



CHAPTER IV

RESULTS

This study aimed to examine factors related to utilization behaviors of non-insulin dependent diabetes mellitus patients at Ban Khaoro health center, Thung Song District, Nakhon - Si - Thammarat Province. The data were collected by individual interviews at the health center for the diabetics receiving health care services and a visit at their own houses for the ones refusing health care services at the health center. The data was collected from 1 January to 31 March 2003. The total population of 84 people was divided into 2 groups:

1. 51 diabetics receiving health care services at the health center
2. 33 diabetics refusing health care services at the health center
 - 18 diabetics receiving health care services at other public health centers
 - 5 diabetics having discontinuous treatment
 - 10 diabetics refusing any types of treatment

The findings would be presented as follows:

Part 1: Fundamental factors involved sexes, ages, marital status, occupations, income, educational qualification, illness records and diabetes treatment, and complicating diseases. The data were expressed as number and percentage, maximum and minimum scores, means and standard deviation.

Part 2: Related factors dealt with knowledge, health perception, and satisfaction on services. The data were calculated as minimum and maximum scores, number and percentage, means and standard deviation.

Part 3: Related factors included facilities, health security assurance, and reasons for accessing or refusing health care services at the health center.

Part 4: Relationships of fundamental factors, factors related to facilities, distance, time, and convenience in health service access between the diabetics receiving health care services and those refusing health care services at the health center were calculated by Chi-square, and Fisher Exact Test

Differences of self-care of the diabetics, health perception, social support and service satisfaction between the two sample groups were calculated by Mann Whitney U Test.

Part 5: Problems and recommendations regarding to the services of the health center staff and the doctors, the cleanness of the health center and other factors related to services were presented.

Table 4.1: Number and percentage of population characteristics

Population characteristics		those receiving		Those refusing		Total	
		services at the health center (N=51)		services at the health center (N=33)		(N = 84)	
		No.	Percentage	No.	percentage	No.	Percentage
Ages (years)	40-59	21	41.18	12	36.36	33	39.28
	60-69	30	58.82	12	36.36	42	50.00
	more than or equivalent 70	0	0	9	27.28	9	10.72
Those receiving services at the health center Mean = 59.19 Max = 69 Min = 40 SD = 6.64							
Those refusing services at the health center Mean = 62.24 Max = 78 Min = 40 SD = 9.13							
Sex	Male	14	27.45	18	54.54	32	38.09
	Female	37	72.55	15	45.46	52	61.91
marital status	Married	48	94.12	23	69.69	71	84.52
	Widow	3	5.88	10	30.31	13	15.48
Occupations	Farmers	40	78.43	14	42.43	54	64.28
	Sellers	2	3.92	4	12.12	6	7.14
	Officials	0	0	5	15.15	5	5.95
	Workers	9	17.65	0	0	9	10.72
	Housekeepers	0	0	10	30.30	10	11.91
income (bath)	less than2,000- 3,000	7	13.72	7	21.21	14	16.67
	3,001-4,000	31	60.78	12	36.37	43	51.19
	4001,5000	11	21.58	4	12.12	15	17.85
	more than5,000	2	3.92	10	30.30	12	14.29
those receiving services at the health center Median = 3,600 Max = 8,000 Min = 2,200 SD = 951.77							
those refusing services at the health center Median = 4,000 Max = 7,800 Min = 1,580 SD = 1711.00							
Educational qualification	Illiterate	0	0	3	9.09	3	3.57
	primary (grades1-4)	49	96.07	25	75.75	74	88.09
	secondary or vocational certificate	2	3.93	2	6.07	4	4.77
	diploma or higher vocational certificate	0	0	3	9.09	3	3.57

Table 4.1: (Cont.) Number and percentage of population characteristics

Population characteristics		those receiving		Those refusing		Total	
		services at the health center (N=51)		services at the health center (N=33)		(N = 84)	
		No.	Percentage	No.	percentage	No.	Percentage
Duration of being diabetics (years)	1-5 years	2	3.92	1	3.03	3	3.57
	more than 5-10	48	94.12	24	72.73	72	58.72
	more than 10	1	1.96	8	24.24	9	10.71
Those receiving services at the health center Mean = 7.490 SD = 1.890 Max = 14 Min = 1							
Those refusing services at the health center Mean = 8.578 SD = 2.646 Max = 14 Min = 1							
Complicating diseases	Yes	36	70.58	13	39.39	49	58.33
	No	15	29.42	20	60.61	36	41.67
	poor eyesight's	4	11.12	1	7.71	5	10.20
	wounds, blisters	0	0	1	7.68	1	2.05
	hypertension	11	30.55	5	38.46	16	32.65
	numbs at the edges of feet and fingers	21	58.33	6	46.15	27	55.10
Methods of treatment	Tablets	47	92.16	18	54.55	65	77.39
	herbal medicines	0	0	5	15.15	5	5.95
	herbal medicines and tablets	4	7.84	0	0	4	4.76
	no treatment	0	0	10	30.30	10	11.90

Part 1: Fundamental Factors Involved

- **Ages.** The ages of most of the samples (50.00%) ranged from 60-69 years old. The minimum ages of the diabetics receiving health services at the health center were 40 years old while the maximum was 69 years old, and the average was 59.19 years old. For the diabetics refusing health care services, the maximum age was 40 years old whereas the maximum was 78 years old and the average age was 62.24 years

old. A number of the diabetics refusing health services at the health care (27.27%) were older than 70 years old.

- **Sex.** Most of the samples receiving health care services at the health center were females (72.55%, 27.45%). In contrast, most of the diabetics refusing health services at the health center were males (54.54%).

- **Marital Status.** Most of all sample groups were married (84.52%). For the diabetics receiving the health care services at the health center, most them were married (94.12%), followed by widows (5.88%). Similarly, most of the diabetics refusing health services at the health care center were married (69.69%), followed by widow (30.31%).

- **Occupation.** Most of the samples (64.28%) were farmers. For the samples receiving health care services at the health center, most of them were farmers (78.43%), followed by workers (17.65%), which was similar to the samples refusing health services that most were farmers (42.43%), followed by housekeepers (30.30%) and governmental officials (15.15%).

- **Income.** Overall, both groups of samples earned about 3,001-4,000 bath (51.19%). The average income of the group receiving health services at the health center was approximately 3,833 bath, the maximum was 8,000 bath and the minimum 2,200 bath. For the ones refusing health services at the health center, the average income was 4,252 bath; the maximum was 7,800 bath and the minimum 1,580 bath.

- **Educational Qualification.** Overall, most of the samples (88.09%) finished the primary level. Both samples receiving and refusing health services at the health center finished the primary levels, i.e. 96.07% and 75.75%, respectively. The highest educational qualification for the samples refusing health services at the health center was diploma and higher vocational certificate levels (3.57%) while for those receiving health services was secondary and vocational certificate levels (3.39%).

- **Duration of being diabetics.** Overall, most of both sample groups have been sick of diabetics for more than 5-10 years (85.72%). About 24.24% of the samples refusing health services at the health center have been sick of diabetes for more than 10 years; the average time was 8.57 years, the maximum period was 14 years and the minimum 1 year. For the samples receiving health services at the health center, the average time for being diabetics was 7.4 years with the maximum period 14 years and minimum period 1 year.

- **Diabetes family records.** All of the samples in this study had the closed relatives being diabetics (100.00%)

- **Complicating diseases diagnosed by the doctor.** Both sample groups showed complicating symptoms of diabetes (58.33%). Most of the samples receiving health services at the health center (70.58%) suffered with complicating symptoms, and most of the symptoms observed (58.33%) were numbs at the edges of fingers and feet, followed by hypertension (30.55%), and poor eye sights (11.12%). For the samples refusing the health services at the health center, about 39.39% showed complicating diseases. Most of the symptoms found were numbs at the edges of fingers and feet (46.15%), followed by hypertension (38.46%).

- **Diabetes Treatment.** Most of the samples receiving health services at the health center (92.16%) received treatment in forms of tablets, followed by combination treatment of herbal medicines and tablets (7.84%). For the ones refusing health services at the health center, most received treatment by taking tablets (54.55%), followed by the rejection of all forms of treatment (30.30%).

Part 2: Related Factors Dealt with Knowledge

2.1 Knowledge of the diabetics about self-care

2.1.1 Scores on knowledge about self-care of the diabetics, by items

Table 4.2: Number and percentage of knowledge about self-care for the diabetes

Knowledge about the diabetics	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)		Total (N=84)	
	No.	Percentage	No.	Percentage	No.	Percentage
Principles in diabetes control	35	68.62	21	63.63	56	66.66
Advantages of diet control, particularly rice, starch and sugar	42	82.35	28	84.84	70	83.33
Complicating diseases	41	80.39	16	48.48	57	67.85
Foot care	36	70.58	20	60.60	56	66.66
Advantages of Exercises	29	56.86	15	45.45	44	52.38
Quality of the tablets for controlling blood glucose	36	70.58	26	78.78	62	73.80
Consequences of discontinuous tablet treatment	39	76.46	17	51.55	56	66.66

Those receiving services at health center Min = 3 items, Max = 7 items, \bar{x} = 5.05. S.D. = 0.92

Those refusing services at health center Min = 3 items, Max = 6 items, \bar{x} = 4.24. S.D. = 1.09

Table 4.2 showed that the diabetics receiving health services at the health center had the highest scores in advantages of diet controls (82.35%), followed by complicating diseases (80.39%) and consequences of discontinuous tablet taking (76.46%). The lowest scores were obtained from advantages of exercises (56.86%).

For the diabetics refusing health services at the health center, the highest scores were found in the knowledge about advantages of diet control (84.84%), followed by quality of the tablets (78.78%). The lowest scores were obtained from the knowledge about advantages of exercises (45.45%).

2.1.2 Overall knowledge about self-care of the diabetics

Table 4.3: Number and Percentage levels of knowledge about self-care of the diabetics

Levels of knowledge	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)		Total (N=84)	
	No.	Percentage	No.	percentage	No.	Percentage
	High	19	37.26	5	15.15	24
Medium	20	39.22	9	27.28	29	34.52
Low	12	23.52	19	57.57	31	36.90

Table 2.3 showed three levels of knowledge about self-care of the diabetics. Most of the diabetics receiving health services at the health center had the knowledge about self-care at the medium level (39.22%), followed by at the high level (37.26%) and at the low level (23.52%).

For the diabetics refusing health services at the health center, most showed the knowledge about self-care at the low level (57.59%), followed by at the medium level (29.28%) and at the high level (15.15%). It was noted that the number of the diabetics receiving health services and having the knowledge about self-care at the high and medium levels were higher than of those refusing health services at the health center.

In overall, most diabetics have knowledge about self-care at the low level (36.90%), followed by at the medium level (34.52%).

2.2 Information on Health Perception of the Non-insulin Dependent

Diabetics

2.2.1 Scores of health perception, by items

Table 4.4: Number and percentage of scores on health perception of the diabetics

Health perception	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)		Total (N=84)	
	No.	percentage	No.	percentage	No.	Percentage
Risk perception on complicating diabetes						
1. The diabetics can have wounds or blisters easily if the blood glucose level is elevated.	27	52.94	16	48.48	43	51.1
2. It is easier for the diabetics to have poor eyesight or cataract.	26	50.98	15	48.38	41	48.8
3. The diabetics with wounds should go to see the doctor for treatment.	28	54.90	15	48.38	43	51.1
4. The diabetics can have numbs at the edges of fingers and feet.	35	68.62	22	66.66	57	67.8
5. The diabetics are likely to have heart disease.	19	37.25	10	30.30	29	34.5
6. The diabetics are likely to have hypertension.	29	56.86	16	48.48	45	53.5
Severity perception of diabetes and its complicating diabetes						
7. The symptoms of the diabetes will be more severe if the blood glucose level is elevated.	28	54.90	18	54.54	46	54.7
8. The complicating diseases are unlikely to take place if there is a good control of blood glucose.	30	58.82	14	42.42	44	52.3
9. The diabetics can control their blood glucose levels if they follow the doctor's advice strictly and have regular examination.	32	62.74	11	33.33	43	51.1
10. The diabetes has no effect on their normal life.	23	45.90	24	72.72	47	55.9
11. The diabetics can be unconscious if their blood glucose levels are elevated or below the normal level.	31	60.78	19	57.57	50	59.5

Table 4.4: (Cont.) Number and percentage of scores on health perception of the diabetics

Health perception	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)		Total (N=84)	
	No.	percentage	No.	percentage	No.	Percentage
Beneficial perception of health service access						
12 Advantages of seeing doctors regularly are body examination and continuous drug treatment.	33	64.70	13	39.39	44	53.2
13 Discontinuous drug treatment results in the ineffective control of blood glucose levels.	34	66.66	19	57.57	53	63.0
14 The diabetes cannot be cured but can be controlled	28	54.90	14	42.42	42	5
15 The diabetics will receive the results of their blood glucose examinations when seeing the doctor.	27	52.94	20	60.60	47	55.9
Barrier perception in health service access						
16 It takes a long time waiting for the Doctor	14	27.45	17	51.51	31	36.9
17 Enough information about the Appointment such as date, time and place is given	39	76.47	18	54.54	57	67.8
18 Jobs or occupations are important Factors affecting the punctual Appointment.	3	5.88	20	60.60	23	27.3
19 It is inconvenient to travel to the Health center	3	5.88	20	60.60	23	27.3
20 No family members are available to accompany you to the health center.	12	23.52	18	54.54	30	35.7
Average total scores on health perception						
Those receiving services at health center						
—						
$\bar{x} = 11.82$ S.D. = 2.40						
Those refusing services at health center						
—						
$\bar{x} = 10.84$ S.D. = 1.92						

From Table 4.4, when considered item by item, it was found as follows:

- Risk perception on complicating diabetes

The highest perception scores for both sample groups were found in the item that the diabetes can easily cause numbs at the edges of fingers and feet (38.62%, 66.66%) and the lowest perception scores were obtained from the item that the diabetics are likely to have heart disease (37.25%, 30.30%).

- Severity perception of the diabetes and complicating diabetes

For the diabetics receiving health services at the health center, the highest perception score (62.74%) was found in the item asking whether the diabetics know that their blood glucose level can be controlled if they go to see the doctor regularly. The lowest score (45.09%) was the one concerning the diabetes had no effect on their normal life.

The highest perception score of the diabetics refusing health services at the health center was found in the item that the diabetes had no effect on their normal life (72.72%). The lowest score (45.09%) was the one indicating that following the doctor's advice and seeing doctor regularly can help controlling the blood glucose levels (33.33%).

- Beneficial perception on receiving health services

The highest perception score for the diabetics receiving health services at the health center was the item that taking the tablets discontinuously can cause ineffective blood glucose control (66.66%). The lowest score was found in the item that

seeing the doctor regularly according to the appointment can help controlling their blood glucose levels (52.94%).

For the diabetics refusing health services at the health center, the highest perception score was obtained from the item that seeing the doctor regularly according to the appointment can help controlling their blood glucose levels (60.60%). The lowest score (39.39%) was the item that advantages of seeing doctors regularly are regular blood examinations and continuous drug taking.

2.2.2 Health perception of the diabetics by items

Table 4.5: Average scores of health perception in each aspect

Overall Aspects of Health perception	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)	
	\bar{x}	S.D.	\bar{x}	S.D.
Risk perception on complicating diabetes	3.21	0.90	3.06	0.55
Severity perception of diabetes and its complicating diabetes	2.90	0.80	2.60	0.89
Beneficial perception of health service accessing	2.49	0.73	2.09	0.72

Table 4.5 showed that the two sample groups had the highest average score on health perception in risk perception on complicating diabetes ($\bar{x} = 3.21, 3.06$) and the lowest average score in beneficial perception of service receiving ($\bar{x} = 2.60, 2.09$). When considered in detail, it was found as follows:

Risk perception on complicating diseases. The average score of the diabetics receiving health services at the health center was higher than of those refusing health services at the health center ($\bar{x} = 3.21, 3.06$).

Severity perception on the diabetes and its complicating diseases. The average score of the diabetics receiving health services at the health center was higher than of those refusing health services at the health center ($\bar{x} = 2.90, 2.60$).

Beneficial perception on health service at the health center. The average beneficial perception scores of the diabetics receiving health services at the health center were higher than of those refusing health services at the health center in all aspects ($\bar{x} = 2.46, 2.09$).

2.2.3 Overall levels of health perception of the diabetics

Table 4.6: Number and percentage of levels of health perception of the diabetics

Levels of Health perception	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)		Total (N=84)	
	No.	Percentage	No.	Percentage	No.	Percentage
	High	1	1.96	0	0	1
Medium	26	50.98	9	27.27	35	41.66
Low	24	47.06	24	72.73	48	57.15

From Table 6, it revealed that most of the diabetics receiving health services at the health center (50.98%) had the health perception at the medium level, followed by the low level (47.06%) and at the high level (1.96%), respectively.

For the diabetics refusing health services at the health center, most (72.73%) had the health perception at the low level, followed by at the medium level (27.27%). It can be clearly seen that there were a higher number of the diabetics receiving health services at the health center who had the health perception at the high and medium levels compared to those refusing health services at the health center.

In overall, most of the samples had the health perception at the low level (57.15%), followed by at the medium level (41.66%), and at the high level (1.19%), respectively.

2.3 Social Support for the Diabetics

2.3.1 Scores of social support by items with two sample groups shown.

Table 4.7: Number and Percentage of social support scores of the diabetics

Social Support	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)		Total (N=84)	
	No.	Percentage	No.	Percentage	No.	Percentage
Encouragement to receive health services						
1. Your family members always encourage you to see the doctor promptly.	45	88.23	14	42.42	59	70.23
2. Your family member will accompany you to the health center.	25	49.01	15	45.45	40	47.61
3. You get convenient and fast services at the health center	29	56.86	17	51.51	46	54.76
Resources						
4. You get financial support on health expenses from your family members.	36	70.58	22	66.66	58	69.04
5. Your family members help you to do the housework so that you can have time to see the doctor regularly.	21	41.17	12	36.36	33	39.28
Information						
6. The doctor makes an appointment for the next meeting and when you have any health problem you can ask the doctor.	36	70.58	22	66.66	58	69.04
7. You get the suggestions about self-care of diabetes from the health center staff.	26	50.98	18	75.75	44	52.38
8. Your family members provide the information about the diabetes for you.	21	41.17	13	39.39	34	40.47
Positive reinforcement						
9. The health center staff always provide you the positive reinforcement by informal conversation about the diabetes.	39	76.47	22	66.66	61	72.61
Average total scores on social support						
Those receiving services at health center $\bar{x} = 5.49$ S.D. = 0.70						
Those refusing services at health center $\bar{x} = 5.45$ S.D. = 0.71						

Table 4.7 revealed that:

- Encouragement to receive health services

The highest score for the diabetics receiving health services at the health center was found in the item that your family members always encourage you to receive health services promptly (88.23%). The lowest score was obtained from the item that your family members always accompany you to see the doctor (49.01%).

For those refusing health services at the health center, the highest score was found in the item concerning the convenience of accessing services (51.51%). The lowest score was obtained in the item that the family members always encourage the diabetics to see the doctor promptly (42.42%).

- Resources

The highest score of the resource support for the diabetics receiving health services at the health center was found in the item that the diabetics get the financial support in terms of treatment expenses from your family members (70.58%). The lowest score was obtained from the item that your family members help you to do the housework so that you can have time to see the doctor regularly (41.17%).

For those refusing health services at the health center, the highest score was obtained in the item that the diabetics get the financial support in terms of treatment expenses from your family members (66.66%). The lowest score was obtained from the item that your family members help you to do the housework so that you can have time to see the doctor regularly (36.36%).

- Information

The highest score of the information support for the diabetics receiving health services at the health center was found in the item that the doctor will make an appointment for the next meeting (70.58%). The lowest score was obtained from the item that your family members provide the diabetes information for you (41.17%). For those refusing health services at the health center, the highest score was obtained in the item that the diabetics get the suggestions about self-care on the diabetes from the health center staff (75.75%). The lowest score was obtained from the item that their family members provide the diabetes information for them (39.39%).

- Positive Reinforcement

The higher score of the positive reinforcement (informal conversation) was found for the diabetics receiving health services at the health center compared to of those refusing health services at the health center (74.50% vs. 66.66%).

2.3.2 Social Support for the diabetics, by items

Table 4.8 revealed that the highest average total score of social support for the diabetics receiving health services at the health center was the support to encourage the diabetics to receive health services ($\bar{x} = 1.80$) and the lowest score ($\bar{x} = 0.75$) was the information support.

Table 4.8: Average total scores of social support for the diabetics

Social Support	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)	
	\bar{x}	S.D.	\bar{x}	S.D.
1. Support to encourage the diabetics to receive health services	1.86	0.49	1.69	0.52
2. Resource support	1.11	0.47	1.90	0.38
3. Information support	0.75	0.44	0.64	0.41
4. Positive reinforcement	1.76	0.55	1.21	0.48

For those refusing health services at the health center, the highest average total score in this area was obtained from the resource support ($\bar{x} = 1.90$) and the lowest was the information support ($\bar{x} = 0.64$)

In short, the diabetics receiving health services at the health center had the average total scores regarding to social support higher than those refusing health services at the health center in almost areas except the resource support.

2.3.3 Overall levels of social support

Table 4.9: Number and percentage of levels of social support of the diabetics

Levels of Social Support	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)		Total (N=84)	
	No.	percentage	No.	Percentage	No.	Percentage
	Medium	28	54.90	17	51.51	45
Low	23	45.10	19	48.49	39	46.42

Table 4.9 presented the number and percentages of scores on levels of social support for the diabetics at three levels; high, medium and low. As can be seen, most of the diabetics receiving health services at the health center got the social support at the medium level (54.90%), followed by a the low level (45.10%). Similarly, most of those refusing health services at the health center got social support at the medium level (51.51%), followed by at the low level (48.49%). However, the number of the diabetics receiving health services at the health center with the social support at the medium and low levels were higher than of those refusing health services at the health center. Overall, most of the samples got social support at the medium level (53.57%), followed by at the low level (46.42%).

Table 4.10: Percentage of satisfactory levels of the diabetics on health services at the health center by items

Satisfaction by items (all aspects)	Levels of satisfaction of those receiving health services at the health center					Means	Levels of satisfaction of those refusing health services at the health center					Means
	N = 51						N = 33					
	1	2	3	4	5		1	2	3	4	5	
1. hospitality of the health center staff	3.9	0	3.9	49.0	43.2	4.27	9.1	30.3	39.4	18.2	3.0	2.75
2. doctor's examinations	0	33.4	49.0	17.6	0	2.84	9.1	36.4	54.5	0	0	2.45
3. cheaper expenses	0	0	13.7	62.7	23.6	4.09	0	27.3	51.5	21.2	0	2.93
4. service hours from 07.00-12.00 a.m.	23.5	47.1	25.5	3.9	0	2.09	0	27.3	51.5	21.2	0	1.90
5. quick service	0	2.0	3.9	52.9	41.2	4.33	0	18.2	33.3	33.3	15.2	3.95
6. one-month appointment	0	47.1	45.1	7.8	0	2.60	24.2	54.5	21.2	0	0	1.96
7. knowledge of the health center staff	0	0	31.4	43.1	25.5	3.94	0	15.2	33.3	39.4	12.1	3.48
8. quality of drugs for the diabetes treatment	0	11.8	49.0	33.4	5.9	3.33	9.1	36.4	42.4	12.1	0	2.57
9. cleanness of the health center	19.6	43.1	33.4	3.9	0	2.21	0	27.3	51.5	21.2	0	2.93
Total												

$$\bar{x} = 3.29$$

$$X = 2.71$$

1 = least satisfaction, 2 = little satisfaction, 3 = fair satisfaction, 4 = high satisfaction, 5 = most satisfaction

2.4.1 Percentages of satisfactory levels of the diabetics on health services at the health center

The levels of satisfaction on the services of the health center were presented in Table 4.10 They were calculated from the average total scores of all samples.

The average total score for the diabetics receiving health services at the health center was at $\bar{x} = 3.29$ with the highest average total score in quick services ($\bar{x} = 4.33$), followed by hospitality of the health center staff ($\bar{x} = 4.27$), cheaper expenses ($\bar{x} = 4.09$), knowledge generation of the health center staff ($\bar{x} = 3.94$), quality of drugs for the diabetes treatment ($\bar{x} = 3.33$), doctor's examinations ($\bar{x} = 2.84$), one-month appointment ($\bar{x} = 2.60$), and cleanness of the health center ($\bar{x} = 2.21$), respectively. The lowest average total score was observed in the aspect of service hours ($\bar{x} = 2.09$).

For those refusing health services at the health center, the average total score was $\bar{x} = 2.71$ with the highest average total score in quick service ($\bar{x} = 3.95$), followed by knowledge generation of the health center staff ($\bar{x} = 3.48$), cheaper expenses, cleanness of the health center ($\bar{x} = 2.93$), hospitality of the health center staff ($\bar{x} = 2.75$), quality of drugs for the diabetes treatment ($\bar{x} = 2.57$), doctor's examination ($\bar{x} = 2.45$), one-month examination ($\bar{x} = 1.96$). The lowest average total score was found in service hours ($\bar{x} = 1.90$).

2.4.2 Overall satisfaction levels of the diabetics

Table 4.11: Number and percentage of level of satisfaction of the diabetics

Levels of Satisfaction	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)		Total (N=84)	
	No.	Percentage	No.	Percentage	No.	Percentage
	High	41	80.39	0	0	41
Medium	8	15.68	26	78.78	34	40.48
Low	2	3.93	7	21.22	9	10.71

Table 4.11 showed that most of the diabetics receiving health services at the health center were satisfied with the services at the high level (80.39%), followed by at the medium level (15.68%) and at the low level (3.93%).

For those refusing health services at the health center, most were satisfied with the services at the medium level (78.78%), followed by at the low level (21.22%).

In overall, most of the samples (48.81%) were satisfied with the health services at the high level, followed by at the medium level (40.48%) and at the low level (10.71%).

Part 3: Data Analysis on Factors Concerning Service Accessibility

3.1 Information on facilities influencing service accessibility

Table 4.12: Number and percentage of facility factors and service access

Facilities	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)		Total (N=84)	
	No.	percentage	No.	percentage	No.	Percentage
	Distance from home to the health center					
Less than 0-5 km	35	68.63	10	30.31	45	53.57
More than 5-10 km	16	31.37	23	69.69	39	46.43
	$\bar{x} = 2.20$ S.D. = 1.366		$\bar{x} = 4.81$ S.D. = 1.465			
Time taken from home to the health center						
1-15 min	38	74.50	11	33.33	49	58.34
more than 15-30 min	13	25.50	22	66.67	35	41.66
	$\bar{x} = 10.61$ S.D. = 6.456		$\bar{x} = 22.52$ S.D. = 9.090			
Convenience in travelling to the health center						
- convenience	50	98.03	13	39.39	63	75.00
- inconvenience	1	1.97	20	60.61	21	25.00
Total	51	100.00	33	100.00	84	100.00

Percentages of the samples compared by distance, time and convenience of travelling to the health center were compared in Table 4.12.

- Comparison of percentages on distance

Most of the diabetics receiving health services at the health center (68.63%) live less than 1-5 kilometer from the health center while most of those refusing health

services at the health center (69.69%) live further than 5-10 kilometer from the health center. There were significant differences in distance and behaviors in receiving health services at the health center ($P<0.01$) between the two sample groups.

- Comparison of percentages on time

Most of the samples receiving health services at the health center spent about 1-5 minutes in travelling to the health center while most of those refusing health services at the health center (66.67%) spent about 15-30 minutes in their travel to the health center. Significant differences in time spending on travelling were found between the two sample groups ($P<0.01$)

- Comparison of percentages of convenience in travelling to the health center

Most of the samples receiving health services at the health center (98.03%) found that it was very convenient to travel to the health center whereas most of those refusing health services at the health center (60.61%) found it was inconvenient to travel to the health center. Significant difference was found in convenience of travelling between the two sample groups ($P<0.01$).

3.2 Health security assurance for the diabetics

Table 4.13: Percentage of the diabetics separated by types of the health security assurance and sample groups

Health Security Assurance	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)	
	No	percentage	No	percentage
	Public Health Assurance	13	25.49	10
Social Security Assurance Fund's	3	5.88	0	0
30-baht Medicare	5	9.80	0	0
Government reimbursement of health expenses	0	0	5	15.15
Elders' Health Security Assurance	30	58.83	18	54.55
Total	51	100.00	33	100.00

Table 4.13 showed various types of the health security assurance the two sample groups claimed. Most of the samples receiving health services at the health center (58.53%) were those held the Elders' Security Assurance cards, followed by Public Health Assurance cards (25.49%), 30-baht Medicare's (9.80%) and Social Security Assurance Fund's (5.88%), respective. For those refusing health services at the health center, most of them (54.55%) held Elders' Security Assurance cards, followed by Public Health Assurance cards (30.30%), and government reimbursement of health expenses (government officials) (15.15%).

3.3 Reasons for receiving health services at the health center

Table 4.14: Number and percentage of reasons for receiving health services (for those receiving at the health center)

Reasons for accessing health services at the health center	Those receiving health services at the health center (N=51)	
	No	Percentage
Convenience in travelling to the health center	19	37.25
cheaper expenses	16	31.38
satisfaction on the services	11	21.57
short distance from their house	15	9.80
Total	51	100.00

Table 4.14 presented the reasons why the diabetics received the health services at the health center from the most to the least. The most important reason was convenience of travelling (37.25%), followed by cheaper expenses (31.38%), satisfaction in the services (21.57%) and short distance from their homes (9.80%), respectively.

3.4 Reasons for refusing health services at the health center

Table 4.15: Number and percentage of reasons for refusing health care services

Reasons for refusing health services at the health center	Those refusing health services at the health center (N=33)	
	N	Percentage
No signs of the diabetes	10	30.30
Inconvenience in travelling to the health center	7	21.21
Reimbursement of the expenses at any health centers	5	15.15
Treatment with herbal medicines	5	15.15
Assumption that the diabetes had been cured	5	15.15
Dissatisfaction on the services a the health center	1	3.04
Total	33	100.00

From Table 4.15, the reasons that the diabetics refusing the health services to the health center from the most to the least were no signs of the diabetes (50.30%), inconvenience of travelling (21.21%), reimbursement of the health expenses at any health centers (15.15%), treatment with herbal medicines (15.15%), misunderstanding that the diabetes had been cured (15.15%), and dissatisfaction on the services at the health center (3.04%), respectively.

Part 4: Relationships between fundamental factors, accessibility factors and behaviors on receiving or refusing health services at the health center Table

Table 4.16: Relationships between fundamental factors, facility factors accessibility factors in receiving or refusing health services at the health center

Population Characteristics	Those receiving health services at the health center (N=51)		Those refusing health services at the health center (N=33)		Chi – square	P-value
	No.	percentage	No.	percentage		
Educational qualification						
Below primary level	0	0	3	9.09	-	0.106*
Primary level or higher	51	100	30	90.91		
Duration of being diabetics						
Less than 7	26	50.98	11	33.33	2.53	0.11
7 or more than 7	25	49.02	22	66.67		
Complicating diseases						
Yes	15	29.42	20	60.61	8.02	0.007
No	36	70.58	13	39.39		
Distance						
Less than 1-5 km	35	68.63	10	30.31	37.96	< 0.01
More than 5-10 km	16	31.37	23	69.69		
Time						
Less than 1-15 min	38	74.50	11	33.33	30.81	< 0.01
More than 15-30 min	13	25.50	22	66.67		
Convenience in travelling						
Convenience	50	98.03	13	39.39	36.75	< 0.01
Inconvenience	1	1.97	20	60.61		

*Fisher Exact Test

Table 4.16 presented relationships between fundamental factors, facility factors accessibility factors and behaviors on receiving or refusing health services at the health center. The relationships were determined by P-value.

- **Ages.** No significant relationships were observed ($P > 0.05$) between ages and behaviors in receiving or refusing health services at the health center.

- **Sex.** There were significant relationships between sex and behaviors in receiving or refusing health services at the health center ($P < 0.05$). Most of the diabetics receiving health services at the health center were females compared to males but for the samples refusing health services, there were higher number of males.

- **Marital status.** Significant correlation were found between marital status and behaviors in receiving or refusing health services at the health center ($P < 0.05$). The number of married was higher than the widows for those receiving health services at the health center but for those refusing health services, the number of widows existed in a higher number than the married.

- **Occupations.** Occupations were significantly correlated with behaviors in receiving or refusing health services at the health center ($P < 0.05$). For the samples receiving health services at the health center, the number of those working as farmers were higher than those working in other occupations.

- **Income.** No significant correlation were found between income and behaviors in receiving or refusing health services at the health center ($P>0.05$). Most of the two sample groups earned less than 4,000 bath.

- **Educational qualification.** There were no significant relationships between educational qualification and behaviors in receiving or refusing health services at the health center ($P>0.05$). Most of both sample groups finished below or at the primary levels (100%, 90.91%).

- **Duration of sickness of diabetes.** No significant relationships were found between duration of sickness of diabetes and behaviors on receiving or refusing health services at the health center ($P>0.05$).

- **Complicating diseases.** There were significant relationships between complicating diseases and behaviors in receiving or refusing health services at the health center ($P <0.05$). Most of the samples receiving health services at the health center (70.58%) showed no signs of complicating diseases while most of those refusing health services (60.61%) had no sings of the diabetes.

- **Distance.** Significant relationships were observed between distance and behaviors in receiving or refusing health services at the health center ($P<0.01$). Most of the samples receiving health services at the health center live less than 1-5 km from the health center but most of those refusing health services at the health center live further than 5-10 km from the health center.

- **Time for travelling.** Time for travelling was significantly related with behaviors in receiving or refusing health services at the health center ($P < 0.01$). Most of the samples receiving health services at the health center spent about 1-15 minutes on their travel to the health center while most of those refusing health services at the health center spent more than 15-30 minutes on their travel.

- **Convenience in travelling to the health center.** Convenience in travelling to the health center showed significant relationships with behaviors in receiving or refusing health services at the health center ($P < 0.01$). Most of the samples receiving health services at the health center (98.03%) found it convenient to travel to the health center while most of those refusing health services (60.61%) found it inconvenient to travel to the health center.

Table 4.17: Differences between means of related factors and behaviors in receiving or refusing health services at the health center

Relate Factors	Those receiving health services at the health center		Those refusing health services at the health center		P-value
	N	Mean Rank	N	Mean Rank	
	Knowledge about diabetes	51	49.23	33	
Health perception	51	49.31	33	31.82	0.001
Social support	51	41.91	33	42.88	0.844
Satisfaction on services of the health center	51	56.49	33	20.88	< 0.01

*Differences were determined by Mann Whitney U Test (Appendix A)

Table 4.17 showed differences between related factors in the areas of knowledge on self-care of diabetes, health perception, social support, and satisfaction on services provided by the health center

- **Knowledge on self-care.** There were significant differences in knowledge on self-care between the two sample groups ($P < 0.05$). The knowledge of those receiving health services at the health center was higher than of those refusing health services.

- **Health perception.** The samples receiving health services at the health center had significantly health perception at the higher level than those refusing health services ($P < 0.05$).

- **Social support.** No significant difference was observed between the two sample groups in terms of social support ($P > 0.05$).

- **Satisfaction on services of the health center.** There were significant differences in satisfaction on services of the health center between the two sample groups ($P < 0.05$) and the samples receiving health services at the health center was satisfied with the services of the health center at the higher level than those refusing health services.

Table 4.18: Consequences of blood glucose control within 3 months of diabetes treatment at the health center

Criteria for blood glucose controls	The diabetics receiving health services at the health center		Consequences of blood glucose control
	N = 51		
	No.	Percentage	
Blood glucose level less than 126 mg/dl but no less than 90 mg/do when fasting (within 3 months)	39	76.48	Blood glucose levels were effectively controlled.
Blood glucose level less than 126 mg/dl but no less than 90 mg/do when fasting at least 2 out of 3 times of blood examinations (within 3 months)	7	13.72	Blood glucose levels were occasionally controlled.
Blood glucose level less than 126 mg/dl but no less than 90 mg/do when fasting less than 2 out of 3 times of blood examinations (within 3 months)	5	9.80	Blood glucose levels could not be controlled
Total	51	100	

- Consequences of blood glucose control within 3 months of diabetes treatment

Table 4.18 showed the consequences of blood glucose controls after treatment for 3 months. Most of the samples receiving health services at the health center (76.40%) were able to control their blood glucose levels effectively. About 13.72% of the samples could occasionally control their blood glucose while only a few (9.80%) were unable to control their blood glucose level.

Part 5: Problems and Recommendations about the services of the health center staff, the services of the doctors, cleanness of the health center

Table 4.19: Recommendations of the diabetics about the services of the health center

Recommendations	No.	Percentage
1. More doctors should be provided	29	34.52
2. Service hours for the doctors' examinations should be full-time or the diabetes clinic should be provided once a week	55	65.47
3. More health center staff should be provided, particularly on the day that the diabetes clinic is offered.	35	41.66
4. A special examination room for the diabetics should be provided.	44	52.38
5. Larger waiting area should be considered	47	55.95

Table 4.19 listed recommendations on other services of the health center at Ban Khaoro health center. Most of the samples (65.47%) required the doctors to work full-time or allow one full day in a week for the diabetes treatment. In addition, they suggested the extension of the waiting area to suit the number of the patients (55.95%) and there should be a special examination room for the diabetes treatment (52.38%). Moreover, more health center staff should be provided (41.66%) and more doctors on the diabetes clinic day should be considered.