

## **CHAPTER 2**

### **RESEARCH DESCRIPTION**

#### **2.1 Objectives**

The objectives of this study are as follows:

##### **General objective**

To study the effects of group process on self-care behavior of NIDDM.

##### **Specific objectives**

1. To study the levels of knowledge in poorly controlled blood sugar of NIDDM patients before and after being engaged to the group process.
2. To study the levels of self-care behavior in poorly controlled blood sugar of NIDDM patients before and after being engaged in the group process.
3. To study the levels of Fasting blood Sugar (FBS) in poorly controlled blood sugar of NIDDM patients before and after being engaged in the group process.

#### **2.2 Hypothesis**

1. The poorly controlled blood sugar of NIDDM patients has higher levels of knowledge after having received education from the group process.
2. The poorly controlled blood sugar of NIDDM patients has higher levels of self-care behavior
3. The poorly controlled blood sugar of NIDDM patients decreases the levels of fasting blood sugar after having received education from the group process.

#### **2.3 Assumption**

1. Data were collected by questionnaire in order to evaluate DM knowledge and self-care behavior.

2. Although the management of the group process was not held at the same time, the researchers ensured that the results were not changeable.

### 2.3. Research Methodology

The researcher has applied concept and theory from review literature which related to the effect of group process on self-care behavior of the poorly controlled blood sugar of NIDDM patients about diet control, exercise, DM drug taking and self-care.

#### 2.3.1 Research Design

This study is a quasi-experimental design. The experimental group was composed of 19 persons. The control group consisted of 19 persons. The research design was a before and after two-group design as follows:

Experiment group ( E )       $O_1$  \_\_\_\_\_ X \_\_\_\_\_  $O_2$

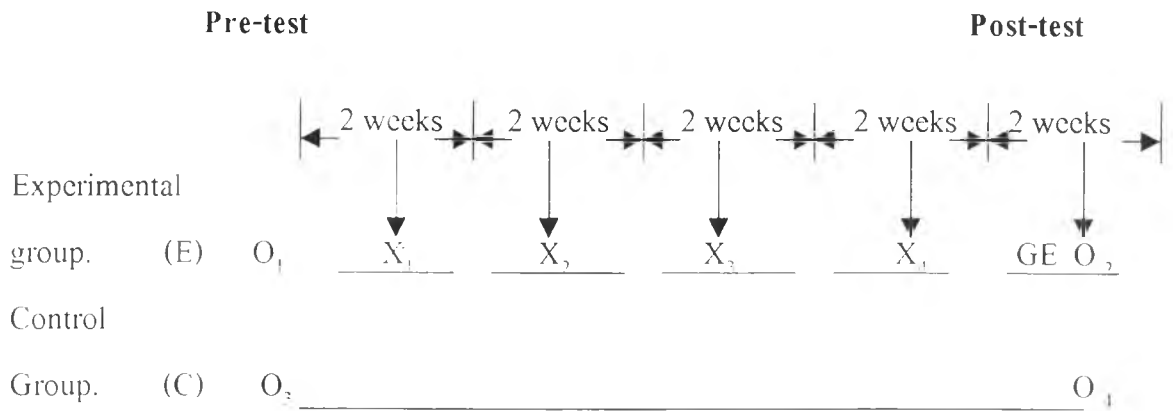
Control group ( C )       $O_3$  \_\_\_\_\_  $O_4$

$O_1$  and  $O_3$       --Data collection before experimentation in the experimental group and the control group.

$O_2$  and  $O_4$       --Data collection after experimentation in the experimental group and the control group.

X      --Health education program by group process

**Figure 6** Experimentation



O<sub>1</sub> O<sub>3</sub> --Data were collected before the experimentation by questionnaires regarding DM knowledge and self-care behavior (pre-test)

O<sub>2</sub> O<sub>4</sub> --Data were collected after the experimentation by questionnaires regarding DM knowledge and self-care behavior. (post- test)

X<sub>1</sub> --1<sup>st</sup> provision of knowledge by group process regarding DM knowledge.

X<sub>2</sub> --2<sup>nd</sup> provision of knowledge by group process regarding food control.

X<sub>3</sub> --3<sup>rd</sup> provision of knowledge by group process regarding exercise.

X<sub>4</sub> --4<sup>th</sup> provision of knowledge by group process regarding drug taking and self-health care.

GE -- group evaluation by the participants.

In experimental group were intervention by providing knowledge by group process 4 time total as show in figure 5 above.

In control group, no intervention by group process. They received knowledge by routine health education hospital.( as show in figure 4 page 7 )

### **2.3.2 Sampling**

#### **Population**

There were 520 patients who were being treated in the DM clinic at Patiu Hospital. The criteria for selecting the participants were as follows:

1. The target population had to be DM patients diagnosed NIDDM and treated by oral drugs or diet control.
2. Age ranged from 40 to 60 years old because they are adults. Therefore, they could adapt the life style to join the group process.
3. There were no complications such as heart attack, hypertension and renal disease.
4. If they were females, they could not be pregnant.
5. They should have no problem with listening, visualizing, speaking and being able to engage in any activity.
6. They were willing to engage in the research study.
7. The fasting blood sugar levels were more than 140 mg/dl at least two consecutive times before joining the group.

#### **Participants**

Convenience sample was chosen in this study because of the savings in time and money. There were 38 patients who pass criteria then they were divided into 2 groups by stratified random sampling. They were the experimental group and control group. Each consisted of 19 persons. The experimental group was divided into 2 subgroups. One subgroup comprised 10 persons and the other 9 persons.

### **2.3.3 Data collection**

The research instruments in this study consisted of 2 parts as follow:

1. Data were collected by using questionnaire.
2. The instruments of research study were health education program and video. An expert in the field assured content validity.

### **The questionnaire**

The questionnaire consisted of 3 parts:

#### **Part 1 Personal data**

The personal data included such as age, sex, education, income, duration of having DM, parents who have DM, current fasting blood sugar level, body weight, and blood pressure. Some informations the researcher collected from DM historical cards.

Investigation of fasting blood sugar was utilized. The blood sample was taken from a brachial artery and analyzed by Patiu hospital's laboratory. The criteria were set up according to the European NIDDM policy group as follows;

FBS	80 – 120	mg / dl	means	good control
FBS	120 – 140	mg / dl	means	fair control
FBS	over 140	mg/dl	means	poor control

#### **Part 2 The measurement of diabetes self-care knowledge**

An interview was conducted to obtain diabetes self-care knowledge consisting of food control, exercise, DM drug taking and self-health care behavior. The questionnaire included 20 items. The criteria for obtaining a score were:

Correct answer:	1	score
Incorrect or no answer:	0	score

### **Part 3 The measurement of self-care behavior**

The measurement of self-care behavior was also an interview form, consisting of questions about food control, exercise, DM drug taking and self-health care. There are 20 items.

The criteria for obtaining a score were:

Correct answer:	1 score
Incorrect or no answer:	0 score

### **Instruments for implementing group process**

Instruments for implementing group process consist of 2 process as follow :

1. Health education program of group process for DM patients.

(See Appendix 6 for details)

2. Video

The contents of the video were obtained from the Health education program.

### **Phase of group activity**

#### **Phase 1 The initiating phase**

This phase focused on the members becoming familiar with one another by introducing themselves. The researcher explained regulations and methods for practice as group members. Opinions, experiences and knowledge about DM self-care were exchanged among them.

#### **Phase 2 Working phase**

To help the members accept and understand their problems and the others, the researcher stimulated and linked members wording, answered some

problems, provided correct information about DM and self-health care, and advised members in using self-care techniques when experiencing any problem.

### **Phase 3 Final phase**

The researcher summarized issues from the group members and let the members expressed their feelings after group activities.

### **The step of data collection**

#### **1<sup>st</sup> time (1<sup>st</sup> week )**

The health education by using group process was set up in a private room. The meeting was held around a circular table. The researcher introduced her-self to the group and explained the objectives, advising members about regulation and methods for self-practice as group participants. All participants introduced themselves to the group. They were interviewed individually by the researcher and completed all questionnaires. The questionnaires consisted of personal data, the knowledge of diabetes self-care and individual behaviors.

When the questionnaires were completed, the data were analyzed for preparing a lesson plan for the next time .The group held a meeting each fortnight, for a total of 6 times.

#### **2<sup>nd</sup> time (3<sup>rd</sup> week)**

The members watched the video and discussed DM knowledge, using 3 activity steps to proceed.

#### **3<sup>rd</sup> time (5<sup>th</sup> week )**

The members watched the video and analyzed food control, using 3 activity steps to proceed .

**4<sup>th</sup> time (7<sup>th</sup> week )**

The member watched the video and evaluated exercise using 3 activity steps to proceed.

**5<sup>th</sup> time (9<sup>th</sup> week)**

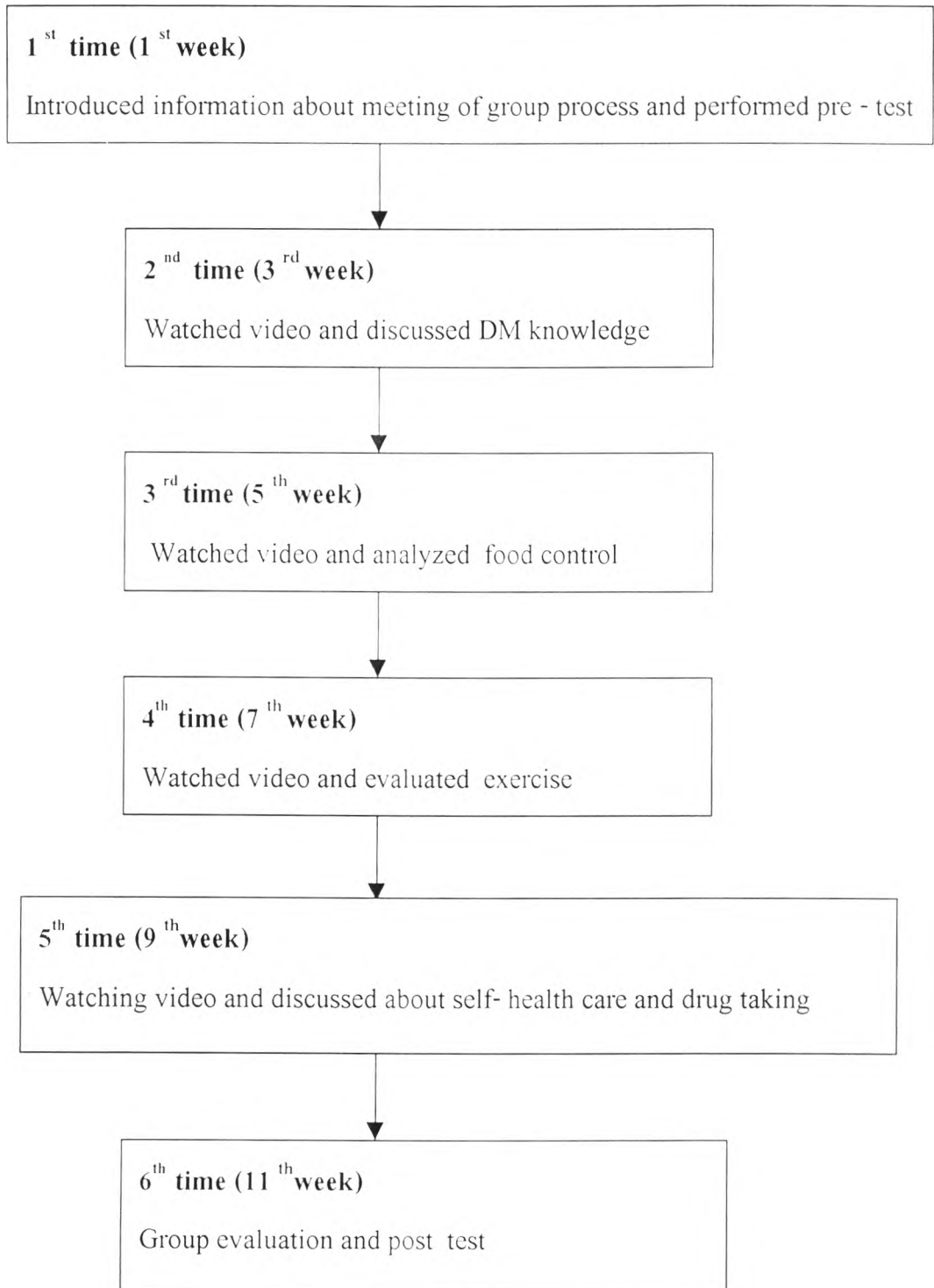
The members watched the video and discussed self-health care and drug taking, using 3 activity step to proceed.

**6<sup>th</sup> time (11<sup>th</sup> week)**

Group evaluation by the members and doing the post-test.

(As show in figure 7)



**Figure 7** The step of data collection

## **2.4 Data Analysis and Results**

### **2.4.1 Data Analysis**

The researcher analyzed the data by using steps as follow :

1. Analyzing personal data
2. Searching for mean and standard deviation of DM knowledge score and self-care behavior score
3. Comparing the difference of DM knowledge score and self-care behavior score before and after group process interventions in both the experimental and the control group. Pair t-test and independent t-test were used to analyze the data.

### **2.4.2 Results**

The researcher conducted activities according to the group process in NIDDM patients who came for services at Patiu hospital. The researcher collected, analyzed and divided into 4 parts as follow:

**Part 1** personal data

**Part 2** comparison of DM knowledge before and after group process in the experimental group, and between the experimental and control groups

**Part 3** comparison of self-care behavior before and after group process in the experimental group and between the experimental and control groups

**Part 4** comparison of fasting blood sugar before and after group process in the experimental group and between the experimental and control groups.

### Part 1 Personal Data

**Table 1** Number and percentage of sample, category according to personal data

Personal data	Experimental groups		Control group	
	number	percentage	number	Percentage
<b>Sex</b>				
Male	-	0	1	5.3
Female	18	100	18	94.7
<b>Total</b>	18	100	19	100
<b>Age /years old</b>				
40-45	3	16.7	4	21.1
46-50	4	22.2	5	26.3
51-55	8	44.4	8	42.1
56-60	3	16.7	2	10.5
<b>Total</b>	18	100	19	100
<b>Education</b>				
Pratom 4	16	88.9	16	84.2
Pratom 6	1	5.5	2	10.5
Matayom 3	1	5.5	1	5.3
<b>Total</b>	18	100	19	100

From table 1, it was found that most of the sample was female, and the level of education was pratom 4; age ranged from 51 to 55 years old .

**Table 2** Number and percentage of sample group, category of personal data  
(continued)

Personal data	Experimental group		Control group	
	number	percentage	number	percentage
<b>Occupation</b>				
Agriculture	16	89.0	15	79.0
House wife	1	5.5	2	10.5
Laborer	1	5.5	2	10.5
<b>Total</b>	<b>18</b>	<b>100</b>	<b>19</b>	<b>100</b>
<b>Income per month</b>				
< 1,000 bath	13	72.2	14	73.7
1,001 – 5,000 bath	2	11.1	3	15.8
> 5,000 bath	3	16.7	2	10.5
<b>Total</b>	<b>18</b>	<b>100</b>	<b>19</b>	<b>100</b>
<b>Reimbursed payment</b>				
Yes	3	16.7	4	21.1
No	15	83.3	15	78.9
<b>Total</b>	<b>18</b>	<b>100</b>	<b>19</b>	<b>100</b>
<b>When DM diagnosed</b>				
0 –4 years	5	27.8	6	31.6
5- 9 years	9	50	9	47.4
>10 years	4	22.2	4	21.0
<b>Total</b>	<b>18</b>	<b>100</b>	<b>19</b>	<b>100</b>

From table 2, it was found that the majority of sample's occupation was agriculture. The average income was less than 1,000 baht per month. No reimbursed payment and most were 5-9 years old when DM was diagnosed.

## Part 2 Comparison of pre and post test DM knowledge between the experimental and control groups.

**Table 3** Number and percentage of sample according to DM knowledge levels in the experimental and control groups

Sample Group	Knowledge Levels					
	low	percentage	medium	percentage	high	percentage
<b>Experimental group</b>						
Before experiment	10	55.6	8	44.4	-	-
After experiment	-	-	1	5.6	17	94.4
<b>Control group</b>						
Before experiment	12	63.2	7	36.8	-	-
After experiment	11	57.9	7	36.8	1	5.3

Low - the score <60 %

Medium - the score 60 – 79 %

High - the score > 80 %

From table 3, it was found that the experimental groups, after implementing group process, had high knowledge levels.

**Table 4** Comparison of knowledge between pre and post test in the experimental and control groups by pair t – test.

Sample group	n	$\bar{x}$	S.D	t-value	P-value
<b>Experimental group</b>	18				
Before experiment		10.22	3.19	-8.54	<0.001
After experiment		17.67	1.14		
<b>Control group</b>	19				
Before experiment		10.16	2.65	-1.41	0.176
After experiment		11.00	2.67		

From table 4, it was found that in the experimental group, after implementing group process, knowledge had increased significantly.

**Table 5** Comparison of DM knowledge between the experimental and control groups by using an independent t- test.

Sample group	n	$\bar{x}$	S.D	t-value	P-value
<b>Before experiment</b>					
Experimental group	18	10.22	3.19	0.17	0.870
Control group	19	10.06	2.69		
<b>After experiment</b>					
Experimental group	18	17.67	14.1	9.37	<0.001
Control group	19	11.06	2.73		

**From table 5**, it was found that :

**Before the experiment**, both groups had some DM knowledge ( table 5 page 23 ), because both groups received knowledge from the same routine of Patiu Hospital

**After the experiment**, it was found that the experimental group significantly increased their knowledge from that of the pre-experiment phase (table 5 page 23 ). The control group had no difference in knowledge between pre – and post experimentation (table 5 page 23). It was found that post–experimentation, the experimental group increased their knowledge. significantly more than the control group ( table 5 page 23 ). It was concluded that the experimental group had a higher level of knowledge than the control ( table 5 page 23 ).

**Part 3 Comparison of self-care behavior before and after group process intervention in experimental and control groups**

**Table 6** The number and percentage of sample according to self-care behavior levels, before and after experiment, in the experimental and control groups.

Sample group	Behavior level					
	Low	percentage	medium	percentage	high	percentage
<b>Experimental group</b>						
Before experiment	10	55.5	5	27.8	3	16.7
After experiment	-	-	1	5.6	17	94.4
<b>Control group</b>						
Before experiment	11	57.9	8	42.1	-	-
After experiment	11	57.9	7	36.8	1	5.3

Low - the score < 60 %

Medium - the score 60 – 79 %

High - the score > 80 %

**From table 6,** it was found that the majority of sample in the experimental group, after implementing group process, had high behavior level.



**Table 7** Comparison of self-care behavior in the experimental and control groups before and after experiment by using pair t- test.

Sample group	n	$\bar{x}$	S.D	t-value	P-value
<b>Experimental group</b>	18				
Before experiment		11.67	2.93	-10.358	0.000
After experiment		18.17	1.15		
<b>Control group</b>	19				
Before experiment		11.11	1.43	-0.160	0.875
After experiment		11.16			

From table 7, it was found that in the experimental group there was a significant increase in self care behavior.

**Table 8** Comparison of self-care behavior between the experimental and control groups before and after experiment by using independent t – test.

Sample group	n	$\bar{x}$	S.D	t-value	P-value
<b>Before experiment</b>					
experimental group	18	11.67	2.93	0.829	0.149
control group	19	11.11	1.63		
<b>After experiment</b>					
experimental group	18	17.11	1.15	11.369	0.000
control group	19	11.16	2.22		

From table 8, it was found that :

**Before the experiment**, both groups had no difference in self-care behavior .

**After the experiment**, both groups improved self-care behavior better than pre-experiment .However, the participants in the experimental group had better self-care behavior when compared to the participants in the control group . It was found that 100% of the participants in the experimental group improved their self-care behavior.

**Table 9** Comparison of knowledge about food control, exercise, drug taking and self-health care between the experimental and control groups before and after experiment by using independent t – test.

Knowledge/sample group	n	$\bar{x}$	SD	t-value	p- value
<b>● Food control</b>					
<b>Before experiment</b>					
- experimental group	18	3.9	1.26	-0.29	0.777
- control group	19	3.8	0.98		
<b>After experiment</b>					
- experimental group	18	5.6	0.51	-4.76	0.000
- control group	19				
<b>● Exercise</b>					
<b>Before experiment</b>					
- experimental group	18	0.67	0.77	0.46	0.651
- control group	19	0.78	0.54		
<b>After experiment</b>					
- experimental group	18	1.72	0.23	-8.10	0.000
- control group	19	0.44	0.50		

**Table 9** Comparison of knowledge about food control, exercise, drug taking and self-health care between the experimental and control groups before and after experiment by using independent t – test. ( continuous)

Knowledge/sample group	n	$\bar{x}$	SD	t-value	p- value
<b>● Drug taking</b>					
<b>Before experiment</b>					
- experimental group	18	0.44	0.51	0.000	1.000
- control group	19	0.44	0.51		
<b>After experiment</b>					
- experimental group	18	0.94	0.23	-4.610	0.000
- control group	19	0.39	0.50		
<b>● Self-health care</b>					
<b>Before experiment</b>					
- experimental group	18	5.17	2.15	-2.39	0.814
- control group	19	5.00	1.94		
<b>After experiment</b>					
- experimental group	18	6.11	1.15	-5.89	0.000
- control group	19	9.44	1.93		

From table 9, it was found there was no significant difference in food control, exercise, drug taking and self-health care between the experiment and control group before group process interventions. After group process, there was significant difference in food control, exercise, drug taking and self-health care in food control, exercise, drug taking and self-health care between the experimental group and control group.

**Table 10** Comparison of self- care behavior about food control, exercise, drug taking and self-health care between the experimental and control groups before and after experiment by using independent t – test.

Behavior/sample group	n	$\bar{x}$	SD	t-value	p- value
<b>● Food control</b>					
<b>Before experiment</b>					
- experimental group	18	3.9	1.11	- 0.46	0.653
- control group	19	3.8	1.00		
<b>After experiment</b>					
- experimental group	18	4.8	0.38	-4.53	0.000
- control group	19	1.1	0.87		
<b>● Exercise</b>					
<b>Before experiment</b>					
- experimental group	18	0.8	1.21	- 0.21	0.834
- control group	19	0.7	0.83		
<b>After experiment</b>					
- experimental group	18	2.1	0.68	-3.69	0.002
- control group	19	1.1	0.99		

**Table 10** Comparison of self-care behavior about food control, exercise, drug taking and self-health care between the experimental and control groups before and after experiment by using independent t – test. ( continuos)

behavior/sample group	N	$\bar{x}$	SD	t-value	p- value
<b>● Drug taking</b>					
<b>Before experiment</b>					
- experimental group	18	2.7	1.03	-0.53	0.601
- control group	19	2.4	1.25		
<b>After experiment</b>					
- experimental group	18	3.8	0.51	-4.12	0.001
- control group	19	2.7	1.14		
<b>● Self-health care</b>					
<b>Before experiment</b>					
- experimental group	18	4.4	1.42	-0.75	0.462
- control group	19	4.1	1.18		
<b>After experiment</b>					
- experimental group	18	7.2	0.71	-8.15	0.000
- control group	19	3.5	1.58		

**From table 10**, it was found that there was no significant difference in food control, exercise, drug taking and self-health care between the experiment and control group, before group process interventions. After group process, there was significant difference in food control, exercise, drug taking and self-health care in food control, exercise, drug taking and self-health care between the experimental group and control group.

#### Part 4 Comparison of fasting blood sugar

The fasting blood sugar levels were divided into 3 levels. There were the normal level (60–120 milligram percentage), The fair level (121–140 milligram percentage) and the high level (> 140 milligram percentage).

**Table 11** Number and percentage of sample according to fasting blood sugar levels, before and after experiment, in the experimental and control groups.

Sample group	FBS level					
	Normal	%	Fair	%	High	%
	60-120mg%		121-140mg%		>141mg%	
<b>Experimental group</b>						
before experiment	-	-	-	-	18	100
2 weeks after	6	33.3	4	22.2	8	44.5
2 months after	3	16.7	4	22.2	11	61.1
3 months after	3	27.8	6	33.3	7	38.9
<b>Control group</b>						
before experiment	-	-	-	-	19	100
2 weeks after	1	5.3	1	5.3	17	89.
2 months after	1	5.3	3	15.8	15	78.9
3 months after	-	-	2	10.5	17	89.5

From table 11, it was found that the sample in the experimental group, after implementing group process, had increase normal and fair FBS level.

**Table 12** Comparison of fasting blood sugar levels in experimental group and control group, before and after experiment, by using paired t- test.

Sample group	n	$\bar{x}$	S.D.	t- value	p- value
<b>Experimental group</b>	<b>18</b>				
Before experiment		189.64	22.67	6.502	< 0.001
After experiment (3 months)		131.11			
<b>Control group</b>	<b>19</b>				
Before experiment		199.33	40.65	0.902	0.379
After experiment (3 months)		186.83			

From table 12, it was found that after three months fasting blood sugar levels were significantly decreased in the experimental group while in the control group the FBS levels were not.

**Table 13** Comparison of fasting blood sugar levels between the experimental and control groups before and after experiment by using independent sample t - test

Sample group	n	$\bar{x}$	S.D	t-value	P-value
<b>Before experiment</b>					
experimental group	18	189.64	22.67	0.89	0.387
control group	19	199.33	41.57		
<b>2 weeks after experiment</b>					
experimental group	18	135.94	26.2	4.19	0.001
control group	19	174.89	36.08		
<b>2 months after experiment</b>					
experimental group	18	156.00	42.87	1.19	0.25
control group	19	175.56	60.84		
<b>3 months after experiment</b>					
experimental group	18	131.11	27.06	4.7	<0.001
control group	19	186.83	38.71		0.000

**From table 13**, it was found that :

**Before the experiment** , both groups had no difference in FBS level.because both groups had similar characteristic of social, occupation and household

**After the experiment**, it was found that the experimental group had statistically significant of decreasing in their FBS level from that of the before experiment, except after 2 month the experiment was not significant. This was to



change of doctor who treated DM. He over reduced dosage of DM drug, Therefore FBS level of the participants was increased. The control group had no difference in their FBS between before and after experiment. The FBS level of the participant in the experimental group had decreased significantly more than the control group.

## 2.5 Limitations

The limitations in this study were :

1. The researcher carried out the result of fasting blood sugar (FBS) as mediator variable. The sample ate nothing per oral (NPO) for at least 8 hours.
2. The results of fasting blood sugar faith less than HbA<sub>1</sub>C. This due to the fact that cost of HbA<sub>1</sub>C was expensive (400 – 500 bath/case)
3. Laboratories at Patiu and Yasothon hospitals could not examine Hb<sub>1</sub>AC. Both hospitals must send the blood examples to Ubonrachatanec hospital.
4. The poorly controlled BS of NIDDM who met the criteria, there are 38 patients. They may be not good represent of sample group.