.02)
Neoplasms	431 (1.91)
Blood and Blood-forming Organs	192 (0.85)
Total	22,556 (100.00)

2.1.4 Outpatient Service Utilization Rate

These indices can be represented into 2 figures:

2.1.4 Outpatient Service Utilization Rate

These indices can be represented into 2 figures:

2.1.4.1 Proportion of number of insured outpatient visits to total number of registered insured at Chulalongkorn Hospital

The value of this figure

$$= 22,556 \text{ visits} / 76,664 \text{ insured} / 6 \text{ month}$$

$$= 0.2942 \text{ visits/insured} / 6 \text{ month}$$

$$= 0.5884 \text{ visits/insured/year}$$

$$= 588.4 \text{ visits}/1000 \text{ insured/year}$$

2.1.4.2 Proportion of number of insured outpatients to total number of registered insured at Chulalongkorn Hospital

The value of this figure

$$= 8,707 \text{ persons} / 76,664 \text{ insured} / 6 \text{ month}$$

$$= 0.1136 \text{ persons/insured} / 6 \text{ month}$$

$$= 113.6 \text{ person} / 1000 \text{ insured} / 6 \text{ month}$$

Note : The total number of insured registered with Chulalongkorn Hospital was calculated from averaged the figure of the 6-month during study period.

2.2 Inpatient service

2.2.1 Number of hospital admissions

A total of 427 insured inpatients were obtained during 6-month in 1997 since May to October while a total hospital admission was 505. About 383 insured patients (89.7%) made at least one admission. Only 25 insured patients (5.9%) made 2 admissions and the rest 19 insured (4.4%) made more than 2 admissions (Table 4.13). The range of hospital admissions for one insured patient was 1 – 7. The average value of hospital admission for one insured inpatient during 6-month period was = 1.18 (S.D. = 0.64).

Table 4.13 Frequency distribution of number of insured inpatients classified by number of insured admissions

No. of admissions	No. of insured inpatients (%)
1	383 (89.7)
2	25 (5.9)
3	12 (2.8)
4	2 (0.5)
5	4 (0.9)
6	0 (0)
7	1 (0.2)
total	427 (100)

The number of insured hospital admissions per month in May, June, July, August, September and October were 73, 93, 72, 79, 92 and 96 respectively. An average number of hospital admission per month was = $(73+93+72+79+92+96) / 6 = 84$ (Table 4.14).

Table 4.14 Number of insured admissions classified by admission time

Month	Number of insured admissions (%)
May	73 (14.5)
June	93 (18.4)
July	72 (14.3)
August	79 (15.6)
September	92 (18.2)
October	96 (19.0)
Total	505 (100.0)

2.2.2 Type of consultation units

From 505 insured admissions, there were used by 7 consultation units: medicine, surgery, obstetrics & gynecology, orthopedics, otolaryngology (ENT), ophthalmology and radiology. Medicine unit was the most used about 178 hospitalization (35.2%), followed by surgery unit (34.1%), orthopedics unit (12.5%), obstetric & gynecology unit (7.3%), otolaryngology unit (5.3%), ophthalmology unit (4.6%), and radiology unit (1.0%) (Table 4.15).

Table 4.15 Frequency distribution of number of insured admissions classified by consultation units

Consultation unit	Number of admissions (%)
Medicine	178 (35.2)
Surgery	172 (34.1)
Orthopedics	63 (12.5)
Obstetrics & Gynecology	37 (7.3)
ENT	27 (5.3)
Ophthalmology	23 (4.6)
Radiology	5 (1.0)
Total	505 (100.0)

2.2.3 Health problems or group of diseases

Among 505 hospital admissions, the most problem of digestive system was rank the first (14.7%). Group of illness which were health problem of admissions as insured inpatients at Chulalongkorn Hospital were showed in Table 4.16.

**Table 4.16 Frequency distribution of number of admissions in descending order
by group of illness**

Group of illness	Number of admissions (%)
Digestive System	74 (14.7)
Genitourinary System	66 (13.1)
Circulatory System	56 (11.1)
Neoplasms	55 (10.9)
Musculoskeletal and Connective Tissue	43 (8.5)
Accident	42 (8.3)
Infectious and Parasitics	28 (5.5)
Eye	24 (4.8)
Unclassified Symptoms e.g. fever, cough, abdominal pain, chest pain	24 (4.8)
Blood and Blood-forming Organ	18 (3.6)
Neurological System	18 (3.6)
Respiratory System	15 (3.0)
Endocrine and Metabolic System	11 (2.2)
Ear and Mastoid Process	11 (2.2)
Skin Disease	10 (2.0)
More than 2 diseases	5 (1.0)
Mental and Behavioural System	3 (0.6)
Drug Abuse/ Allergy	2 (0.4)
Total	505 (100.0)

2.2.4 Number of hospital admissions with an operation

Of 505 hospitalizations, it obtained 134 operations (Table 4.17). The proportion of admission with an operation was 0.26 (134/505). Appendicitis was the major illness that need operations (30 operations, 22.4%).

Table 4.17 Number of operations classified by type of operations

Type of operations	No. of operations (%)
Appendectomy	30 (22.4)
Ovary	13 (9.7)
Mastoidectomy	11 (8.2)
Bone	11 (8.2)
Cataract	9 (6.7)
Thyroidectomy	7 (5.2)
Herniorrhahy	6 (4.5)
Hemorrhoidectomy	5 (3.7)
Brain & Spinal	5 (3.7)
Breast	5 (3.7)
Miscellaneous	32 (24.0)
Total	134 (100.0)

2.2.5 Length of Stay (LOS) and hospital days)

The maximum LOS per admission was 91 days while the minimum LOS was 1 day. The average LOS per one admission was 10.14 ± 11.24 . The LOS was grouped into 7 categories: 1 – 5 days, 6 – 10 days, 11 – 15 days, 16 – 20 days, 21 – 25 days, 26 – 30 days and more than 30 days. There was 43.6% of hospital admissions which the LOS was between 1 - 5 days, 26.3% was between 6 – 10 days, 13.7%

was between 11 – 15 days, and 4.7% was longer than 30 days (Table 4.18). Of which 505 admission, the total hospital days was 5,073.

Table 4.18 Frequency distribution of number of insured admissions classified by LOS

Length of stay (days)	Number of insured admissions (%)
1 - 5	220 (43.6)
6 - 10	133 (26.3)
11 - 15	69 (13.7)
16 - 20	30 (5.9)
21 - 25	17 (3.4)
26 - 30	12 (2.4)
> 30	24 (4.7)
total	505 (100.0)

Table 4.19 Meidan LOS and hospital days classified by Consultation unit

Consultation unit	Median LOS (days)	Hospital days
Medicine	3.0	6
Surgery	8.0	28
Orthopedics	12.0	42
Obstetrics & Gynecology	5.0	50
ENT	6.0	59
Ophthalmology	5.5	61
Radiology	4.0	78

Table 4.20 Length of Stay (LOS) and hospital days classified by group of diseases

Group of diseases	LOS (days)		Hospital days
	Range	Median	
Drug Abuse/ Drug Allergy	2 - 4	3.0	6
More than 2 diseases	1 - 12	8.0	28
Mental and Behavioral Disorder	12 - 18	12.0	42
Ear and Mastoid Process	2 - 6	5.0	50
Skin	2 - 11	5.5	61
Respiratory System	3 - 17	4.0	78
Endocrine and Metabolic Diseases	3 - 12	9.0	88
Blood and Blood-forming Organs	1 - 16	4.0	90
Eye	1 - 13	5.0	136
Unclassified Symptoms e.g. fever, cough, dizziness	1 - 63	6.0	288
Neurological System	1 - 62	14.5	330
Infectious and Parasitic Diseases	1 - 91	6.0	366
Neoplasms	1 - 31	5.0	408
Digestive System	3 - 52	5.0	569
Accidents	2 - 87	6.0	596
Musculoskeletal and Connective Tissue	1 - 60	10.5	609
Circulatory System	2 - 60	8.0	619
Genitourinary System	2 - 30	10.0	709

The leading group of disease caused the median LOS longer than or equal 10 days were as followings : neurological system (14.5 days), mental and behavioral disease (12.0 days), musculoskeletal and connective tissue disease (10.5 days), and genitourinary system (10.0 days).(Table 4.20)

2.2.6 Admission Rate or Inpatient Service Utilization Rate

These indices can be represented into 2 figures:

2.2.6.1 Proportion of number of hospital admissions (by insured patients) to total number of registered insured at Chulalongkorn Hospital

The value of this figure

$$\begin{aligned}
 &= 505 \text{ admissions}/76,664 \text{ insured}/6 \text{ month} \\
 &= 0.00659 \text{ admissions/ insured}/6 \text{ month} \\
 &= 0.01317 \text{ admissions/insured}/\text{year} \\
 &= 13.17 \text{ admission}/1000 \text{ insured}/\text{year}
 \end{aligned}$$

2.2.6.2 Proportion of number of insured inpatients to total number of registered insured at Chulalongkorn Hospital

The value of this figure

$$\begin{aligned}
 &= 427 \text{ persons}/76,664 \text{ insured}/6 \text{ month} \\
 &= 0.00557 \text{ persons/insured}/6 \text{ month} \\
 &= 5.57 \text{ persons/insured}/6 \text{ month}
 \end{aligned}$$

Note : The total number of insured registered with Chulalongkorn Hospital was calculated from averaged the figure of the 6-month during study period.

Part 3. The information about medical care cost consumed by the insured patients.

3.1 Outpatient service

3.1.1 Type of medical care cost

Of 22,556 hospital visits, a total amount of medical care cost consumed by the insured outpatients was 7,641,879.25 baht. Of these, drugs was the major type of cost which accounted for 6,555,234.00 baht (85.78%), followed by X-ray and ultrasound procedures (564,672.30 baht, 7.38%), Laboratory tests (515,880.00 baht, 6.75%), EKG (4,396.00 baht, 0.06%), and medical supplies (2,326.95 baht, 0.03%) (Table 4.21).

Table 4.21 Amount and percentage of dispensed medical care classified by type of medical care

Type of medical care	Amount (%)
Drugs	6,555,234.00 (85.78)
X-ray and Ultrasound	564,042.30 (7.38)
Laboratory tests	515,880.00 (6.75)
Medical supplies	2,326.95 (0.03)
EKG	4,396 (0.06)
Total	7,641,879.25 (100.00)

3.1.2 Average medical cost per insured outpatient visit

The amount of average of medical cost per insured outpatient visit was calculated from the figure of total medical cost divided to total outpatient visits. From calculation, the value is $7,641,879.25/22,556 = 338.80$ baht/patient visit.(Table 4.22)

Table 4.22 Average medical cost per insured visit classified by type of medical care

Type of medical care	Amount	Average amount/visit
Drugs	6,555,234.00	290.62
Laboratory tests	515,880.00	22.87
X-ray & Ultrasound	564,042.30	25.01
Medical supplies	2,326.95	0.10
EKG	4,396.00	0.19
Total	7,641,879.25	338.80

3.1.3 Average medical cost per one insured

The amount of average of medical cost per one insured could be calculated from the 2 figures:

3.1.3.1) From total medical cost divided to total number of insured outpatients . The value is $7,641,879.25/8,707 = 877.67$ baht/insured/6 month (or $442.81 \times 2 = 1,755.34$ baht/insured/year).

3.1.3.2) From average medical cost per visit multiplied by average value of outpatient visits per one insured per year. The value is $338.80 \times 2.59 = 877.49$ baht/insured/6 month (or $877.49 \times 2 = 1,754.98$ baht/insured/year).

3.1.4 Medical cost and group of diseases

Table 4.23, shows the total amount of medical care cost classified by group of illness. These figures were accounted only from 21,503 visits which come to consult only 1 clinic. Health problems of the genitourinary system was rank the first high cost consumed, followed by circulatory system, endocrine and metabolic, musculoskeletal and connective tissue, and respiratory system.

Table 4.23 Amount of drugs, Medical supplies, Lab tests, X-ray/ultrasound, EKG, and Total cost in descending order by group of diseases

Group of Health Problems/Diseases	Drugs	Medical Supplies	Laboratory Tests	X-ray & Ultrasound	EKG	Total cost
Genitourinary System	917,790.00	-	32,760.28	67,239.64	528.00	1,018,317.92
Circulatory system	6,49395.00	-	280,086.90	29,336.32	858.00	959,676.22
Endocrine and Metabolic	668,842.00	-	48,526.89	23,631.41	396.00	741,396.30
Musculoskeletal and Connective Tissue	493,244.00	-	16,912.39	88,486.17	242.00	598,884.56
Respiratory System	476,334.00	-	3,341.38	11,152.53	132.00	490,959.91
Infectious and Parasitic Diseases	345,232.00	-	17,496.84	19,600.92	22.00	382,351.76
Skin	357,115.00	-	6,691.29	1,407.13	-	365,213.42
Digestive System	311,850.00	-	11,734.14	22,556.80	198.00	346,338.94
Neurological System	242,041.00	-	3,316.54	45,656.37	88.00	291,101.91
Neoplasms	129,592.00	-	16,000.94	120,911.22	154.00	266,658.16
Accidents	140,303.00	-	8,651.25	24,777.08	22.00	173,753.33
Eye	158,577.00	1,373.00	4,595.06	1,825.43	66.00	166,436.49
Unclassified Symptoms e.g. fever, cough, dizziness	73,400.00	-	5,876.78	12,448.78	330.00	92,055.56
Others	69,239.00	138.95	9,189.57	8,971.80	220.00	87,759.32
Mental and Behavioral	69,84.00	-	1,791.31	2,566.46	176.00	74,377.77
Ear and Mastoid Process	58,750.00	815.00	1,505.11	10,421.31	-	71,491.42
Blood and Blood-forming Organs	53,007.00	-	5,211.58	4,511.24	-	62,729.82
Drug Abuse/Drug Allergy	2,010.00	-	264.33	127.06	-	2,401.39
Total	5,216,565.00	2,326.95	473,952.58	495,627.67	3,432.00	6,191,904.20

3.1.5 An Average medical care cost per group of illness

An average medical care cost per visit by group of illness was accounted only from 21,503 visits (Table 4.24). Diseases of Genitourinary system ranked first in an average cost per visit (671.71 baht), followed by disease of Circulatory System (581.27 baht), Neoplasms (546.43 baht), Endocrine and metabolic disease (418.40 baht), and Neurological system (282.62 baht). The group of illness that cost the lowest amount per visit was problem from Drug Abuse/ Drug Allergy (63.19 baht).

Table 4.24 Average cost per visit in descending order classified by group of diseases

Group of health problems	Average cost/ visit
Genitourinary System	671.71
Circulatory System	581.27
Neoplasms	546.43
Endocrine and Metabolic Diseases	418.40
Neurological System	282.62
Infectious and Parasitic Diseases	274.68
Musculoskeletal and Connective Tissue	263.01
Digestive System	231.98
Skin	228.97
Accidents	194.57
Respiratory System	192.46
Blood and Blood-forming Organs	171.86
Eye	136.20
Ear and Mastoid Process	117.01
Others	115.93
Unclassified Symptoms e.g. fever, cough, dizziness	104.02
Mental and Behavioral Disorder	93.67
Drug Abuse / Drug Allergy	63.19

3.2 Inpatient service

3.2.1 Type of medical care cost

Table 4.25 shows different types of medical cost and total value. Of 505 hospital admissions, a total amount of medical care cost consumed by the insured patients was 3,324,336.47 baht. Of these, drugs was the major type of cost which accounted for 1,720,825.85 baht or 51.76%, followed by medical supplies (1,277,707.25 baht or 38.43%), X-ray procedures (197,611.21 baht or 5.95%), Laboratory test (126,542.16 baht or 3.81%), and EKG (1,650 baht or 0.05%).

Table 4.25 Total amount of medical cost classified by type of medical care

Type of medical care	Total Amount (%)
Drugs	1,720,825.85 (51.76)
Laboratory tests	126,542.16 (3.81)
Medical supplies	1,277,707.25 (38.43)
X-ray & ultrasound	197,611.21 (5.95)
EKG	1,650.00 (0.05)
Total	3,324,336.47 (100.00)

The total number of dispensed drugs, medical supplies, X-ray, Laboratory tests, and EKG was 1,434. Drugs was dispensed 471 times while laboratory tests, medical supplies, X-ray, and EKG was dispensed 345, 327, 216, and 75 times respectively.

3.2.2 Average medical care cost per one hospitalization

Of 505 hospital admissions, a total amount of medical care cost consumed by the insured patients was 3,324,336.47 baht. Then, the value of average medical care cost per one hospitalization was $= 3,324,336.47 / 505 = 6,582.85$ baht.

(Table 4.26).

Table 4.26 Average amount per admission classified by type of medical care

Type of medical care	Amount	Average amount/ admission
Drugs	1,720,825.85	3,407.58
Laboratory tests	126,542.16	250.58
Medical supplies	1,277,707.25	2,530.11
X-ray & ultrasound	197,611.21	391.31
EKG	1,650.00	3.27
Total	3,324,336.47	6,582.85

3.2.3 Average medical care cost per one insured inpatient

Since the average of medical care cost per one hospitalization was 6,582.85 baht and the mean value of admissions per one insured inpatients was 1.18, then the value of average medical care cost per one insured inpatient was $= 1.18 \times 6,582.85 = 7,767.76$ baht.

3.2.4 Medical care cost and group of illness

Table 4.27, shows the total amount of medical care cost classified by group of illness. Health problems of the circulatory system was rank the first high cost consumed which accounted almost 1 in 5 part (20%) of the total amount, followed by disease of musculoskeletal system and genitourinary system. Whereas, the problems of the most hospitalization; disease of digestive system, was rank the fourth (10.1%).

3.2.5 Average medical care cost per group of illness

The average medical care cost per group of illness shows in Table 4.28 as below. Diseases of Blood and Blood-forming Organ ranked first in an average cost per admission (16,753.83 baht), followed by disease of Circulatory System (11,844.10 baht), and Musculoskeletal and Connective Tissue (10,970.62 baht). The group of illness that cost the lowest amount per admission are problem from Ear and Mastoid Process (379.95 baht) and from Drug Allergy/ Drug Abuse (290.16 baht).

3.2.6 Medical care cost, total hospital days and LOS

Table 4.28 shows the value of average cost per hospital day classified by group of diseases. The result indicate that problem of Blood and blood-forming Organ was rank the first (3,350.79 baht), followed by disease of Circulatory system (1,071.52 baht), Neoplasms (811.60 baht), etc.

Table 4.27 Amount of drugs, Medical supplies, Lab tests, X-ray/ultrasound, EKG, and Total cost in descending order by group of diseases

Group of Health Problems/Diseases	Drugs	Medical Supplies	Laboratory Tests	X-ray & Ultrasound	EKG	Total cost
Circulatory system	182,702.40	5,890.45	18,682.91	15,531.53	462.00	663,269.29
Musculoskeletal and Connective Tissue	91,176.95	326,309.05	9,416.12	44,680.35	154.00	471,736.47
Accidents	136,284.75	239,993.25	8,900.79	39,143.66	22.00	424,344.45
Digestive System	254,772.20	38,056.20	24,973.00	17,597.76	264.00	335,663.16
Neoplasms	297,917.35	14,816.35	10,247.61	8,040.33	110.00	331,131.64
Blood and Blood-forming Organs	285,043.25	14,138.90	1,950.04	432.71	22.00	301,586.90
Infectious and Parasitic Diseases	205,119.45	14,008.85	19,836.50	8,657.41	44.00	247,666.21
Neurological System	63,957.40	64,709.65	5,564.49	33,390.99	44.00	167,666.53
Genitourinary System	85,754.80	51,751.40	12,692.82	10,147.36	264.00	160,610.38
Unclassified Symptoms e.g. fever, cough, dizziness	57,610.45	35,576.75	6,461.11	7,076.31	66.00	111,689.86
Respiratory System	21,717.50	4,255.95	2,100.81	6,508.24	22.00	34,604.50
Eye	9,803.90	15,622.15	476.18	-	44.00	25,946.23
Skin	10,330.05	2,763.35	1,788.38	361.78	44.00	15,287.56
More than 2 diseases	9,183.40	2,181.10	1,257.81	635.30	-	13,257.61
Endocrine and Metabolic	2,419.10	7,291.30	1,332.28	381.18	88.00	11,511.86
Ear and Mastoid Process	4,079.15	100.30	-	-	-	4,179.45
Mental and Behavioral	2,890.00	242.25	471.80	-	-	3,604.05
Drug Abuse/Drug Allergy	63.75	-	389.51	127.06	-	580.32
Total	1,720,825.85	1,277,707.25	126,542.16	197,611.21	1,650.00	3,324,336.47

Table 4.28 Median LOS, Hospital days, Average cost per hospital day and Average cost per admission classified by group of diseases

Group of health problems	Median LOS	Hospital days	Average cost per hospital day	Average cost per admission
Unclassified Symptoms e.g. fever, cough, dizziness	6.0	288	16.16	4,653.74
Ear and Mastoid Process	5.0	50	83.59	379.95
Mental and Behavioral Disorder	12.0	42	85.81	1,201.35
Drug Abuse/Drug Allergy	3.0	6	96.72	290.16
Endocrine and Metabolic Diseases	9.0	88	130.82	1,046.53
Eye	5.0	136	190.78	1,081.10
Genitourinary System	10.0	709	226.53	2,433.49
Skin	5.5	61	250.62	1,528.76
Accidents	6.0	596	402.67	5,714.13
Respiratory System	4.0	78	443.65	2,306.97
More than 2 diseases	8.0	28	473.49	2,651.52
Neurological System	14.5	330	508.08	9,314.81
Digestive System	5.0	569	589.92	4,535.99
Infectious and Parasitic Diseases	6.0	366	676.68	8,845.22
Musculoskeletal and Connective Tissue	10.5	609	774.61	10,970.62
Neoplasms	5.0	408	811.60	6,020.58
Circulatory System	8.0	619	1,071.52	11,844.10
Blood and Blood-forming Organs	4.0	90	3,350.97	16,753.83

Part 4 . Patient satisfaction with health service at Chulalongkorn Hospital

The objective of this part was to assess the insured patient satisfaction with hospital service at Chulalongkorn Hospital. Interviewing schedules were used for data collection from 252 insured patients who received medical service at Chulalongkorn Hospital during the study period (May - October 1997). All patients were selected as the sample of the study by random sampling technique.

The data regarding patient satisfaction with medical service was divided into 3 sections as follows:

Section 1 : Characteristics of insured patients

Section 2 : Level of patient satisfaction with hospital service

Section 3 : Additional data and suggestion for improving the hospital
service

Section 1 : General information of patients

During the study period (May - October 1997), 252 patients of insured who received medical service at Chulalongkorn Hospital were included in the study by using questionnaires interviewed by the researcher. Data of all 252 insured patients were completed. Most of them were the age of 25-54 (78%). The mean of age was 34 years. Most patients were female (58.9%). Among 40.9% of them, the education level was over senior secondary school and the monthly income was over 7,000 baht (61.3%). About 89.6% had past experience in medical service at CH longer than 1 year, and about 45.8% used to received service more than 5 times. Only 34.1% of them just had registered CH as main contractor less than 1 year. Most of them had lived and worked in Bangkok (79.5%, 92.3% respectively). All of this information are presented in Table 4.29.

Table 4.29 General characteristics of sample

General information	Percentage
Sex	
- male	41.1
- female	58.9
Age	
- 15-24 years	17.9
- 25-34 years	37.4
- 35-44 years	27.2
- 45-54 years	13.4
- over 55 years	4.1
Marital status	
- single	44.0
- married	47.2
- widow	2.8
- divorced	1.6
- separated	4.4
Education	
- non education	1.6
- primary education	22.1
- junior secondary education	20.9
- senior secondary education	14.5
- college and vocational education	18.4
- bachelor degree	20.1
- upper bachelor degree	2.4

Table 4.29 General characteristics of sample (continue)

General information	Percentage
Income (baht per month) - < 3,000 - 3,001 - 5,000 - 5,001 - 7,000 - 7,001 - 9,000 - 9,001 - 12,000 - 12,001 - 15,000 - > 15,001	1.2 16.3 21.2 15.9 12.7 10.2 22.5
Region of residence - Bangkok - province nearby Bangkok - others	79.5 12.7 7.8
Region of office - Bangkok - province nearby Bangkok - others	92.3 6.0 1.7
Experiences on Chulalongkorn Hospital service - had experience less than 1 year - had experience more than 1 year	10.4 89.6

Table 4.29 General characteristics of sample (continue)

General information	Percentage
Past experiences in Chulalongkorn Hospital - 0 times - 1-5 times - 6-10 times - 11-15 times - 16-20 times - > 20 times	0.5 53.7 29.8 2.0 8.0 6.0
Years with having previously selected Chulalongkorn Hospital as main contractor - < 1 year - 1 – 3 years - > 3 years	34.1 46.0 19.9
The most common place for seeking medical care - Chulalongkorn Hospital - Chulalongkorn Hospital and private hospital/clinic - Chulalongkorn Hospital and government hospital - government hospital - private hospital/clinic - government hospital and private hospital/clinic - others	53.1 6.5 2.0 6.1 30.6 0.8 0.8

Patients were asked about the main reason for using the service at CH. The response rate was 93.6% (N = 236). The findings showed that the major group (29%) got medical care from CH since initial contract between main contractor and their office and for save their money. Some of them (17.8%) used the service because of good service and confidence in doctors and quality of care. All the reasons for using the CH health service among the group who are currently used the service are showed in Table 4.30

Table 4.30 The reasons for using service at Chulalongkorn Hospital (N=236)

Reasons for using service at Chulalongkorn Hospital	Number of respondents
- contractual agreement and save their money	68 (29.0)
- confidence in doctors and quality of care	42 (17.8)
- good service	41 (17.4)
- continuity of treatment	37 (15.7)
- convenience for travelling	35 (14.8)
- try using service	6 (2.5)
- cleanliness of place	4 (1.7)
- having relatives in the hospital	3 (1.3)

Section 2 : Level of patient satisfaction

The patient satisfaction was assessed by interviewing the insured patients with regard to 5 aspects: waiting time, courtesy of hospital staffs, as well as medical information, service system and quality of care. The degree of overall satisfaction is classified into 5 levels : highly satisfaction, high satisfaction, fairly, low satisfaction and least satisfaction. The unit of measurement is the mean score of satisfaction and percentage of satisfied with the health care provided.

2.1 Patient satisfaction with waiting time

The mean score of patient satisfaction in waiting time was 2.79 (s.d. = 0.78). The percentage of patients who were not satisfied with waiting time was 37.1 %. Only 18.1 % of them were high satisfied with waiting time. (Table 4.31)

2.2 Patient satisfaction with courtesy of hospital staffs

The mean score of patient satisfaction in courtesy of hospital staffs was 3.61 (s.d. = 0.44). The percentage of patients who were high to highly satisfied with courtesy of hospital staffs was 52 %. (Table 4.31)

2.3 Patient satisfaction with information

The mean score of patient satisfaction in medical information was 3.70 (s.d. = 0.62). The percentage of patients who were high to highly satisfied with medical information was 67.8 %. (Table 4.31)

2.4 Patient satisfaction with step of services

The mean score of patient satisfaction in step of services was 3.80 (s.d. = 0.56). The percentage of patients who were high to highly satisfied with hospital service system was 73.3%. (Table 4.31)

2.5 Patient satisfaction with quality of treatment

The mean score of patient satisfaction in quality of treatment was 3.55 (s.d. = 0.59). The percentage of patients who were high to highly satisfied with quality of treatment was 54.6 %. (Table 4.31)

2.6 Patient satisfaction with registration service

The mean score of patient satisfaction in registration service was 3.53 (s.d. = 0.56). The percentage of patients who were high to highly satisfied with registration service was 54.7 %. (Table 4.31)

2.7 Patient satisfaction with nurse service

The mean score of patient satisfaction in nurse service was 3.64 (s.d. = 0.69). The percentage of patients who were high to highly satisfied with nurse service system was 63.8 %. (Table 4.29)

2.8 Patient satisfaction with doctor service

The mean score of patient satisfaction in doctor service was 3.42 (s.d. = 0.59). The percentage of patients who were high to highly satisfied with doctor service was 49 %. (Table 4.31)

2.9 Patient satisfaction with pharmacy service

The mean score of patient satisfaction in pharmacy service was 3.29 (s.d. = 0.60). The percentage of patients who were high to highly satisfied with pharmacy service was 32.4 %. (Table 4.31)

2.10 Patient satisfaction with laboratory service

The mean score of patient satisfaction in laboratory service was 3.41 (s.d. = 0.61). The percentage of patients who were high to highly satisfied with laboratory service was 36.4 %. (Table 4.31)

2.11 Patient satisfaction with overall hospital service

The overall degree of patient satisfaction with overall hospital service were studied. The mean score of patient satisfaction in overall hospital service was 3.50 (s.d. = 0.43). The percentage of patients who were high to highly satisfied with overall hospital service was 49.2 %. The degree of patient satisfaction with step of service was highest (Table 4.31). Most patients were fairly to high satisfied. Except the degree of patient satisfaction with waiting time and pharmacy service were lower than others.

The results of the study revealed that the satisfaction of patients towards Chulalongkorn hospital services was in high level (3.50 (s.d. = 0.43)), the rating of patient satisfaction in waiting time and pharmacy service was the lowest, and the rating of patient satisfaction in step of service was the highest. Most patients praised that the courtesy of hospital staffs, step of service and clarity of information were good. It showed that these are good point of the CH service.

Table 4.31 The minimum, maximum and mean score of patient satisfaction

Patient satisfaction score	Minimum	Maximum	Mean \pm S.D.
1. Waiting time	1.00	4.50	2.79 \pm 0.78
2. Courtesy of staffs	1.94	5.00	3.61 \pm 0.44
3. Clarity of information	1.00	5.00	3.70 \pm 0.62
4. Step of service	2.00	5.00	3.80 \pm 0.56
5. Quality of treatment	1.67	5.00	3.55 \pm 0.59
6. Registration	1.43	4.57	3.53 \pm 0.56
7. Nurse	1.00	5.00	3.64 \pm 0.69
8. Doctor	1.57	4.86	3.42 \pm 0.59
9. Pharmacy	1.00	4.67	3.29 \pm 0.60
10. Laboratory	1.50	5.00	3.41 \pm 0.61
Overall hospital service	1.88	4.56	3.50 \pm 0.43

Table 4.32 Percentage of insured patients with different levels of patient satisfaction by patient satisfaction factor

Patient satisfaction factors	Percentage of patients				
	Least	Low	Fairly	High	Highly
1. Waiting time	7.6	29.5	44.8	18.1	-
2. Courtesy of staffs	-	1.5	46.5	50.5	1.5
3. Clarity of information	0.4	2.5	29.3	60.7	7.1
4. Step of service	-	3.4	23.3	65.2	8.1
5. Quality of treatment	-	5.5	39.9	50.0	4.6

Table 4.33 Percentage of insured patients with different levels of patient satisfaction by service unit

Patient satisfaction with service unit	Percentage of patients				
	Least	Low	Fairly	High	Highly
1. Registration	-	5.1	40.2	52.1	2.6
2. Nurse	-	5.3	30.9	55.3	8.5
3. Doctor	-	7.3	43.7	47.4	1.6
4. Pharmacy	2.4	5.3	59.9	32.0	0.4
5. Laboratory	0.5	10.4	52.7	34.6	1.8

Table 4.34 The mean score of patient satisfaction by patient satisfaction factor

Patient satisfaction factors	Mean score of patient satisfaction ($\bar{X} \pm S.D.$)
1. Waiting time	2.79 ± 0.78
2. Courtesy of staffs	3.61 ± 0.44
3. Clarity of information	3.70 ± 0.62
4. Step of service	3.80 ± 0.56
5. Quality of treatment	3.55 ± 0.59

Table 4.35 The mean score of patient satisfaction by service unit

Patient satisfaction with service of each service unit	Mean score of patient satisfaction ($\bar{X} \pm S.D.$)
1. Registration	3.53 ± 0.56
2. Nurse	3.64 ± 0.69
3. Doctor	3.42 ± 0.59
4. Pharmacy	3.29 ± 0.60
5. Laboratory	3.41 ± 0.61

Table 4.36 Percentage of insured patients with different levels of patient satisfaction regard to overall hospital service

Level of patient satisfaction	Percentage of patients
Least	-
Low	1.1
Fairly	49.7
High	48.7
Highly	0.5
Total	100.0

Section 3 : Additional data about opinion regarding hospital services

3.1 Intention to re-visit CH service by the insured patients

About the intention to re-visit the CH service was asked to the insured patients. As result (Table 4.37), most of them (76.6%) were willing to use the CH service again. There was 5.6% that refused to use in the next time, 16.5% of them can not make decision and the rest 1.6% had no answer.

The reasons for re-visit (Table 4.38), are as follow:-

- 21.3 % will continue because they make sure the quality of physicians, drugs and equipments.
- 21 % will continue because they satisfied with the treatment and need continuity.
- 19.9 % will continue because of the satisfication of the medical service

- 11.1 % will continue because it's convenience for travelling from their residences and offices

Among the total samples (N = 252), 89.6% of them had experiences in using health service at CH and only 76.6% of them have attention to reuse in the future. The proportion of the insured who have an attention to come for reuse medical service was about 0.77.

This finding found that one of reasons for decision was having chronic disease and needed continuously treatment.

Among the insured patients who strongly refuse to use the service again (14 cases, 5.6%), the main reasons were because of the long waiting time, dissatisfied with service, bad speaking of hospital staffs and lacking of knowledge or information about service system.

Of 41 cases (16.3%) who can not make decision, the reasons of whether to re-visit or not were they did not sure that will move the residence or office, difficulty transportation, long distance from their residences and offices, and low probability of sickness.(Table 4.39)

3.2 The main problems and obstacles for using the service

The main problems and obstacles for using medical services at Chulalongkorn Hospital were long waiting time, poor courtesy of hospital staffs, and inappropriate organization of hospital services. Some difficulties mentioned by patients included the limitation of benefit in medical care and no network or overtime service. (Table 4.40)

3.3 Suggestion for improving the service

Patients were interviewed about their requirement in improving service. Reducing the waiting time was the first requirement, following by physicians should pay more attention, the health providers should have more service mind or willingness to service, providing enough hospital beds to the patients, and supplying private clinics into the contracted networks. Another aspect which needs to improve were complexity of the service system and there should be the placard to show the step of service. About the service period, the overtime service should be promoted since some patients did not conveniently attend hospital at 8.30 – 16.30 hr.

Health service satisfaction of the insured is useful information for the market/health care providers as it is an ultimate outcome of the delivery of the health care services and it is also the most important factor or predictor of health service utilization in the future too. It is therefore, suggest from the study that CH should improve their quality of services to effectively create positive image and patient satisfaction.

Table 4.37 Percentage of sample who has intention to reuse service at CH Hospital

Intention of patients whether come to reuse service at Chulalongkorn Hospital	Percentage of patients
Sure	76.6
Not sure	5.6
Could not specify	16.3
No answer	1.5
Total	100.0

Table 4.38 Percentage of patients with reasons for re-visit the service at Chulalongkorn Hospital (N = 216)

Reasons for re-visit the service at CH	Percentage of patients
Good treatment by doctors with well equipment and good drugs	21.3
Need continuity of care (have chronic disease)	21.0
Good service and courtesy of officers	19.9
Convenience for travelling	11.1
Save their money	8.3
Cleanliness of place	3.2
Knowledge about sequence of service system	2.8
Not specify	12.4
Total	100.0

Table 4.39 Percentage of patients with reasons for can not make decision whether to reuse the service at Chulalongkorn Hospital (N = 44)

Reasons for can not make decision whether to reuse the service at CH	Percentage of patients
Move residence and/or office	27.3
Long waiting time	22.7
Long distance for travelling	20.5
Low probability of illness	6.8
Not good service and courtesy of officers	6.8
Try using service to other places	2.3
No network and overtime service	2.3
Not specify	11.3
Total	100.0

Table 4.40 Percentage distribution of the problems and obstacles for using medical service at Chulalongkorn Hospital (N = 134)

List of problems/obstacles	Percentage of patients
Long waiting time	59.0
Poor of courtesy of officers	6.8
Inadequate officers	5.2
Doctors and officers have no attention to service	5.2
Limit of drugs given	5.2
Inadequate of hospital beds and equipments	4.5
Lack of information about the area/step of service	4.5
Inappropriate organization of hospital service	3.7
No network, overtime service	3.0
Inadequate of carpark	1.5
No air-conditioner	0.7
Poor quality of food	0.7
Total	100.0

Table 4.41 Percentage of patients with reasons make patients dissatisfied (N = 14)

Reasons for not re-visit the service at CH	Percentage of patients
Long waiting time	50.0
Long distance for travelling	25.0
Not good service and courtesy of officers	12.5
No network and overtime service	6.3
Not specify	6.2
Total	100.0

Table 4.42 Percentage distribution of suggestion from the patients who using medical service at Chulalongkorn Hospital (N = 141)

Lists of suggestion	Percentage of patients
Improve waiting time	30.5
Increase the number of officers	13.5
Improve the courtesy of officers	12.8
Organized the service system	11.3
Increase the information given	8.5
Doctors should give more examination to the patients	5.7
Increase the number of examination room, pharmacy room and hospital beds, car-park	5.7
Providing network or overtime service	4.3
Officers should take more attention on giving service	3.5
Providing good quality of drugs	2.1
Improving quality of food	2.1
Total	100.0