

## **CHAPTER IV**

### **DATA EXERCISE**

#### **A CROSS SECTIONAL SURVEY OF SELF CARE ABILITY (KNOWLEDGE, DECISION-MAKING, PRACTICE) AMONG THE POORLY CONTROLLED BLOOD GLUCOSE LEVEL NON-INSULIN-DEPENDENT DIABETES MELLITUS PATIENTS IN NAKORNLUANG HOSPITAL**

#### **4.1 INTRODUCTION**

In non-insulin dependent diabetes mellitus (NIDDM), the most prominent metabolic abnormality present after the onset of NIDDM is hyperglycemia. Most Thai diabetes patients are NIDDM. The annual reports of Nakornluang (NKL) hospital since 1998 showed that 750 diabetic patients registered in diabetic clinic accounting for 3000 visits per year. The admission rate increased 1.5 to 5.6 from 1993 to 1998. When considering the age distribution of DM patients, more than 40% are over 60 years old. An Ayutthaya research project found that drop outs and irregular visiting were caused by economic problems, lack of personal care, and lack of knowledge and understanding of the nature of DM. Most of the elderly diabetics in the DM clinic are the poorly controlled non-insulin-dependent patients (The level of fasting blood sugar is over 140 mg %). Melkus, (1993) informed that the normal and near normal metabolic control of diabetes mellitus are the goals of diabetic treatment which can be

achievable from standard management including dietary control, exercise and drug therapy. These control strategies need diabetic education, thus, by necessity, patients should become active members of the health care team.

To address and rectify the issue above this study is proposing a team approach to the education and management of treatment for the patient with diabetes. The program is called " **education model based on Home Health Care**". To provide effective self care for diabetes, patients must understand and accept their responsibilities and be willing and capable of accomplishing the necessary tasks. Patient education based on Home Health Care to promote self care has become an essential component of quality in the health care system. The committee and the researcher have worked together previously to implement the education based on the home health care model among NIDDM patients to assess self care ability and control blood glucose in normal level. This concept will be studied in NKL hospital to develop a model of education based on home health care for patients of the diabetic clinic . NIDDM patient is the one who should received self care education. Self care is the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health and well being. When self care is not maintained, illness, disease or death will occur (Orem, 1980). The researcher will develop the model from "Orem's self care model" of using home health care nursing process. The purpose of home health care education is to provide the poorly controlled NIDDM patients with the support, treatment, information and understanding, that they need to successfully manage their health care needs at home. An important aspect of this model for the

poorly controlled NIDDM patients will be continuous education based on home health care with follow up until the patients can take care of themselves. This program will enhance self care ability.

In the following section, the researcher modified the questionnaire to measure self care ability in the poorly controlled NIDDM . As described in chapter II, knowledge, decision-making and practice of diabetic self care are viewed as three important components of self care ability in this study. The instruments used in the assessment composed of 3 parts: (1) Diabetic knowledge, (2) self care decision-making, and (3) self care practice regarding diet, medicine, complications, exercise and foot or hygiene care. The data exercise will cover the process of the assessment phase, the most crucial element of education based on home health care. The information gathered from this data exercise will be used in designing the method, and will be used to improve further data collection techniques .

## **4.2 OBJECTIVE OF DATA EXERCISE**

### **4.2.1 General objective**

To assess knowledge, decision-making and practice about the diabetes self care ability of the poorly controlled NIDDM patients in NKL hospital

#### **4.2.2 Specific Objective**

1. To describe the self care ability among the poorly controlled NIDDM.
2. To test the data collection instruments designed and pre-tested for clarity, suitability, validity and reliability

#### **4.3 METHODOLOGY**

A Cross sectional survey is used as the research methodology. The study area for this data exercise is the diabetic clinic in NKL hospital. The sample are from the NIDDM patients seeking care from the diabetic clinic at NKL hospital, in the Ayutthaya province. The target population were the Thai patients who were diagnosed as NIDDM by physicians. The total population of NIDDM patients are 249. Data was obtained from 15 patients with poorly controlled NIDDM. They were selected purposively for the study , according to the following criteria.

##### **Inclusion Criteria :**

- ◆ NIDDM patients with more than 3 months of treatment, aged 40 and over with a fasting blood glucose level of more than 140 mg/dl at least twice consecutively before selection.
- ◆ Having no serious health problems including stroke, acute myocardial infarction, dementia and blindness.
- ◆ Did not have a history of psychosis or neurosis

- ◆ Voluntary participation in the study and able to comprehend verbal instructions.

**Exclusion Criteria :**

- ◆ Insulin dependent diabetes mellitus
- ◆ NIDDM patients with the following conditions:
  - severe obvious visual problems,
  - a history of stroke confirmed by physical examination,
  - an evidence of a myocardial infarction detected by electrocardiogram within 6 months before selection,
  - a poor cognitive function and any underlying conditions that could prevent adherence to the study protocol,
  - an evidence of a severe renal insufficiency (serum creatinine more than 3 Mg /dl).

**4.3.1 Instruments**

The instrument used in this study was a structured demographic data and interview questionnaire. It consisted of two parts; the measurement of self care ability (Appendix 1). The questionnaire was translated into Thai language before it was administered. (Appendix 2).

### **4.3.2 Data collection**

Data collection for this study was done by an interviewer following a questionnaire guideline. Strict confidentiality was maintained by not recording the name of the patient. The questionnaire had been tested for internal consistency in ten diabetic patients from another hospital. The alpha calculated by a computer SPSS, the reliability coefficient to analyze the knowledge part, attitude towards decision-making, and practice before data exercise testing was 0.53, 0.83, and 0.31 respectively. From the repeatability of the same instrument over time to compare with the data exercise subjects, the alpha scores are 0.8, 0.9 and 0.5 respectively. If the two correlate highly, they are reliable; it is, indeed, a more challenging test than comparing the same instrument at two different times (Ian McDowell and Claire Newell. (1996). *Measuring Health: A guide to rating Scales and Questionnaires*. New York, Oxford University, 40.)

### **4.3.3 Data management**

The questionnaire was checked to see whether there were anything and was used after testing its content validity and consistency. Influencing responses, the agreement among the researcher and the hospital staff was that they should not be involved in interviewing, so the respondents would feel free to answer. Interviews were carried out by only one interviewer. All questionnaires were completely anonymously. The information provided was entered into a program developed in Epi. 6 software and checked by the double entry technique. The final analysis of data were

done by computer using the Statistical Package of the Social Science (SPSS) Descriptive analysis in terms of percentage, frequency, mean, standard deviation (S.D) and range were conducted to describe the demographic data and analyze the scores of the diabetic self care ability.

## **4.4 RESULTS**

### **4.4.1 Demographic data**

The total sample size was 15. The mean age of the patient in this study was 59 years. There were 13 female and 2 male acting as the respondents. Most of subjects (86.7 %) were female, age ranged from 44 to 70 years with a mean of 59.07 years . Most of them were married (73.3 %). There were 80 % of housewife or a head of family. The average time of having NIDDM was 3.87 years, with a range of 1 to 7 years. The education level, 46.7 % were illiterate and primary school, 6.7 % was at secondary school level. For treatment status, there was no subject who followed only diet control, only one subject who took oral plus insulin injection (6.7%), most of them took oral anti-diabetes (93.3%). The mean of FBS was 195.07 mg % ranging from 156 mg % to 287 mg %. The demographic or baseline characteristics of the sample are shown in Table 4.1 and Table 4.2.

**Table 4.1 : Baseline characteristics of the study population**

<b>Characteristics</b>	<b>Number = 15</b>	<b>Percentage</b>
<b>Sex</b>		
Female	13	86.7
Male	2	13.3
<b>Marital status</b>		
Single	2	13.3
Married	11	73.3
Widowed	2	13.3
<b>Occupation</b>		
Merchant	1	6.7
Housewife or head of family	12	80.0
Agriculture	2	13.3
<b>Education</b>		
Illiterate	1	6.7
Primary school	12	80.0
Secondary school	2	13.3
<b>Economic status</b>		
≤ 2,000 baht	7	46.7
2,001 - 5,000 baht	7	46.7
5,001 - 9,999 bath	1	6.7
<b>Treatment status</b>		
Diet control	0	0.00
Oral antidiabetes	14	93.3
Oral plus insulin injection	1	6.7

**Table 4.2 : Mean score of demographic characteristics**

Characteristics	Mean	S.D.
Age	59.07	9.18
Family member (person)	3.33	2.72
Duration of having NIDDM (years)	3.87	1.81
FBG (mg/dl)	195.01	41.50
BW (kg.)	56.73	9.70

**4.4.2 Self care ability of the poorly controlled NIDDM****Table 4.3 : Subject responses for each knowledge statement**

Statement	True %	False %	Don't Know %
Diabetes mellitus is the disease where the body can not use food containing sugar well and has a high blood sugar level.	40.0 (6)*	20.0 (3)	40.0 (6)
Diabetes mellitus is a genetically transmitted disease.	26.7 (4)*	26.7 (4)	46.7 (7)
Diabetes mellitus is the disease which can be cured completely.	20.0 (3)*	20.0 (3)	60.0 (9)
The cooking oil that should be used in DM is coconut oil.	26.7 (4)	6.7 (1) *	66.7 (10)
Controlling blood glucose in normal level can prevent and delay the occurrence of diabetic complications.	86.7 (13)*	0.00	13.3 (2)
DM patients should control their diet, exercise and take medicine following their physician's advice and self care.	86.7 (13)*	6.7 (1)	6.7 (1)
Palpitation, sweating, hunger and dizziness are the symptoms of hypoglycemia.	33.3 (5)*	20.0 (3)	46.7 (7)
The prompt treatment of hypoglycemia is eating candy, drinking sweet syrup then rest and consult the doctor.	46.7 (7)*	0.00	53.3 (8)
Symptoms of thirst, dry mouth, polyuria, and weight loss are effects of hyperglycemia.	46.7 (7)*	13.3 (2)	40.0 (6)
The prompt treatment of hyperglycemia at home is taking more tablet of oral diabetic agent.	20.0 (3)	53.3 (8)*	26.7 (4)

**Note :** Actual frequencies in parentheses. An asterisk denotes correct response.

**Table 4.3 : Subject responses for each knowledge statement diabetic self care (con.)**

Statement	True %	False %	Don't Know %
DM patients should have an eye examination by an ophthalmologist once a year .	60.0 (9)*	0.00	40.0 (6)
DM patients should take an oral hypoglycemic drug one hour before meal.	80.0 (12)	13.3 (2)*	6.7 (1)
When the DM patients get any problems of illness, they should stop to taking anti diabetic drug without consulting a doctor.	33.3 (5)	33.3 (5)*	33.3 (5)
The benefit of exercise in DM patients is to facilitate good diabetic control and to produce less complications.	66.7 (10)*	0.00	33.3 (3)
The type of exercise for DM patients are walking, jogging and aerobics for at least 15 minutes three times per week.	46.7 (7*)	0.00	53.3 (8)
Prolonged uncontrolled DM can cause complications such as heart disease, renal disease, numbness sensation at extremities, blurred vision, skin infection which are difficult to cure and delay recovery.	60.0 (9)*	0.00	40.0 (6)
Whenever there is any ulcer or abscess at any part of body, the diabetic patient should consult the doctor immediately.	80.0 (12)*	0.00	20.0 (3)
Good foot care includes examination of the foot , washing then drying with soft towel everyday.	80.0 (12)*	0.00	20.0 (3)
It is not necessary to visit the doctor, If you don't have abnormal symptoms.	13.3 (2)	86.7 (13)*	0.00
Keeping emotionally relaxed and not easily angered can prevent the increase of the blood sugar level.	40.0 (6)*	0.00	60.0 (9)

**Note : Actual frequencies in parentheses. An asterisk denotes correct response.**

The findings in Table 4.3 suggest that although the patients possess some knowledge about diabetes, it is uneven and not necessarily related to the knowledge needed for self care management. The most problematic item is the timing for taking oral drug before meals (80%). Only 20 percent of the subjects were not aware that the true prompt treatment of hyperglycemia at home. Only 46 percent and 40 percent ,respectively, don't know the symptoms of hypoglycemia and hyperglycemia. Patients were less informed regarding how to prevent long term care of diabetes complications. Eighty seven percent of the patients correctly indicated that they had knowledge about controlling blood glucose at a normal level which can prevent and delay the occurrence of diabetic complications, following a proper diet control, exercise , taking medicine following the physician's prescription and engaging in self care. On the other hand, they were aware that it is necessary to visit the doctor by appointment, but, they don't know about the following items; DM is a disease which can be completely cured (60%), coconut oil should not be used in DM (66.7%), and keeping emotionally relaxed can prevent the increase of blood sugar level (60%).

**Table 4. 4 : Subject responses for Decision-making about diabetic self care**

Statement	Strongly disagree %	disagree %	Uncertain %	Agree %	Strongly agree %
Since I have had diabetes, I have decided to behave properly about (1) eating an adequate amount of food three times per day , (2)exercise, (3) take medicine following the physician's prescription and (4)self care .	0.00 (0)	0.00 (0)	40.0 (6)	20.0 (3)	40.0* (6)
As circumstances of having DM, I am determined to have food or beverage between meals.	0.00 (0)	6.7 (1)	40.0 (6)	13.3 (2)	40.0* (6)
When I feel better, I have decided to stop the oral diabetic medicine by myself.	40.0* (6)	26.7 (4)	13.3 (2)	20.0 (3)	0.00 (0)
I have decided to select soybean oil for cooking.	0.00 (0)	0.00 (0)	33.3 (5)	13.3 (2)	53.3* (8)
I have decided to check my blood sugar and visit the doctor regularly.	0.00 (0)	13.3 (2)	20.0 (3)	13.3 (2)	53.3* (8)
If I receive a new antidiabetic drug, I intend to ask the physician for the effects and side effects of the drug.	0.00 (0)	6.7 (1)	40.0 (6)	13.3 (2)	40.0* (6)
If I have had fatigue, thirst and dry mouth, I have promptly decide to consult the doctor.	0.00 (0)	0.00 (0)	13.3 (2)	26.7 (4)	60.0* (9)
It is not my choice to take time to travel or join in society such as parts, or meeting associates.	33.3* (5)	13.3 (2)	26.7 (4)	20.0 (3)	6.7 (1)
I prefer self care to seeking help from other people in order to control blood glucose level and prevent complications.	0.00 (0)	33.3 (5)	6.7 (1)	6.7 (1)	53.3* (8)
I am determined to have a physical examination by physician to detect the presence of any symptoms of ulceration, heart , renal , hypertension, cataract and neuropathy once a year.	0.00 (0)	0.00 (0)	26.7 (4)	26.7 (4)	46.7* (7)

**Note : Actual frequencies in parentheses. An asterisk denotes correct response.**

The relative finding in Table 4.4 were reported regarding decision-making in diabetes self care. Sixty percent of patients strongly agree with "If I have fatigue, thirst and dry mouth, I promptly decide to consult the doctor" and 53.3 percent strongly agree " I prefer self care to seeking help from other people in order to control blood glucose level and prevent complications", " I have decided to check my blood sugar and visit the doctor regularly, and "I have decided to select soybean oil for cooking". However 40 percent of the patients were rather uncertain to "have decided to behave properly eating, exercise, take medicine and self care, but in the part of the practice report over half the patients (53.3%) can eat limited starch, fat, sugar but unlimited vegetable with leaves only sometimes.

**Table 4.5 : Subject responses for practice about diabetic self care**

Statement	Often %	Sometimes %	Never %
When you are diagnosed as having DM , you can eat limited starch, fat, sugar but unlimited vegetables with leaves .	40.0 * (6)	53.3 (8)	6.7 (1)
You check your blood sugar level regularly and visit the doctor on appointment or no later than one week.	60.0* (9)	40.0 (6)	0.00 (0)
You eat the proper amount of food at the correct time.	40.0 (6)*	46.7 (7)	13.3 (2)
You should always carry some candy or sweet foods when you have to travel or exercise, in case of showing the symptoms of hunger, sweating and dizziness.	13.3 * (2)	13.3 (2)	73.3 (11)
You can keep yourself relaxed by reading, listening to the radio, watching television and playing sports, when you have emotional stress.	26.7* (4)	73.3 (11)	0.00 (0)
You exercise for 15 minutes each time.	40.0 (6)*	20.0 (3)	40.0 (6)
You wash your feet with soft soap and dry with soft towel.	33.3 (5)*	33.3 (5)	33.3 (5)
You walk bare foot outside the house.	13.3 (2)	33.3 (5)	53.3 (8)*
You have stopped taking oral diabetics by yourself when you improve.	13.3 (2)	33.3 (5)	33.3* (5)
You always carry your diabetic card when you go outside the house or travel.	33.3* (5)	40.0 (6)	26.7 (4)

**Note : Actual frequencies in parentheses. An asterisk denotes correct response.**

Table 4.5 indicated that 73.3 percent of patients never carry candy or sweet foods when they have to travel or exercise. 40 percent of them sometimes carry their card when they go outside the house. 73.3 percent sometimes are able to keep

themselves relaxed , these findings may indicate that additional education will assist in carrying out self care knowledge to prevent the increase of blood sugar level.

#### **4.5 DISCUSSION**

These discrepancies suggest that many subjects, know some of the major roles of diabetic service. The weakness of knowledge in diabetic patients in this study is inadequate knowledge in self care management. They need to further their education about the details of diabetic self care management at home.

These finding indicate the need for the teaching program. In future study, the question number one in table 4.3 should be divided into three separate questions, as responses indicate some confusion about the breadth of the question.

The further descriptive analysis of findings indicates that some subjects had a relative knowledge deficit and limitation of decision-making and practice partially existed. This can be interpreted to mean that the subjects' diabetic knowledge in definition, hypoglycemic & hyperglycemia symptoms and preventing complication items were actually relatively weak. By using this questionnaire to assess the self care ability, it is implied that the findings can be used as supportive evidence for the needs assessment of patients and health care providers. Selections from these findings can be used to prepare self care education and provide input to a home health care planning program related to improved self care ability.

#### **4.6 LIMITATIONS**

1. The sample size of this study was relatively small, these subjects do not represent the poorly controlled NIDDM in NKL hospital.

2. The findings of this study are relatively limited. The subjects were obtained by using purposive sampling . Using one or two patient of 12 sub districts, this sample may or may not be representative of all patient's problems in the NKL district.

3. Potential errors in measurement were discovered when observed behavior did not correspond to patients answers in the questionnaire. It may be explained that some of the items in the questionnaire were not appropriate for the subjects and would be considered therefore, further study is required.

#### **4.7 LESSON LEARNED**

1. The lessons and experiences learned from this data exercise are very useful and will help me understand how to approach and manage the natural contexts problems of the poorly controlled NIDDM patients. Findings show that there is lack of knowledge in many aspects of diabetic self care, the need for improving the existing health education are provided. The findings of this study suggest that nursing interventions put more efforts on the weakness of self care ability. The content and methods for diabetes education should be revised to be more meaningful to client's needs and consider the multidimensional of both subjective and objective data.

2. The research instruments used in this study were a demographic data form and the interview questionnaire modified from the research of Miss Adisai Poomwisate, 1996 “Result of Home Visit Towards Self Care of Diabetes Mellitus Patients”. It was learned that the content validity was confirmed by experts in the diabetes self care education model in Mahidol University using the agreement method. According to his comments and suggestions, some items of the instrument were revised.

3. The reliability of this study was tested among 10 NIDDM patients who had the same characteristics as this study’s subjects at another hospital in Ayutthaya. The reliability was obtained by means of Cronbach’s coefficient alpha, the alpha of this study calculated by a computer SPSS for knowledge, decision-making and practice after data exercise are 0.8. For assessing the quality of measurement devices and procedures. If the instrument is valid, it is measuring the right thing. Its measurement is consistent and accurate if it is reliable. For this data exercise reliability to be directly assessed, the self care ability score has to be compared within the different groups.