ปัจจัยที่มีอิทธิพลต่อพฤติกรรมการดูแลตนเองของผู้ป่วยเบาหวาน ในคลินิกโรคเบาหวาน โรงพยาบาลจังหาร จังหวัดร้อยเอ็ด ประเทศไทย

นายศักดิ์ชัย เคหาบาล

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรมหาบัณฑิต
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ปีการศึกษา 2552

FACTORS INFLUENCING SELF-CARE BEHAVIORS OF DIABETIC PATIENTS IN DIABETES MELLITUS CLINIC, CHANGHAN HOSPITAL, ROI ET PROVINCE, THAILAND

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ศักดิ์ชัย เคหาบาล: ปัจจัยที่มีอิทธิพลต่อพฤติกรรมการดูแลตนเองของผู้ป่วยเบาหวานในคลินิกโรคเบาหวาน โรงพยาบาลจังหาร จังหวัดร้อยเอ็ด ประเทศไทย. (FACTORS INFLUENCING SELF-CARE BEHAVIORS OF DIABETIC PATIENTS IN DIABETES MELLITUS CLINIC, CHANGHAN HOSPITAL, ROI ET PROVINCE, THAILAND) อ. ที่ปรึกษาวิทยานิพนธ์หลัก : อ.ดร.ประเทือง หงสรานากร, 59 หน้า.

วัตถุประสงค์ของการศึกษาครั้งนี้ เพื่อตรวจสอบปัจจัยที่มีอิทธิพลต่อการดูแลตนเองของผู้ป่วยเบาหวาน ที่เข้ารับการรักษาในคลินิกเบาหวาน โรงพยาบาลจังหาร จังหวัดร้อยเอ็ด การศึกษาครั้งนี้เป็นการศึกษา ณ จุดเวลาใดเวลาหนึ่ง (Cross-sectional studies) โดยใช้การสุ่มตัวอย่างอย่างง่าย (Simple Random Sampling) กับกลุ่มตัวอย่างจำนวน 315 ราย เก็บข้อมูลระหว่างเดือนธันวาคม พ.ศ. 2552 การวิเคราะห์ข้อมูลใช้สถิติเชิงบรรยาย (ค่าความถี่ ร้อยละ ค่าเฉลี่ย ส่วนเบี่ยงเบนมาตรฐาน) และใช้สถิติ Chi Square เพื่อตรวจสอบความสัมพันธ์ระหว่าง ตัวแปรอิสระกับตัวแปรตาม

การศึกษาพบว่า ข้อมูลประชากรส่วนใหญ่เป็นเพศหญิง ร้อยละ 72.1 มีอายุมากกว่า 60 ปี ร้อยละ 39.7 สถานภาพสมรสคู่ ร้อยละ 73.3 จบการศึกษาในระดับประถมศึกษาหรือน้อยกว่า ร้อยละ 88.3 อาชีพเกษตรกรรม ร้อยละ 77.1 รายได้และรายจ่ายต่อเดือนของครอบครัว ต่ำกว่า 2,000 บาท (ร้อยละ 56.5 และ ร้อยละ 44.8 ตามลำดับ) ระยะเวลาการเจ็บป่วยด้วยโรคเบาหวาน ต่ำกว่า 5 ปี ร้อยละ 53.3 ไม่มีสมาชิกในครอบครัวป่วยเป็นโรคเบาหวานร้อยละ 62.5 ผู้ป่วยส่วนใหญ่มีคนรอบข้างในชุมชนช่วยกระตุ้นในการควบคุมโรคเบาหวาน ร้อยละ 66.7 ผู้ป่วยเบาหวานเกือบทั้งหมด ร้อยละ 91.1 ได้รับข้อมูลเกี่ยวกับโรคเบาหวานจากเจ้าหน้าที่สาธารณสุข และความรู้มีความสัมพันธ์กับระดับพฤติกรรมการดูแลตนเองของผู้ป่วยเบาหวาน

ในอนาคตควรสร้างความร่วมมือของคนในชุมชนในการควบคุมโรคเบาหวานให้มากขึ้น และส่งเสริมความรู้และทัศนคติโดยเฉพาะอย่างยิ่งในส่วนที่ยังไม่ถูกต้อง

สาขาวิชา การพัฒนาระบบสาธารณสุข ลายมือชื่อนิสิต .....

ปีการศึกษา 2552 ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก .....

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KEYWORDS : SELF-CARE BEHAVIOR / DIABETIC PATIENTS / CHANGHAN HOSPITAL / ROI ET PROVINCE / THAILAND

SAKCHAI KAEHABAN : FACTORS INFLUENCING SELF-CARE BEHAVIORS OF DIABETIC PATIENTS IN DIABETES MELLITUS CLINIC, CHANGHAN HOSPITAL, ROI ET PROVINCE, THAILAND. THESIS ADVISOR : PRATHURNG HONGSRANAGON, Ph.D., 59 pp.

The objective of this study was to find out the factors influencing self-care behaviors of diabetic patients treated at the Diabetes Mellitus Clinic, Changhan Hospital, Roi Et Province. It was a cross-sectional study with simple random sampling among 315 samples. Data collection was in December 2009. Descriptive statistics was employed (frequency, percentage, means, standard deviation) and Chi Square test was used to find out the relationship among social-demographic characteristics, knowledge and attitude about diabetes mellitus, and self-care behaviors of diabetic patients.

The result found that demographic data of majority of samples was females (72.1%), more than 60 years old (39.7%), married (73.3%), finished Prathomsuksa or lower (88.3%), agiculturers (77.1%), with household monthly income and expenses of less than 2,000 baht (56.5% and 44.8% respectively). The duration of their diabetes illness was less than 5 years (53.3%). Sixty-two point five percent of the patients had no family members with diabetes mellitus history, and 66.7% had people around them to motivate them to control diabetes. Ninety-one point one percent had information on diabetes from public health officers. It also found that knowledge had the relationship with the level of self-care behaviors of diabetic patients. In the future, there should be cooperation of people in the community for diabetes control with a promotion of knowledge and attitudes correctly.

Field of Study : Health System Development Student's Signature .....

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Finally, if there are any mistakes found in any steps of the research, the researcher would like to express apologies for this matter.

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CHAPTER I
INTRODUCTION

1.1 Background and Rationale

Diabetes mellitus, a non-communicable disease is as major public health problem. Diabetic patients not only suffer from diabetes mellitus symptoms, but also acute and chronic complications. Those complications such as cardiovascular complications, hypertension, ophthalmic complications, and neurological complications can cause a disability among diabetic patients. The disability will become a burden to diabetic patients themselves, family, and society.

United Nations has projected the prevalence of diabetes mellitus among all world's population of all ages around the world for years 2030 will be 4.4%. The total numbers of diabetic patients will reach 366 million for years 2030. (Wild, S., Roglic, G., Green, A., Sicree, R., & King, H., 2004).

Diabetes mellitus is usually found more among people living in the urban areas. Type 2 diabetes mellitus is the most frequently occurring form of diabetes showing no obvious symptoms. Those people with type 2 diabetes mellitus do not know they have suffered from diabetes mellitus before until they get blood test to measure their blood glucose level. Most diabetic patients receive diabetic medicine or insulin treatments. Risks for getting diabetes mellitus symptoms and its complications vary depending on individual's self-care behaviors. (Aekplakorn, W., Abbott-Klafter, J., Premgamone, A., Dhanamun, B., Chaikittiporn, C., Chongsuvivatwong, V., et al, 2007).

Prevalence of diabetes mellitus in Thailand has been increased from 33.3 to 147.2 per hundred thousand population during 1985 to 1997 (Ministry of Public Health, 2000) which means that every two thousand people, three of them are diabetic patients. Both acute and chronic complications can occur among diabetic patients if their blood glucose level is not well-controlled due to their self- care behaviors. The most common form of diabetes mellitus (95.0-96.3%) in Thailand is Type 2 diabetes mellitus (Nitiyanant W, 1999). Diabetes mellitus is considered a problem affecting on medical services, treatment, self-care behaviors of diabetic patients preventing complications, especially on complications of cardiovascular system.

Most of diabetic patients are women. Risks of diabetes mellitus increase with increasing age. People over 40 years-old are at high- risk of getting diabetes mellitus (World Health Organization, 2002). Prevalence of diabetes mellitus in people aged 30-64 is 5-7% and aged over 60 is 10-15% (Fugpholngam V, Tabtimtes S, Boontavee A, et al, 1993)

According to data found from Thailand Diabetes Registry Project, the overall prevalence of hypertension, chronic renal insufficiency, cataract, diabetic retinopathy, ischemic heart disease, and ischemic cerebro vascular disease is 63.3, 43.9, 42.8, 30.7, 8.1, and 4.4, respectively (Rawdaree, P., Ngarmukos, C., Deerochanawong, C., Suwanwalaikorn, S., Chetthakul, T., Krittiyawong, S., et al, 2006)

Diabetes mellitus is a chronic disease that require medical care and diabetic patients should learn to manage it themselves to prevent acute complications and to reduce risks of getting chronic complications.

Based on data from registration system of Changhan Hospital, it showed that there are high numbers of diabetic patients who are screened by chronic care clinic receiving the hospital treatment. The situation of diabetes mellitus in Changhan district, Roi Et is concluded that there is an increasing trend of diabetic patients. From three year-progress report of the hospital, found that prevalence rate of diabetic mellitus in 2006, 2007, and 2008 is 1,929, 1,979 and 2,134 per hundred thousand population, respectively and 95% of diabetic patients coming for the hospital services are non-insulin-dependent diabetic patients (Information centre, Changhan Hospital, 2008)

Guidelines for improving the care of diabetic patients by American Diabetes Association (American Diabetes Association, 2007) was stated that diabetic patients must be treated by changing their lifestyles including eating habits and self-management along with taking diabetes medicine to reduce blood glucose level correctly and regularly.

Risk factors for diabetes mellitus are obesity status, hypertension, and hyperlipidemia that are caused by inappropriate self-care management of each person. To prevent risky groups of people from getting diabetes mellitus, therefore; changing in self-care behaviors among those should be promoted promptly. In addition, study of factors influencing blood glucose control behavior of diabetic patients can be beneficial for utilizing data found for the purpose of developing a plan for changing self-care behaviors of diabetic patients. Such plan can enable diabetic patients to control their blood glucose level, as a result; the incidence of complications and death among diabetic patients can be reduced. Through controlling diabetes mellitus symptoms, dietary management, diabetes medications, exercise, and basic self-care behavior management must be arranged.

1.2 Research Questions

1. What are social-demographic characteristics, knowledge, and attitude of diabetic patients receiving treatment at diabetes mellitus clinic in Changhan Hospital, Roi Et?
2. What are the levels of self-care behaviors of diabetic patients receiving treatment at diabetes mellitus clinic in Changhan Hospital, Roi Et?
3. What are the factors influencing self-care behaviors of diabetic patients receiving treatment at diabetes mellitus clinic in Changhan Hospital, Roi Et?

1.3 Objectives

1. To study about levels of self-care behaviors of diabetic patients receiving treatment at diabetes mellitus clinic in Changhan Hospital, Roi Et.
2. To explain about social-demographic characteristics, knowledge, attitude of diabetic patients receiving treatment at diabetes mellitus clinic in Changhan Hospital, Roi Et
3. To analyze factors influencing self-care behaviors of diabetic patients receiving treatment at diabetes mellitus clinic in Changhan Hospital, Roi Et.

1.4 Conceptual Framework of Research

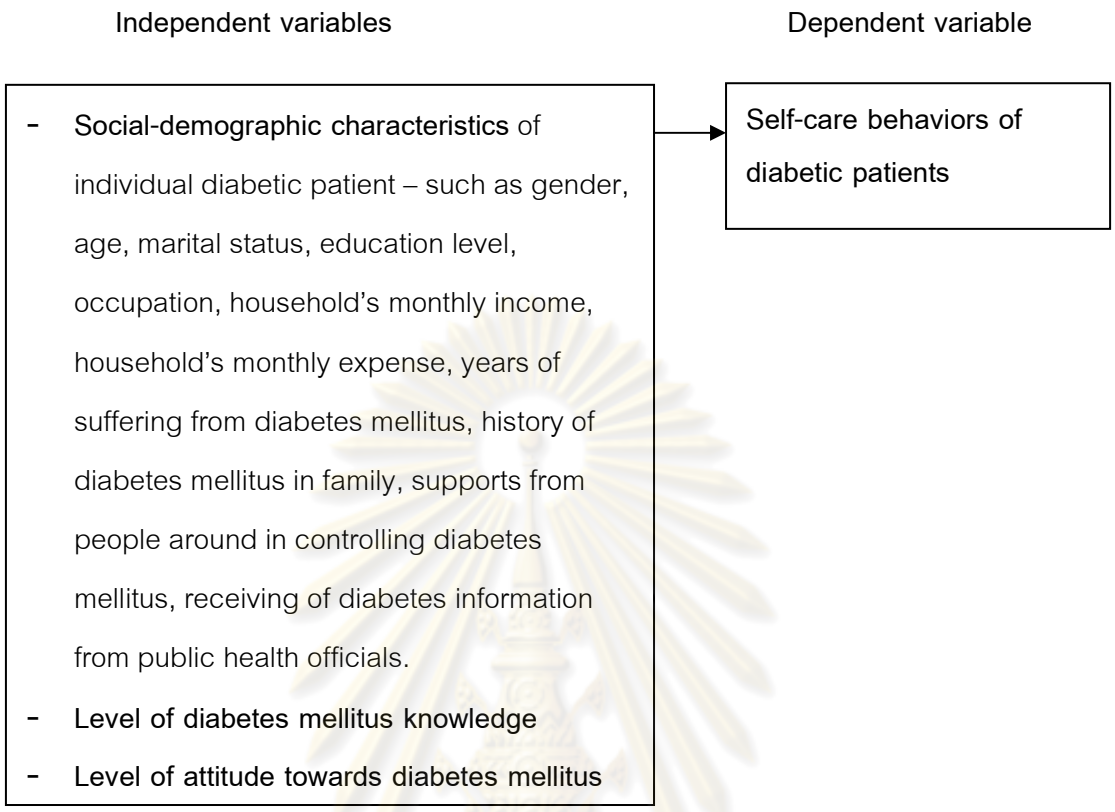

Figure 1 Conceptual Framework

1.5 Research Delimitation

Sample populations of the research are diabetes patients who are registered diabetes patients at diabetes mellitus clinic in Changhan Hospital, Roi Et.

1.6 Operational Definitions

1. A diabetes mellitus – it is a hyperglycemia which means the blood glucose level is too high, as a result of; the body isn't properly using blood glucose received from food.
2. A diabetic patient – both men and women who are diagnosed from a doctor that they have diabetes mellitus and are registered diabetic patients at Diabetes Mellitus clinic in Changhan Hospital.
3. Blood glucose level – level of blood glucose of diabetic patients who just have 6 hours-fasting is measured for one time before data collection.

4. Knowledge on diabetes mellitus – diabetes mellitus related knowledge such as factors, symptoms, treatments, exercise, medications, complications, and improvement.
5. Attitude towards diabetes mellitus – it is belief or feeling of a person having towards diabetes mellitus and such attitude partly effect on behaviors in controlling diabetes mellitus.
6. Self-care behaviors of diabetic patients – performing correct behaviors in controlling diabetes mellitus such as dietary management, exercise, medications, seeking health check-up as scheduled, basic self-care management and prevention of complications.

Variables in the Research

Independent variables are – gender, age, marital status, education level, occupation, household's monthly income, household's monthly expense, years of suffering from diabetes mellitus, supports from people around in controlling diabetes mellitus, history of diabetes mellitus in family, receiving of diabetes mellitus information from public health officials, level of diabetes mellitus knowledge, and level of attitude towards diabetes mellitus.

Dependent variable – is occurred in relation to the incidence of independent variables in this research), that is self-care behaviors in controlling diabetes mellitus.

1.7 Expected Benefits from Research.

1. Social-demographic characteristics, level of knowledge and attitude towards diabetes mellitus of diabetic patients receiving treatment in diabetes mellitus clinic in Changhan Hospital, Roi Et is clarified.
2. Level of self-care behaviors of diabetic patients receiving treatment in diabetes mellitus clinic in Changhan Hospital, Roi Et is clarified.
3. Factors influencing diabetes mellitus of diabetic patients receiving treatment in diabetes mellitus clinic in Changhan Hospital, Roi Et is clarified.
4. Related primary information is clarified and used for developing a plan to provide services and care as well as for improving self-care behaviors of diabetic patients.

CHAPTER II

LITERATURE REVIEW

2.1 Provision of information or knowledge to diabetic patients

Diabetes mellitus related general knowledge may be used to predict treatment collaboration of diabetic patients. Non-collaboration of diabetic patients is correlative to their insufficient knowledge. Unaware of advantages of collaboration and disadvantages of non-collaboration occurring with health and following expenses of diabetic patients may cause non-collaboration in diabetes mellitus treatment. Therefore, a clear suggestion about treatment should be emphasized through verbal action and IEC material dissemination can help increasing treatment collaboration level of diabetic patients.

Most of diabetic patients are elder who may have difficulties that prevent them to follow suggestion/information they receive due to their bad memory (Levy, R. A. 1991).

2.2 Health Promotion and Health Education on Diabetes Mellitus

Without proper control, diabetes mellitus can cause complications such as visual loss, heart failure, mutilation of arms and legs, blood stroke, renal failure, and erectile dysfunction. Diabetes mellitus has been spreading to people around the world. Currently, there are many attempts to change human's lifestyles and educate people about proper behaviors reducing risk of getting diabetes mellitus. Presently, modern treatment can decrease illness and death rates by adjustment of insulin-glucose infusion, arrangement of dialysis, transplantation of pancreas-kidney and management of efficient care reducing fat and hypertension. In addition, diabetes mellitus and its complications can be preventable or delayed in getting illness by reducing risk factors. Therefore, diabetic patients must be aware of diabetes mellitus and behave properly to avoid overweight, smoking, and fasting type of food causing body a weakness. In addition, exercise, control of blood glucose level, basic self-care and professional care are essential for diabetic patients (Anthony, S., Odgers, T., & Kelly, W, 2004).

Patient-Center Care by Michael Balint et al, Levenstein and University of Western Ontario is a process of interaction between the clinician and the diabetic patients. It refers to the clinician's behavioral skill in the consultation. Patient-centered care customizes seeking and accepting the patient's ideas, giving encouragement and treatment recommendations, and creating guidance resulting on an individual's attitude. (Weston WW, Brown JB, 1995)

2.3 Concept of self-care agency

Definition of self-care based on conceptual framework of Orem (Orem, 1995) is to perform activities by individual who initiate and perform by his/herself continuously. The purpose of self-care is to maintain a good health as well as sanitation and well-being and to avoid illness and harm from life. Through behaving effectively, integrity of human structure, functioning and human improvement of individuals can be promoted until its maximum point is reached. By performing activities to response to individual needs of self-care or to contribute to the goals of self-care, that individual must have ability in self-care which is described as a complex qualities of human in creating or improving self-care. This self-care ability consists of hierarchical three-part structures which are:

1. Foundational capabilities and dispositions is ability necessary for human to perceive and perform, the following components are consisted of foundational capabilities and dispositions.

1.1 ability and skills to learn such as to memorize, to read, to write and to rationalize.

1.2 Functioning of sensation including touching, vision, hearing, tasting, and smelling.

1.3 Perception of situations that are both occurred internal and external.

1.4 Self-value

1.5 Habits

1.6 Determination

1.7 Self-understanding

1.8 Self-concern

1.9 Self-acceptance

1.10 Prioritize and time management for performing activities

1.11 Management ability

2. Ten power components

It is a middle portion to connect between perception and deliberately performance in self-care as following:

2.1 ility to maintain attention, self-care as self-care agent and internal and external factors affecting self-care.

2.2 The ability to control physical energy to be sufficient for initialization and performance of self-care continuously.

2.3 The ability to control parts of body for essential movement in initiating or performing self-care continuously and successfully.

2.4 The ability to reason for self-care

2.5 Motivation to perform self-care in order to accomplish set goal in accord with its characteristic and meaning for life, health and well-being.

2.6 Skills in making decision about self-care and put this decision into action.

2.7 The ability to acquire knowledge about self-care from appropriate and reliable sources, to memorize it and to put it into action.

2.8 Skills in thinking cognitively and perceptually, in managing, operating, communicating, and building a relationship with others for self-care performance.

2.9 The ability to manage self-care system

2.10 The ability to perform self-care continuously and to integrate them into a major part of lifestyle.

3. Capabilities for self-care operations are necessary and composed of three types as follows:

3.1 Estimative - the ability to determine the situation, self-factors and environment factors for self-care, and decide what need to be adjusted for self-care.

3.2 Transitional - the ability to judge about what to do to response to self-care demands.

3.3 Productive operation- the ability to perform activities to response to self-care demands.

According to therapeutic self-care demand, Orem divided self-care demand as necessary activities for self-care into three requisites as follows:

1. Universal self- care requisites – all self-care actions that should be performed by individual to response to human's basic need over time to maintain integrity of human structure ad functioning of body.
2. Developmental self-care requisites – it is a self-care demand to support human to go through life development for some period of time such as pregnancy, child birth, development into next period of life, and harmful situation or any obstacles of life.
3. Health deviation self-care requisites- it is a self-care demand to reduce and remove symptoms that may arise from having congenital disability or abnormal body structure and functioning through doctor's diagnosis and treatment in order to resume to a healthy status rapidly.

2.4 Family Center Self-Care

According to WHO, self-care is a performance of any social activities of an individual, family, neighbors, colleagues, and community. The social activities include health related decision making for both health maintenance, disease prevention diagnosis, treatment (medication) and self-care after the service. Self-care is most referred to a performance by civil sector which includes self care in health and self care in illness.

1. Self-care in health – it is a self-care promoting a good health for yourself and your family members, this type of self-care is performed while having a good health as follows:

1.1 Health maintenance – performing behaviors to maintain a good health without illness, to support human well-being and to avoid any hazards affecting health condition. Those behaviors are such as exercise, sanitation, dietary management, not drinking alcohol, and non-smoking must be performed on regular basis.

1.2 Disease prevention – performing behaviors to prevent from illness or disease such as injection for vaccination, three levels of disease or illness prevention can be divided into three as below.

- Primary prevention such as injection for vaccination
- Secondary prevention – this level of prevention is to eliminate disease before its symptoms will become severe such as lung scan and x-ray should be performed for a patient having chronic airway disease to prevent incidence of lung cancer that may occur accordingly.
- Tertiary prevention – this level of prevention is to prevent spread of disease from patients to others.

2. Self-care in illness – it is a self-care performed when people have become ill. For components are described below.

2.1 dual self care

2.2 Family care

2.3 Care from extended social network

2.4 Mutual aid or self-help group

Comparison of different behaviors in controlling blood glucose level between patients who can and cannot control blood glucose level by studying from 232 populations, it was found that predisposing factors (knowledge, belief, value) have shown a relationship with controlling blood glucose at significance level of 0.01 which can be described following 1) dietary management (r=.15), 2) exercise (r=.30) 3) medication (r=.34) and 4) stress management (r=.16). For enabling factors (receiving of diabetes related information, accessing to public health services in the community, treatment expense for diabetes mellitus), its relationship with controlling blood glucose is shown at significance level of 0.01 as described following 1) dietary management (r=.22), 2) exercise (r=.32), 3) medication (r=.20) and 4) stress management (r=.21). For reinforcing factor that is being influenced by people around in controlling blood glucose level has shown a relationship with controlling blood glucose level at significance level of 0.01 as described following 1) dietary management (r=.21), 2) exercise (r=.27), and 3) medication (r=.27). However, for stress management (r=.07), there is no relationship shown between stress management and controlling blood glucose level (Chompusri, 2008)

Based on study on 'Health Behaviors of Non-Insulin-Dependent Diabetic Patients and Factors relating to Behavior in Controlling Blood Glucose level', it is revealed that behavior in controlling blood glucose level among sample groups was at fair level. Factors that have relationship with controlling blood glucose level are diabetes related knowledge, complications related knowledge, intensity of diabetes mellitus, perception of advantages received by following recommendations of public health officials, being skilled in controlling blood glucose level and being supported by people around in controlling blood glucose level. Controlling blood glucose level is most influenced by factor of being supported by people around (r=.31) and factor of perception of advantages received by following recommendations of public health officials (r=.23) (Promchark, 2007)

A study on 'Factors Effecting the Compliance of Diabetic Patients', found that perception of self-efficacy in overall has contributed to a relationship with compliance from diabetic patients toward treatment at significance level of $P < 0.01$. Diabetic patients having a good relationship with doctor or general practitioner, they tends to have higher self-efficacy and provide a better compliance compared to those having a poor relationship with doctor or general practitioner. Diabetic patients whose factors are different in term of demographic and economy characteristics, have provided different levels of compliance for diabetes mellitus treatment, but there is no significance shown ($P > 0.05$) (Jaikumwan, 2008)

CHAPRER III
METHODOLOGY

3.1 Research Design

This research was a cross-sectional study. The researcher utilized the previously found data relating to diabetes's concept, theory, and research results for guiding this research to find out about factors influencing self-care behaviors of diabetic patients at Diabetes Mellitus Clinic in Changhan Hospital, Roi Et.

3.2 Study Area

Diabetes Mellitus Clinic in Changhan Hospital, Roi Et. The total of registered diabetic patients at the Clinic were 1,009 people.

3.3 Study Time

3.3.1 Research period was from May to December 2009

3.3.2 Data collection time was in December 2009

3.4 Study Population and Sample Group

Population and sample group of this research were 1,009 diabetic patients who were diagnosed by doctors and had been registered as diabetic patients at the Diabetes Mellitus Clinic in Changhan Hospital, Roi Et in year 2008. All of these patients were still alive and visited the Diabetes Mellitus Clinic in Changhan Hospital.

1. Criteria for recruitment of research sample

Sample group could be both male and female aged over 15 years old who had registered as Type 1 and Type 2 diabetic patients at the Diabetes Mellitus Clinic in Changhan Hospital in 2008 and had been constantly receiving treatments at the Clinic.

2. Criteria for screening out research sample

Diabetic patients with problems of memory, mentality and hearing, were to be screened out by checking such information from patient record files. Additionally, diabetic patients who were not, at the time of the data collection, residing in Changhan district and had

lost contact with the Clinic for more than 6 months would also be not included in the research.

3.5 Sampling Technique

Simple Random Sampling was used by sorting out registered identification number of diabetic patients who were still alive and received treatments at Diabetes Mellitus Clinic in Changhan Hospital and then do sampling the identification number in the sampling table until 315 samples were achieved.

Sample size was determined by using formula developed by Taro Yamane at 95 percent level of significance.

(Yamane, Taro,1973)

$$n = \frac{N}{1 + Ne^2}$$

n means Sample size

N means Numbers of research populations (1,009 people)

e means Error allowance of sampling (0.05)

Sample size calculated by using the formula was 286 people (adding up 10% on top = 315 people)

3.6 Data Collection

1. Questionnaire divided into four parts and developed by the researcher was used as a measurement tool.
2. A training course aiming to build understanding of questions in the questionnaires and interview process among interviewers was conducted by the researcher. Each interview must be standardized by beginning with introduction of interviewer as they were interviewer of the research as well as explanation of research objectives and later the interviewer was required to seek collaboration from the respondent for the interview. Through the process, the respondents must be ensured that all information given would not be presented as individual result, but the whole picture of the research. At the end of interview, the interviewer was required to check completeness of the questionnaire and later to say 'thank you' to the respondent.

3. If there were some samples of diabetic patients who could not read or complete the questionnaire, responsible officials could act as an interviewer and complete the questionnaire on their behalf.
4. For those who were illiterate, they could give their consents to attend the research by giving their fingerprint.
5. About 20 minutes would be taken for collecting data from each diabetic patient.

Questionnaire was consisted of:

Part 1 Personal Data of Sample group

This part consisted of 11 questions regarding gender, age, marital status, education level, current occupation, household's monthly income, household's monthly expense, years of suffering from diabetes mellitus, history of diabetes mellitus in family, supports from people around in controlling diabetes mellitus, and receiving of information regarding diabetes mellitus from public health officials.

Part 2 knowledge about diabetes mellitus

This part consisted of 18 questions (total point scores are 18). For each question, only one answer was correct. (One point score for a correct answer and zero point score for an incorrect answer).

By applying WHOQOL-BREF by WHO (1996), the category of knowledge was categorized into low, medium and high as follows:

1-6 = Low (low level of knowledge)
7-12 = Medium (medium level of knowledge)
13-18 = High (high level of knowledge)

Part 3 Attitude towards Diabetes Mellitus

This part consisted of 15 questions (total point scores were 60). Each question required each sample to choose one of four scales which were strongly agree, agree, disagree and strongly disagree.

Six questions were negative questions (no. 1, 2, 3, 6, 8, and 14) while 9 questions were positive questions (no. 4, 5, 7, 9, 10, 11, 12, 13 and 15).

Interpretation of scores

	Positive questions	Negative questions
Strongly agree	4	1
Agree	3	2
Disagree	2	3
Strongly disagree	1	4

Scoring Criteria

Score would be calculated segregatedly by each question, each area and overall picture to present attitude towards diabetes mellitus of diabetic patients by using average ($\overline{X}$) from 1.00 to 4.00. Therefore, levels of attitude towards diabetes mellitus according to Levy and Lemeshow, 2008; Vanichbuncha, 2001, the level of attitude in low, medium and high were as follows:

$\overline{X}$ 1.00- 1.75 = poor (diabetic patients whose attitude towards diabetes mellitus was on a poor level)

$\overline{X}$ 1.76-2.51 = fair (diabetic patients whose attitude towards diabetes mellitus was on a fair level)

$\overline{X}$ 2.52-3.27 = good (diabetic patients whose attitude towards diabetes mellitus was on a good level)

$\overline{X}$ 3.28-4.00 = very good (diabetic patients whose attitude towards diabetes mellitus was on a very good level)

Part 4 Self-care behaviors in controlling diabetes mellitus

This part consisted of 24 questions (total point scores were 96). Four rating scale questions were used to divide answers into 4 scales as follows:

Regular = one behaved on a routine basis or every time (6-7 days/a week)

Most of the times = one behaved for most of times, but not every time (4-5 days/ a week)

Sometimes = one behaved for sometimes or irregularly behaved (1-3 days/ a week)

Never = one never behaved (0 days/a week)

Six questions were negative questions (no. 2, 3, 5, 6, 10 and 11) while 18 questions were positive questions (no. 1, 4, 7, 8, 9, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24).

Interpretation of scores

	Positive Questions	Negative Questions
Regular	4	1
Most of the times	3	2
Sometimes	2	3
Never	1	4

Scoring Criteria

Score would be calculated segregatedly by each question, each area and overall picture to present self-care behaviors of diabetic patients by using average ($\overline{X}$) from 1.00 to 4.00, Therefore, levels of self-care behaviors towards diabetes mellitus according to Levy and Lemeshow, 2008; Vanichbuncha, 2001, categorized into low, medium and high were as follows:

$\overline{X}$ 1.00- 1.75 = poor (diabetic patients whose self-care behaviors towards diabetes mellitus was on a poor level)

$\overline{X}$ 1.76-2.51 = fair (diabetic patients whose self-care behaviors towards diabetes mellitus was on a fair level)

$\overline{X}$ 2.52-3.27 = good (diabetic patients whose self-care behaviors towards diabetes mellitus was on a good level)

$\overline{X}$ 3.28-4.00 = very good (diabetic patients whose self-care behaviors towards diabetes mellitus was on a very good level)

Quality Inspection of Research Measurement Tool

Content Validity - questions about knowledge on diabetes mellitus, attitude towards diabetes mellitus, and self-care behaviors in controlling diabetes mellitus were reviewed by 3 academicians for correctness of language and validity of content. After being reviewed, the researcher revised the questionnaires according to suggestions and comments of 3 academicians.

Reliability - the researcher conducted questionnaire testing among 30 diabetic patients at Diabetes Mellitus Clinic in Srisomdej, Roi Et, the social-demographic characteristics of these 30 diabetic patients were similar to diabetic patients in Diabetes Mellitus Clinic in Changhan Hospital. Formula of Kuder-Richardson was used to calculate reliability of questions about knowledge on diabetes mellitus and result was 0.75 By using Cronbach's Alpha Coefficient, reliability of questions about attitude and behaviors were 0.80 and 0.78 respectively. (permissible reliability was more than 0.70).

3.7 Data Analysis

The researcher analyzed the scores by using SPSS Version17, therefore; the following types of data were analyzed by different types of methods.

1. The personal data of sample group by distributing frequency and percentage.
2. The level of knowledge about diabetes mellitus of sample group by distributing frequency and percentage.
3. The level of attitude towards diabetes mellitus of sample group by using statistic, average and standard deviation.
4. The level of self-care behaviors of sample group by using statistic, average and standard deviation.
5. The relationship between independent variables and self-care behaviors of diabetic patients by using Chi Square test.

3.8 Limitations

With time limitation, the researcher, therefore; only conducted the data collection among sampled diabetic patients in Changhan Hospital. As a result, the sample size of this research can not be considered as a representative group for overall Roi Et province.

3.9 Obstacles and Solutions during the Research

Through using questionnaires to collect data about knowledge, attitude and self-care behaviors of diabetic patients, some patients might not be aware of importance of this research and thus did not give collaboration in completing the questionnaire. The research, therefore; should explain about the types of benefits to be received according to the research objectives which were to analyze data found and to identify factors influencing control of diabetes mellitus. In addition, data was also utilized to develop a plan to control diabetes mellitus in order to prevent complications causing a great loss to diabetic patients. Prior to the collection of data through questionnaires, the researcher should certify that personal data of diabetic patients would be maintained confidential and consent form from diabetic patients must be sought.

CHAPTER IV
RESULTS

The research studied about factors influencing self-care behaviors of diabetic patients at Diabetes Mellitus Clinic in Changhan Hospital, Roi Et. Three hundred and fifteen samples were selected through the use of simple random sampling. Data was collected through using a questionnaire consisting of 4 parts: Personal data of sample group, knowledge about diabetes mellitus, attitude towards diabetes mellitus, and self-care behaviors in controlling diabetes mellitus. The data was analyzed by using frequency, percentage, mean and standard deviation. Chi-Square was also used to analyze a relationship between independent variables and self-care behaviors of diabetic patients.

4.1 Personal data of sample group

Table 4.1: Number and percentage of diabetic patients by demographic characteristics (n=315)

Demographic Characteristics	Number	Percentage
Gender		
- Male	88	27.9
- Female	227	72.1
Age (years)		
- Less than 51 years-old		
- 51 – 60 years-old	73	23.2
- More than 60 years-old	117	37.1
Mean = 58.9, S.D. = 9.5, Min = 36,Max =92	125	39.7
Marital Status		
- Single		
- Couple	84	26.7
Education Level	231	73.3
- Primary school or lower		
- Secondary school or higher	278	88.3
	37	11.7

Table 4.1 (continued): Number and percentage of diabetic patients by demographic characteristics (n=315)

Demographic Characteristics	Number	Percentage
Current Occupation		
- Unemployed	28	8.9
- Agriculturer	243	77.1
- Others (Employee, trader, government officials and monk)	44	14
Household's monthly income		
- Less than 2,000 baht	178	56.5
- 2,000 – 3,999 baht	62	19.7
- 4,000 baht or over	75	23.8
Household's monthly expense		
- Less than 2,000 baht	141	44.8
- 2,000 – 3,999 baht	89	28.3
- 4,000 baht or over	85	27.0
Years of suffering from diabetes mellitus		
- Less than 5 years	168	53.3
- 5 – 9 years	66	21.0
- More than 9 years	81	25.7
Ever having family member who suffered from diabetes mellitus		
- Ever	118	37.5
- Never	197	62.5

Table 4.1 (continued): Number and percentage of diabetic patients by demographic characteristics (n=315)

Demographic Characteristics	Number	Percentage
Having people around to encourage in controlling diabetes.		
- Yes	210	66.7
- No	105	33.3
Having received diabetes mellitus related information from public health officials		
- Yes	287	91.1
- No	28	8.9

Table 4.1 indicates that among the sample group, the percentages of female were 72.1, while 21.9 percent were male. Almost half of the sample group (39.7%) was aged over 60 years-old while 37.1% was between 51-60 years of age. Majority (73.3%) of them were couple, while 88.3 percent completed primary school or lower. About seventy-seven percent (77.1%) of them were in agriculture occupation.

Those 56.5 percent of all were responsible for household's monthly income ranged below 2,000 baht and 44.8 percent of them were responsible for household's monthly expense ranged below 2,000 baht. More than fifty percent (53.3%) had been ill with diabetes mellitus for less than 5 years and most (62.5%) of the sample group had not had any family members with diabetes mellitus. Over sixty-six percent (66.7%) of them reported that they had people around to encourage them for controlling diabetes mellitus. Over ninety percent (91.1%) received diabetes mellitus related information from public health officials. The information can reveal there were more female patients in their early old age who were married, agriculturers, had low level of education and very low income and expenses, suffered from diabetes mellitus for some years but had no history of family member with this illness. Fortunately, they had people around to help them overcome the illness and almost all of them got educated from public health officers on the illness topics.

4.2 Knowledge about diabetes mellitus of sample group

Table 4.2: Number and percentage of the respondents who gave the correct answers to the questions of knowledge about diabetes mellitus (n=315)

Content	Number	Percentage	Level
1. Diabetes mellitus is a hyperglycemia which means the blood glucose level in body is too high than normal.	298	94.60	high
2. Obese people are more risky for diabetes mellitus than the thin people.	222	70.48	high
3. Blood glucose level of diabetic patients is normally at 140 mg percent. *	199	63.17	medium
4. Obvious diabetes mellitus symptoms are boring with food, headache, and chest pain.*	137	43.49	medium
5. Diabetic patients do not need to eat 3 meals a day.*	240	76.19	high
6. Diabetic patients should control food to maintain normal level of blood glucose.	315	100	high
7. Eating carbohydrate food, fried food and sweets can increase blood glucose level to be higher than normal level.	267	84.76	high
8. Fruits that diabetic patients can eat without limiting quantity are jackfruit and banana.*	230	73.02	high
9. Diabetic patients should drink alcohol to reduce blood glucose level.*	249	79.05	high
10. Brisk walking and stick exercise is appropriate for diabetic patients.	311	98.73	high

Table 4.2 (continued): Number and Percentage of the respondents who gave the correct answers to the questions on knowledge about diabetes mellitus (n=315)

Content	Number	Percentage	Level
11. Each time of exercise should take more than 30 minutes.	303	96.19	high
12. Diabetic patients should not exercise while feeling hungry or full.	307	97.46	high
13. If diabetic patients do not eat a meal, he/she does not need to take diabetes medicine for that meal.*	256	81.27	high
14. After taking diabetes medicine, if you feel hungry, sweat and feel like fainting, you should consult a doctor.	301	95.56	high
15. Positive thinking can fresh-up mind and also partly reduce blood glucose level.	306	97.14	high
16. Diabetic patients should conduct renal function test for at least one time a year.	262	83.17	high
17. If you feel hungry, trembled heart, cold body, you should give basic self-care by taking a candy or sugar in the mouth immediately.	304	96.51	high
18. Suffering from diabetes mellitus for long times may cause erectile dysfunction.	299	94.92	high

From table 4.2, it was found that the samples had high level of knowledge on right knowledge, for instance, “diabetic patients should control food to maintain normal level of blood glucose” (100.0%), “brisk walking and stick exercise is appropriate for diabetic patients” (98.73%), “diabetic patients should not exercise while feeling hungry or full”(97.46%), “positive thinking can fresh-up mind and also partly reduce blood glucose level” (97.14%), “if you feel hungry, trembled heart, cold body, one should give basic self-care by taking a candy or sugar in the mouth immediately”(96.51%), “each time of exercise should take more than 30 minutes” (96.19%), “after taking diabetes medicine, if you feel hungry, sweat and feel like fainting, you should consult a doctor” (95.56%), “suffering from diabetes mellitus for long times may cause erectile dysfunction” (94.92%), “diabetes mellitus is a hyperglycemia which means the blood glucose level in body is too high than normal”(94.60%), and “eating carbohydrate food, fried food and sweets can increase blood glucose level to be higher than normal level” (84.76%). For some negative statements which the sample had high level on (already reversed scoring, therefore, correct knowledge) were “if diabetic patients do not eat a meal, he/she does not need to take diabetes medicine for that meal” (81.27%), “diabetic patients should drink alcohol to reduce blood glucose level”(79.05%), “diabetic patients do not need to eat 3 meals a day” (76.19%), and “fruits that diabetic patients can eat without limiting quantity are jackfruit and banana” (73.02%).

On the other hand, the samples had medium level of knowledge on 2 negative statements, namely, “blood glucose level of diabetic patients is normally at 140 mg percent” (63.17%) and “obvious diabetes mellitus symptoms are boring with food, headache, and chest pain” (43.49%).

This can be concluded quite a success of education program on diabetes mellitus to the patients by public health officers at Changhan Hospital, Roi Et.

4.3 Attitude level of diabetic patients towards diabetes

Table 4.3: Average and attitude level of diabetic patients towards diabetes mellitus. (n=315)

Content	$\overline{X}$	S.D.	Level
1. Getting diabetes mellitus is a matter of fate.	2.44	0.81	fair
2. Dietary management does not reduce blood glucose level.	3.06	0.58	good
3. Diabetes mellitus care is a responsibility of doctors and public health officials only.	3.18	0.62	good
4. Diabetic patients should control weight to be not over normal level.	3.38	0.86	very good
5. Diabetic patients should not purchase and take 'package' medicine or advertised supplementary food.	2.97	0.31	good
6. In case of eating herbal to reduce blood glucose level, you do not need to inform a doctor.	2.88	0.44	good

Table 4.3 (continued): Average and attitude level of diabetic patients towards diabetes mellitus. (n=315)

Content	$\overline{X}$	S.D.	Level
7. You think purchasing shoes that are not too tight and loose is necessary for diabetic patients.	3.05	0.31	good
8. Adjustment of taking medicine is an appropriate solution to the front situation.	3.12	0.58	good
9. Diabetic patients should eat steam rice rather than sticky rice.	2.63	0.82	good
10. Behave according to doctor's suggestion can reduce incidence of complications.	3.41	0.57	very good
11. Small wounds should be treated immediately.	3.20	0.47	good
12. Exercise regularly is beneficial to diabetic patients.	3.23	0.42	good
13. Diabetes patients should see a doctor and receive medicine as scheduled.	3.75	0.55	very good
14. Fat body represents healthy body.	2.42	0.82	fair
15. Meditation is a method reducing stress for diabetic patients.	3.03	0.22	good

From table 4.3, it was found that the sample had a very good attitude on "diabetic patients should see a doctor and receive medicine as scheduled" (Mean=3.75, S.D.=0.55), "behave according to doctor's suggestion can reduce incidence of complications" (Mean=3.41, S.D.=0.57), "diabetic patients should control weight to be not over normal level" (Mean=3.38, S.D.=0.86).

For good level of attitude were in the following items “exercise regularly is beneficial to diabetic patients” (Mean=3.23, S.D.=0.42), “small wounds should be treated immediately” (Mean=3.20, S.D.=0.47), “you think purchasing shoes that are not too tight and loose is necessary for diabetic patients” (Mean=3.05, S.D.=0.31), “meditation is a method reducing stress for diabetic patients” (Mean=3.03, S.D.=0.22), “diabetic patients should not purchase and take ‘package’ medicine or advertised supplementary food” (Mean=2.97, S.D.=0.31), and “diabetic patients should eat steam rice rather than sticky rice” (Mean=2.63, S.D.=0.82).

On the other hand, for negative statements (which scoring was properly reversely, therefore, the right attitude), it showed the fair and good attitude of the samples on the issue. For instance, “diabetes mellitus care is a responsibility of doctors and public health officials only” (Mean=3.18, S.D.=0.62); “adjustment of taking medicine is an appropriate solution to the front situation” (Mean=3.12, S.D.=0.58); “dietary management does not reduce blood glucose level” (Mean=3.06, S.D.=0.58), “in case of eating herbal to reduce blood glucose level, one does not need to inform a doctor” (Mean=2.88, S.D.=0.44). The fair level of attitude were only on 2 items, namely, “getting diabetes mellitus is a matter of fate” (Mean=2.44, S.D.=0.81) and “fat body represents healthy body (Mean=2.42, S.D.=0.82).

The result might indicate that certain wrong attitude should be corrected and more emphasized for further bettering the situation among the patients at Changhan Hospital, Roi Et.

4.4 Level of self-care behaviors of diabetic patients

Table 4.4: Average and level of self-care behaviors of diabetic patients (n=315)

Content	$\overline{X}$	S.D.	Level
1. You eat three scheduled meals a day.	2.44	0.84	fair
2. You eat food according to your needs without limiting quantity.	2.48	0.98	fair
3. You eat sweets or sweet fruits like lungan, and custard apple.	3.08	0.55	good
4. You eat fresh and parboiled vegetable.	3.47	0.82	very good
5. You drink tea and coffee with sugar.	3.27	1.02	good
6. You eat fat food such as fat meat, food with coconut milk, fried or stir-fired food.	3.13	0.61	good
7. You exercise at least 3 days a week.	3.14	0.90	good
8. Your exercise each time takes more than 30 minutes.	2.47	1.00	fair
9. You start exercise at small level based on your strengths and continuously increase level of exercise.	3.43	0.73	very good

Table 4.4 (continued): Average and level of self-care behaviors of diabetic patients (n=315)

Content	$\overline{X}$	S.D.	Level
10. You reduce quantity of medicine yourself.	3.95	0.25	very good
11. You forget to take diabetes medicine.	3.60	0.49	very good
12. You take 'before meal-medicine' prior eating meal for 30 minutes.	3.07	1.01	good
13. You take 'after meal-medicine' right away after meal.	3.21	0.84	good
14. You get blood test and blood pressure measurement according to scheduled appointments.	3.80	0.44	very good
15. You behave according to doctor or public health's suggestions when you ill.	3.99	0.08	very good
16. You take a shower by focusing on cleaning covered areas such as underarm, groin and sexual organ.	3.66	0.74	very good
17. You give a foot care by soaping toes while you take a shower. You also dry your toes when you finish showering.	3.44	0.96	very good
18. You exercise your feet by massaging, cycling ankle and flap toes up-down and left-right.	3.28	0.86	very good
19. You monitor on wounds or ingrown nail.	3.59	0.74	very good
20. You carry diabetes medicine, candy or sugar with you when you are not in the house or travel in long distance.	3.41	0.82	very good
21. Your self-eyesight and visions is focused.	3.67	0.70	very good

Table 4.4 (continued): Average and level of self-care behaviors of diabetic patients (n=315)

Content	$\overline{X}$	S.D.	Level
22. Your self-mouth and teeth health is focused.	3.90	0.37	**very good**
23. You seek health knowledge from other types of media such as watching TV, reading documents and discussing health problems with others.	2.57	1.02	good
24. You relax your stress by reading, watching TV, listening to radio, doing hobby, praying and listening to philosophical cassette.	3.52	0.69	**very good**

For table 4.4, it indicated that the sample group performed the following self-care behaviors very well: “you behave according to doctor or public health’s suggestions when you get ill” (Mean=3.99, S.D.=0.08), “your self-mouth and teeth health is focused” (Mean=3.90, S.D.=0.37), “you get blood test and blood pressure measurement according to scheduled appointments” (Mean=3.80, S.D.=0.44),”your self-eyesight and visions is focused” (Mean=3.67, S.D.=0.7), “ you take a shower by focusing on cleaning covered areas (ie. underarm, groin, and sexual organ” (Mean=3.66, S.D.=0.74), “you monitor on wounds or ingrown nail” (Mean=3.59, S.D.=0.74), “you relax your stress by reading, watching TV, listening to radio, doing hobby, praying and listening to philosophical cassette” (Mean=3.52, S.D.=0.69), “you eat fresh and parboiled vegetable” (Mean=3.47, S.D.=0.82), “you give a foot care by soaping toes while you take a shower”, “you also dry your toes when you finish showering” (Mean=3.44, S.D.=0.96); “you start exercise at small level based on your strengths and continuously increase level of exercise” (Mean=3.43, S.D.=0.73), “you carry diabetes medicine, candy or sugar with you when you are not in the house or

travel in long distance" (Mean=3.41, S.D.=0.82), and "you exercise your feet by massaging, cycling ankle and flap toes up-down and left-right" (Mean=3.28, S.D.=0.86).

For good level of self-care behaviors included "you take 'after meal-medicine' right away after meal" (Mean = 3.21, S.D.= 0.84), "you exercise at least 3 days a week" (Mean=3.14, S.D.=0.90), "you take 'before meal-medicine' prior eating meal for 30 minutes" (Mean = 3.07, S.D.= 1.01), and "you seek health knowledge from other types of media such as watching TV, reading documents and discussing health problems with others" (Mean=2.57, S.D.=1.02).

For the negative statements, which were properly reversed therefore correct self-care behaviors, included fair and good levels as follows: "you drink tea and coffee with sugar" (Mean=3.27, S.D.=1.02), you eat food such as fat meat, food with coconut milk, fried or stir-fired food" (Mean=3.13, S.D.=0.61), and "you eat sweets or sweet fruits like lungan and custard apple" (Mean=3.08, S.D.=0.55). For those on fair level included "you eat food according to your needs without limiting quantity" (Mean=2.48, S.D.= 0.98), "you exercise each time takes more than 30 minutes" (Mean=2.47, S.D.=1.00), and "you eat three scheduled meals a day" (Mean=2.44, S.D.=0.84).

This reveals the fact that certain incorrect self-care behaviors need attention from public health officers at Changhan Hospital, Roi Et.

Table 4.5: Relationships between diabetic patients' demographic characteristics and self-care behaviors (n=315)

Variables	Level of self-care behaviors			χ^2	P-value
	fair/good	very good	Total		
Gender					
- Male	36	52	88	3.741	0.053
	(40.9%)	(59.1%)	(100%)		
- Female	67	160	227		
	(29.5%)	(70.5%)	(100%)		
Age (years)					
- Less than 51 years-old	45	28	73	37.355	**0.001**
	(61.6%)	(38.4%)	(100%)		
- 51 – 60 years-old	32	85	117		
	(27.4%)	(72.6%)	(100%)		
- More than 60 years-old	26	99	125		
	(20.8%)	(79.2%)	(100%)		
Marital Status					
- Single	21	63	84	3.085	0.079
	(25.0%)	(75.0%)	(100%)		
- Couple	82	149	231		
	(35.5%)	(64.5%)	(100%)		

Table 4.5 (continued): Relationships between diabetic patients' demographic characteristics and self-care behaviors (n=315)

Variables	Level of self-care behaviors			χ^2	P-value
	fair/good	very good	Total		
Education Level					
- Primary school or lower	94 (33.8%)	184 (66.2%)	278 (100%)	1.336	0.248
- Secondary school or higher	9 (24.3%)	28 (75.7%)	37 (100%)		
Current Occupation					
- Unemployed	2 (7.1%)	26 (92.9%)	28 (100%)	9.562	**0.008**
- Agriculture	88 (36.2%)	155 (63.8%)	243 (100%)		
- Others (Employee, trader, government officials and monk)	15 (34.1%)	29 (65.9%)	44 (100%)		
Household's monthly income					
- Less than 2,000 baht	63 (35.4%)	115 (64.6%)	178 (100%)	1.513	0.469
- 2,000 – 3,999 baht	17 (27.4%)	45 (72.6%)	62 (100%)		
- 4,000 baht or over	23 (30.7%)	52 (69.3%)	75 (100%)		

Table 4.5 (continued): Relationships between diabetic patients' demographic characteristics and self-care behaviors (n=315)

Variables	Level of self-care behaviors			χ^2	P-value
	fair/good	very good	Total		
Household's monthly expense					
- Less than 2,000 baht	60	81	141	15.035	**0.001**
	(42.6%)	(57.4%)	(100%)		
- 2,000 – 3,999 baht	28	61	89		
	(31.5%)	(68.5%)	(100%)		
- 4,000 baht or over	15	70	85		
	(17.6%)	(82.4%)	(100%)		
Years of suffering from diabetes mellitus					
- Less than 5 years	73	95	168	20.476	**0.001**
	(48.5%)	(51.5%)	(100%)		
- 5 – 9 years	17	49	66		
	(62.0%)	(38.0%)	(100%)		
- More than 9 years	13	68	81		
	(35.5%)	(64.5%)	(100%)		

Table 4.5 (continued): Relationships between diabetic patients' demographic characteristics and self-care behaviors (n=315)

Variables	Level of self-care behaviors			χ^2	P-value
	fair/good	very good	Total		
Ever have anyone in your family suffering from diabetes mellitus					
- Ever	48 (40.7%)	70 (59.3%)	118 (100%)	5.459	**0.019**
- Never	55 (27.9%)	142 (72.1%)	197 (100%)		
The diabetes mellitus patients had people around to encourage in controlling diabetes.					
- Yes	71 (33.8%)	139 (66.2%)	210 (100%)	0.353	0.552
- No	32 (30.5%)	73 (69.5%)	105 (100%)		
The diabetes mellitus patients received diabetes mellitus related information from public health officials					
- Yes	93 (32.4%)	194 (67.6%)	287 (100%)	0.127	0.722
- No	10 (35.7%)	18 (64.3%)	28 (100%)		

Note: P - value < 0.05

Table 4.5 indicates that out of total social-demographic characteristics, there were 5 variables having relationship with self-care behaviors of the sample with P-value < 0.05. They included age (P-value 0.001), current occupation (P-value 0.008), household's monthly expense (P-value 0.001), years of suffering from diabetes mellitus (P-value 0.001), and no family members with diabetes mellitus history (P-value 0.019).

This reveals the fact that the older the sample, the better is their self-care behaviors, especially those more than 60 years of age. Perhaps due to the fact that diabetes mellitus is a type of chronic disease which requires close attention from people around them and the fact that the elderly may not want to be the burden to their family members. For the current occupation, it is true that agriculturers were the majority of the sample (77.1%). For household expense per month, the less well-to-do (less than 2,000 baht monthly household expense), the better is their self-care behaviors perhaps due to the necessity to save money for other types of daily expenses. On the contrary, the shorter the time the samples suffered from the diabetes mellitus (less than 5 years), the better is their self-care behaviors. Perhaps those who are ill recently have more hope to overcome the situation of this chronic illness. As well, the more the absence of family member history of diabetes mellitus, the better is their behaviors, perhaps due to more information indicating that this illness can be prevented by change of one's lifestyle rather than relying on genetic issue.

Table 4.6: Relationships between level of knowledge and level of self-care behaviors of diabetic patients (n=315)

Variables	Level of self-care behaviors			χ^2	P-value
	fair/good	very good	Total		
Knowledge Level					
- middle	31	8	39	42.667	**0.001**
	(79.5%)	(20.5%)	(100%)		
- high	74	202	276		
	(26.8%)	(73.2%)	(100%)		

Note: p - value < 0.05

Table 4.6 indicates that the level of knowledge had a relationship with self-care behaviors (P-value = 0.001). In fact, the higher the knowledge, the better is the sample's self-care behaviors.

This reveals that with the current on-going support of health information disseminated among patients at Changhan Hospital, Roi Et, the patients learned that their in-depth knowledge of this illness can build-up their strength to fight with the illness or to at least improve the situation of their health status.

Table 4.7: Relationships between level of attitude and level of self-care behaviors of diabetic patients (n=315)

Variables	Level of self-care behaviors			χ^2	P-value
	fair/good	very good	Total		
Attitude Level					
- fair	9	7	16	4.164	0.125
	(56.3%)	(43.8%)	(100%)		
- good	77	167	244		
	(31.6%)	(68.4%)	(100%)		
- very good	19	36	55		
	(34.5%)	(65.5%)	(100%)		

Note: p - value < 0.05

Table 4.7 indicates that the level of attitude, regardless of on fair, good, or very good level, had no relationship with the level of self-care behaviors of the samples.

The finding is quite contrary to some of the KAP principle which indicates that knowledge and attitude may affect the practice of the samples. Nevertheless, there are also some studies finding that there is no connection between KAP.

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CHAPTER V
SUMMARY, DISCUSSION, AND RECOMMENDATIONS

This study was about factors influencing self-care behaviors of diabetic patients in Diabetes Mellitus Clinic, Changhan Hospital, Roi Et Province, Thailand. The samples were 315 diabetic patients diagnosed by physicians and were registered as diabetic patients at the Diabetes Mellitus Clinic, Changhan Hospital, Roi-et Province. The statistics used were frequency and percentage on social-demographic characteristics, percentage on knowledge of diabetes mellitus, mean and standard deviation for scores on attitude on diabetes mellitus of the patients and scores on practice of self-care of the diabetic patients. An analysis on the relationship between independent variables and self-care behavior of diabetic patients was conducted by Chi Square test. The result of the study corresponded to the set objectives as follows:

The first objective – to explain about social-demographic characteristics, knowledge, and attitude of diabetic patients receiving treatment at Diabetes Mellitus Clinic, Changhan Hospital, Roi Et Province. From the result, the discussion can be concluded as follows:

Among the sample group, majority of them were female (72.1%), aged more than 60 years old (39.7%), married (73.3%), with primary and lower education (73.3%), were agriculturers (77.1%), had less than 2,000 baht household monthly income and expense (56.5% and 44.8% respectively). Fifty three point three percent of them had been ill with diabetes mellitus for less than 5 years and most (62.5%) of the sample had not had any family members with diabetes mellitus history. Over sixty-six percent (66.7%) of them reported that they had people around to encourage them for controlling diabetes mellitus. Over ninety percent (91.1%) received diabetes mellitus related information from public health officials.

For the knowledge part, it could be concluded that the samples had quite high level of right knowledge which might counted as a success of Changhan Hospital's dissemination of information on health prevention and health promotion to the patients. However, there is also a necessity to improve the incorrect part of knowledge to the patients in order to help reducing the severity of their illness and to support their good quality of life.

In terms of attitude, the spreading out of very good attitude, good and fair attitude encourages the public health officers at Changhan Hospital that they are on the right direction toward health promotion and health prevention which are counted as the cornerstone of public health services to Thai people, including diabetic patients at Changhan Hospital. However, as there are still certain wrong attitude toward diabetes mellitus which should be corrected and should be more emphasized for further bettering the situation among the patients at Changhan Hospital, Roi Et.

The second objective – to study the level of self-care behaviors of diabetic patients being treated at the Diabetes Mellitus Clinic, Changhan Hospital, Roi Et Province. From the result, the discussion can be concluded as follows:

The variety of self-care behaviors on very good, good, and fair levels, indicates the fact that there are some issues about self-care behaviors of diabetic patients that should be counted as a success by public health officers at Changhan Hospital. However, not all roads are rosy as there are still some gaps which need to be closed to ascertain that the diabetic patients have correct self-care behaviors to affect a good impact on their life quality.

The third objective – to analyze the factors affecting self-care behavior of diabetic patients being treated at Diabetes Mellitus Clinic, Changhan Hospital, Roi Et Province. From the result, the discussion can be concluded as follows:

Data from table 4.5, it indicated that out of total social-demographic characteristics, there were 5 variables having relationship with self-care behaviors of the

sample with P-value < 0.05. They included age (P-value 0.001), current occupation (P-value 0.008), household's monthly expense (P-value 0.001), years of suffering from diabetes mellitus (P-value 0.001), and no family members with diabetes mellitus history (P-value 0.019).

This reveals the fact that the older the sample, the better is their self-care behaviors, especially those more than 60 years of age. Perhaps due to the fact that diabetes mellitus is a type of chronic disease which requires close attention from people around them and the fact that the elderly may not want to be the burden to their family members. For the current occupation, it is true that agriculturers were the majority of the sample (77.1%). For household expense per month, the less well-to-do (less than 2,000 baht monthly household expense), the better is their self-care behaviors perhaps due to the necessity to save money for other types of their daily expenses. On the contrary, the shorter the time the samples suffered from the diabetes mellitus (less than 5 years), the better is their self-care behaviors. Perhaps those who are ill recently have more hope to overcome the situation of this chronic illness. As well, the more the absence of family member history of diabetes mellitus, the better is their behaviors, perhaps due to more information indicating that this illness can be prevented by change of one's lifestyle rather than relying on genetic issue. Meanwhile, the level of knowledge had a relationship with self-care behaviors (P-value = 0.001). In fact, the higher the knowledge, the better is the sample's self-care behaviors. This reveals that with the current on-going support of health information disseminated among patients at Changhan Hospital, Roi Et, the patients learned that their in-depth knowledge of this illness can build-up their strength to fight with the illness or to at least improve the situation of their health status. On the contrary, the level of attitude, regardless of on fair, good, or very good level, had no relationship with the level of self-care behaviors of the samples.

All of the findings on social-demographic characteristics, knowledge, and attitude in relation to self-care behaviors of the samples are in line with the study by Promchak (2007) and Chompusri et al. (2008). This is especially true for knowledge and its relation to self-care behaviors of the samples. The study by Promchak (2007) wanted to find the influencing factors with the behaviors on blood glucose control of non-insulin diabetic patients among 204 patients in Sakhon Nakorn Province, Thailand. He found that some of the factors included knowledge on diabetes mellitus and support from their family members. Meanwhile, the study by Chompusri et al. 2008 found that for the behavior of blood glucose control among 232 samples in Lampang Province, Thailand, the influencing factors were knowledge on diet control, on exercising, on medication use, and on stress management.

As for the recommendation, it is vital to take into consideration the following facts to improve the situation of diabetes mellitus at Diabetes Mellitus Clinic, Changhan Hospital, Roi Et Province:

More correct knowledge on diabetes mellitus should be disseminated to the diabetic patients at Changhan Hospital's Diabetes Mellitus Clinic. More important, it should be noted that diabetes mellitus is not an issue of genetic-oriented, but in fact, a change of lifestyle that can realistically has an impact on one's health status. As well, proper exercise for the elderly should be introduced so that the patients can practice appropriately with no danger to their physicality.

More cooperation should be sought with family members of diabetic patients as they can be an important drive of the patients to take control of their illness.

Building-up of knowledge should start when the kids are young. Warning should be that no junk food should be consumed as it will not only be harmful to the children's health but also a waste of money on useless diet which they should refrain from.

Extensive cooperation of people in the community for diabetes control with a promotion of knowledge and attitudes in a correct manner should be established. This is especially important for primary health care that is health care services close to people at the grass root level. By having community participation, villagers can help as team facilitators who motivate the diabetic patients to take control of their self-care behavior to support health promotion among patients on self-reliant and sustainable manner.

As health is one of the fundamental human rights, it is imperative that Changhan Hospital, Roi Et Province, as well as other regions of Thailand, should take a notion and importance of community involvement for self-care behaviors of diabetic patients.

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APPENDICES

APPENDIX A

Questionnaire Number …….

Data collected from this questionnaire will be kept confidentially by the researcher. The result analysis will be shown as overall picture, thus there will not be any effects for respondents. Therefore, please provide the data based on the fact.

Date of Data Collection .....

Part I Personal Data

1. Gender (Sex) 1 ( ) Male 2 ( ) Female

2. Age..... years-old (Age)

3. Marital Status (Status)

1 ( ) Single 2 ( ) Married 3 ( ) Widow

4 ( ) Divorce/Separate

4. Education Level (Edc)

1 ( ) Uneducated 2 ( ) Primary school 3 ( ) Lower secondary school

4 ( ) Upper secondary school 5 ( ) Diploma

6 ( ) Bachelor degree or higher degree

5.Current Occupation (Occ)

1 ( ) Unemployed 2 ( ) Employee 3 ( ) Trade

4 ( ) Agriculture 5 ( ) Government officials

6 ( ) Others, please specify ……

6. Household's monthly income (Inc)

1 ( ) Less than 2,000B 2 ( ) 2,000 – 3,999B

3 ( ) 4,000 – 6,000B 4 ( ) More than 6,000B

7.Household's monthly expense (Pay)

1 ( ) Less than 2,000B 2 ( ) 2,000 – 3,999B

3 ( ) 4,000 – 6,000B 4 ( ) More than 6,000B

8. Years of suffering from diabetes mellitus (Years)

1 ( ) Less than 5 years 2 ( ) 5 – 9 years

3 ( ) 10 – 15 years 4 ( ) More than 15 years

9. Have you ever had anyone in your family suffering from diabetes mellitus? (Gene)

1 ( ) Yes 2 ( ) No

10. Do you have anyone around such as children, spouse, father, mother, and others community members encouraging you in controlling diabetes? (Env)

1 ( ) Yes 2 ( ) No

11. Do you receive information about complications and intensity of diabetes mellitus from public health officials? (Srv)

1 ( ) Yes 2 ( ) No

Part II Knowledge relating to Diabetes Mellitus

Explanation – Please mark ' /' in the empty box behind each content to present what you think is 'Correct' or 'Incorrect' about the content.

Item	Content	Correct	Incorrect	
1.	Diabetes mellitus is a hyperglycemia which means the blood glucose level in body is too high than normal.			K1
2.	Obese people are more risky for diabetes mellitus than the thin people.			K2
3.	Blood glucose level of diabetic patients is normally at 140 mg. percent.			K3
4.	Obvious diabetes mellitus symptoms are boring with food, headache, and chest pain.			K4
5.	Diabetic patients do not need to eat 3 meals a day.			K5
6.	Diabetic patients should control food to maintain normal level of blood glucose.			K6
7.	Eating carbohydrate food, fried food and sweets can increase blood glucose level to be higher than normal level.			K7
8.	Fruits that diabetic patients can eat without limiting quantity are jackfruit and banana.			K8

Item	Content	Correct	Incorrect	
9.	Diabetic patients should drink alcohol to reduce blood glucose level.			K9
10.	Brisk walking and stick exercise is appropriate for diabetic patients.			K10
11.	Each time of exercise should take more than 30 minutes.			K11
12.	Diabetic patients should not exercise while feeling hungry or full.			K12
13.	If diabetic patients do not eat a meal, he/she does not need to take diabetes medicine for that meal.			K13
14.	After taking diabetes medicine, if you feel hungry, sweat and feel like fainting, you should consult a doctor.			K14
15.	Positive thinking can fresh-up mind and also partly reduce blood glucose level.			K15
16.	Diabetic patients should conduct renal function test for at least one time a year.			K16
17.	If you feel hungry, trembled heart, cold body, you should give basic self-care by taking a candy or sugar in the mouth immediately.			K17
18.	Suffering from diabetes mellitus for long times may cause erectile dysfunction.			K18

Part 3 Attitude towards Diabetes Mellitus

Explanation - Please mark ‘ /’ in the empty box where is most suitable to your comment.

Item	Content	(4) Strongly agree	(3) Agree	(2) Disagree	(1) Strongly disagree	
1.	Getting diabetes mellitus is a matter of fate.					A1
2.	Dietary management does not reduce blood glucose level.					A2
3.	Diabetes mellitus care is a responsibility of doctors and public health officials only.					A3
4.	Diabetic patients should control weight to be not over normal level.					A4
5.	Diabetic patients should not purchase and take ‘package’ medicine or advertised supplementary food.					A5
6.	In case of eating herbal to reduce blood glucose level, you do not need inform a doctor.					A6
7.	You think purchasing shoes that are not too tight and loose is necessary for diabetic patients.					A7

Item	Content	(4) Strongly agree	(3) Agree	(2) Disagree	(1) Strongly disagree	
8.	Adjustment of taking medicine is an appropriate solution to the front situation.					A8
9.	Diabetic patients should eat steam rice rather than sticky rice.					A9
10.	Behave according doctor's suggestion can reduce incidence of complications.					A10
11.	Small wounds should be treated immediately.					A11
12.	Exercise regularly is beneficial to diabetic patients.					A12
13.	Diabetes patients should see a doctor and receive medicine as scheduled.					A13
14.	Fat body represents healthy body.					A14
15.	Meditation is a method reducing stress for diabetic patients.					A15

Part 4 Self-care behaviors to control diabetes mellitus.

Explanation - Please mark ' /' in the empty box where it is most suitable to your behaviors. Please answer to every question by using the below scales.

Regular means you have behave on routine basis or every time (6-7 days/a week)

Most of times means you have behave for most of times, but not every time (4-5 days/a week)

Sometimes means you have behave for sometimes or irregularly behave (1-3 days/a week)

Never means you have never behave (0 days/a week)

Item	Content	(4) Regular	(3) Most of times	(2) Sometimes	(1) Never	
	Eating behaviors					
1.	You eat three scheduled meals a day.					Ba1
2.	You eat food according to your needs without limiting quantity.					Ba2
3.	You eat sweets or sweet fruits like lungan, and custard apple.					Ba3
4.	You eat fresh and parboiled vegetable.					Ba4
5.	You drink tea and coffee with sugar.					Ba5
6.	You eat fat food such as fat meat, food with coconut milk, fried or stir-fired food.					Ba6

Item	Content	(4) Regular	(3) Most of times	(2) Sometimes	(1) Never	
	Exercise behaviors					
7.	You exercise at least 3 days a week.					Bb7
8.	Your exercise each time takes more than 30 minutes.					Bb8
9.	You start exercise at small level based on your strengths and continuously increase level of exercise.					Bb9
	Medication behaviors					
10.	You reduce quantity of medicine yourself.					Bc10
11.	You forget to take diabetes medicine.					Bc11
12.	You take 'before meal-medicine' prior eating meal for 30 minutes.					Bc12
13.	You take 'after meal-medicine' right away after meal.					Bc13
	Scheduled checking-up behaviors					
14.	You get blood test and blood pressure measurement according to scheduled appointments.					Bd14

Item	Content	(4) Regular	(3) Most of times	(2) Sometimes	(1) Never	
15.	You behave according to doctor or public health's suggestions when you are ill.					Bd15
	Basic self-care					
16.	You take a shower by focusing on cleaning covered areas such as underarm, groin and sexual organ.					Be16
17.	You give a foot care by soaping toes while you take a shower. You also dry your toes when you finish showering.					Be17
18.	You exercise your feet by massaging, cycling ankle and flap toes up-down and left-right.					Be18
19.	You monitor on wounds or ingrowing nail.					Be19
20.	You carry diabetes medicine, candy or sugar with you when you are not in the house or travel in long distance.					Be20
21.	Your self-eyesight and visions is focused.					Be21

Item	Content	(4) Regular	(3) Most of times	(2) Sometimes	(1) Never	
23.	You seek health knowledge from other types of media such as watching TV, reading documents and discussing health problems with others.					Be23
24.	You relax your stress by reading, watching TV, listening to radio, doing hobby, praying and listening to philosophical cassette.					Be24

APPENDIX B

Budget

Type	No. of Unit	Unit	Amount	Remark
<u>Personnel</u>				
Interviewer 1	7	Times	1,000B	Data collection
Interviewer 2	7	Times	1,000B	Data collection
Interviewer 3	7	Times	1,000B	Data collection
Interviewer 4	7	Times	1,000B	Data collection
Interviewer 5	7	Times	1,000B	Data collection
<u>Materials</u>				
Supplies and equipments	345	Set	3,000B	The questionnaire
<u>Transportation</u>				
Srisomdej Hospital, Roi Et Province	10	Times	2,000B	Testing of questionnaire
Total			10,000B	

APPENDIX C

Time Schedule

Activity	Month 2009								
	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan 2010
1. Review of literature	━	━							
2. Development of questionnaire, writing thesis proposal, submission for proposal exam, thesis proposal exam			━	━	━				
3. Review of ethical research involving human.					━	━	━		
4. Testing of questionnaire						━	━		
5. Collection of data								━	
6. Analyze and interpretation of data								━	
7. Thesis exam, submission of article publication and submission of thesis									━

BIOGRAPHY

Name	: Mr. Sakchai Kaehaban
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Educational Achievement	: Bachelor's degree in public health from Sukothaithammathirat University 1992
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