Shendi University

Faculty of Post Graduate Studies and Scientific Reseach

Research about:

Diabetic patient concept and compliance regarding self management in almak nimir university hospital 2016.

Submitted by:

Wafa Abd Elwahed Mohammed Ahmad Saied

BSc . Shendi university 2011

Supervised by:

Dr: Higazi Mohammed Ahmed

Associate professor of medical Surgical Nursing

Shendi university

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بسم الله الرحمن الرحيم

الآيـة

قال تعالى:-

﴿ وَإِذَا مَرِضْتُ فَهُوَ يَشْفِينِ ﴾

صدق الله العظيم

سورة الشعراء الآية (80)

Dedication

To my father and my mother who learned me the meaning of life.

To my sisters and brothers.

To my supervisor Dr:Higazi Mohammed Ahmed.

Special dedication to all my friends.

Acknowledgement

Firstly greatest thanks to my god Allah and to a lot of thanks to who helped me in issuing out this research to my supervisor Dr:Higazi Mohammed Ahmed

for her support, encouragement and guidance. A lot of thank to my brother and my sister and all my collages in Shendi University.

ملخص البحث

يعتبر مرض الداء السكري من الامراض المزمنه ، ويحتاج في علاجه إلى تغييرات أساسيه في نمط الحياة.

أجريت هذه الدراسة بهدف تقييم مفهوم مريض السكري تجاه المرض ومدي التزامه بالمعالجه الذاتيه، المجموعة المستهدفة هم مرضى السكري النوع الثاني ،شملت الدراسة (70عينه) من مرضي السكري ذهبوا إلي مستشفي المك نمر الجامعي للمتابعة في الفترة من أغسطس إلي نوفمبر2016.

تم جمع البيانات باستخدام استبيان يحتوي علي اسئله عن البيانات الشخصية للمريض واسئله عامه عن مرض السكري والمعالجة الذاتية، وتم تحليل البيانات باستخدام برنامج التحليل الإحصائي (SPSS).

توصلت الدراسه الي عده نتائج ، حيث وجد ان اكثر من نصف عينه الدراسه 61% لديهم معرفه جيده بمقاييس التحكم في مرض السكري ومنع حدوث مضاعفات، بينما فقط 8% من عينه الدراسه لديهم معرفه ضعيفه .ايضا وجد ان معظم عينة الدراسه 94% ياخذون علاجهم بانتظام، وهنالك ايضا اكثر من نصفهم يذهبون للمتابعة الدورية بانتظام.إضافة الي ذلك كانت لديهم معرفه متوسطه عن كيفيه العنايه بالقدم ،فقط 28%من عينه الدراسه يستخدمون مقايس لمعرفه مستوي سكر الدم في منازلهم.

توصلت الدراسه الي عده توصيات اهمها ، يجب تضمين و تكثيف التوعيه للمرضي عن طرق العنايه الذاتيه بالمنزل ، بالاضافه الي ضرورة توفير ملصقات و منشورات للمرضي .

Abstract

Diabetes is a chronic disease of life long duration and its management require a fundamental change in the life style.

The aim of this study were to assess the diabetic patient concept and compliance regarding self Management .The target population was type 2diabetic patient, (70 sample) diabetes patients were participated, during period from august to November 2016.

Data was collected using interview questionnaire composed from questions about the personal data and the knowledge of pt regarding general information about DM, and self-care management and data gathered analysed by using Statistical Package for the Social Sciences (SPSS).

More than half 61% of study group have good knowledge about self-care measure to control diabetes and prevent complication. While only 8% them have poor knowledge.The majority of study group 94% take their management regularly, and more than half of them on fallow up regular.

The study group have moderate knowledge about the items of knowledge and practice of foot care, only 28% of study them used blood testing measures to check up of blood glucose at home.

The study recommended that, nurses and other medical staff have to include patient education in their plan of care, poster, hand book should be available for patient.

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List of abbreviation

Abbreviation	Meaning
(ADA)	American Diabetes Association
(DKA)	diabetic ketoacidosis
(DM)	Diabetes mellitus
(HbA1c)	glycosylated hemoglobin
(HHS)	hyperosmolar hyperglycemic syndrome
(PT)	Patient
(SMBG)	self care management of blood glucose

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1.1. Introduction

Diabetes mellitus is a group of metabolic disease characterized by increased levels of glucose in the blood hyperglycemia from defect in insulin secretion insulin action or both. diabetes in 2000 the world wide estimate of prevalence of diabetes was 171 million people and by 2030 this expected to increase to 366 million diabetes especially in elderly as many as 50% of people older than 65 years of age have some degree of glucose in tolerance people 65 years and older account for almost 40% times of people with diabetes,(1). Sign and symptom include polyuria polydipsia polyphagia fatigue and abdominal pain. diagnostic test include fasting plasma glucose glycosylated hemoglobin and oral glucose tolerance test. therapeutic interventions include diet, exercise, insulin, oral hypoglycemic medication, education and monitoring blood glucose, complications include acute and long term complication,(2).the American Diabetes Association (ADA) publishes standards of medical care yearly to promote the importance of achieving optimal glycaemic control; this is achieved when glycosylated hemoglobin (HbA1c) is less than 7%.4 Comprehensive treatment includes lifestyle modifications, pharmacological control of hyperglycemia, hypertension, hyperlipidemia and preventive care including monitoring for glycaemic control and adequate self-care.4,5 diabetes care is based on self-management by the patient and the quest for improving glycaemic control has made it clear that whatever the technical expertise applied, the outcome depends on willing cooperation by the patient. this, in turn, depends on an understanding of the risks of diabetes and the potential benefit of glycaemic control and other measures such as: following a balanced diet and drug regimens, examining one's own urine, blood glucose monitoring, administration of insulin, maintaining a healthy weight, going for regular health check up, early recognition of symptoms associated with glucose urea and hypoglycemia, (3).exercise is an important factor in

controlling blood glucose and lipid level. in nutrition and meal planning and weight control , control of total caloric intake to attain or maintain control of blood glucose level,(1). Self-monitoring blood glucose : most of diabetologists would agree That the instruction of newly diagnosed patients in home monitoring techniques is now important ,the earlier that self-monitoring is introduce in the curse of the disease,(4).

1.2. Justification

Diabetes mellitus is a chronic disease, and need to help the patient to safe life normally with take treatment without complication maintain good diabetic control.

Diabetes is the third leading cause of death from disease of, primarily because of high rate of cardiovascular disease among people with diabetes, hospitalization rate of people with diabetes are 2-4 time greater for adults than for the general population,(1). the prevalence of the diabetes is increasing at alarming rate particularly in developing countries estimate of global diabetes prevalence predict 6.4%, affecting 285 million adults in 2010, and will increase to 7.7% and 439 million adults by 2030,(10).

1.3. Objectives

1.3.1General objective:

To assess the diabetic patient concept and compliance regarding self-management.

1.3.2. Specific Objective:

1. To determine patients' knowledge of self-care in diabetes management and control.
2. To identify knowledge about diet and exercise in controlling of diabetes mellitus among study group.
3. To identify the factor influence management and controlling among study group.
4. To identify diabetic patient practice of self-care

2. Literature review

2.1. Diabetes mellitus:

DM is a group of metabolic disease characterized by increased level of glucose in the blood (hyperglycemia) resulting from defects in insulin secretion, insulin action or both. Insulin a hormone produced by the pancreas controls the level of glucose in the blood by regulating the production and storage of glucose in diabetes the cells may stop responding to insulin or the pancreas may stop producing insulin this lead to hyperglycemia. The major classification of diabetes is type1 diabetes, typeII diabetes, gestational diabetes, and diabetes associated with other conditions or syndrome, [(1).]

2.2.Risk factors for diabetes mellitus :

- Family history of diabetes (ie, parents or siblings with diabetes)
- Obesity.
- Race/ethnicity (eg, African Americans, Hispanic Americans, Native Americans, Asian Americans, Pacific Islanders)
- Age ≥45 y
- Previously identified impaired fasting glucose or impaired glucose tolerance
- Hypertension (≥140/90 mm Hg)
- HDL cholesterol level ≤35 mg/dL (0.90 mmol/L) and/or triglyceride level ≥250 mg/dL (2.8 mmol/L)
- History of gestational diabetes or delivery of babies over 9 lb,[(1).]

2.3.Pathophysiology:

- Insulin is secreted by beta cells, which are one of four types of cells in the islets of Langerhans in the pancreas. Insulin is an anabolic, or storage, hormone. When a person eats a meal, insulin secretion increases and moves glucose from the blood into muscle, liver, and fat cells. In those cells, insulin transports and metabolizes glucose for energy
- Stimulates storage of glucose in the liver and muscle (in the form of glycogen)
- Signals the liver to stop the release of glucose
- Enhances storage of dietary fat in adipose tissue
- Accelerates transport of amino acids (derived from dietary protein) into cells

Insulin also inhibits the breakdown of stored glucose, protein, and fat.
During fasting periods (between meals and overnight), the pancreas continuously releases a small amount of insulin (basal insulin); another pancreatic hormone called glucagon (secreted by the alpha cells of the islets of Langerhans) is released when blood glucose levels decrease and stimulates the liver to release stored glucose. The insulin and the glucagon together maintain a constant level of glucose in the blood by stimulating the release of glucose from the liver.
Initially, the liver produces glucose through the breakdown of glycogen (glycogenolysis). After 8 to 12 hours without food, the liver forms glucose from the breakdown of noncarbohydrate substances, including amino acids (gluconeogenesis)[(1).]

2.4. Classification of diabetes

Type 1 diabetes mellitus was formerly known as insulin dependent diabetes mellitus and juvenile diabetes mellitus.

- Little or no endogenous insulin, requiring injections of insulin to control diabetes and prevent ketoacidosis.
- Five to 10% of all diabetic patients have type 1.
- Etiology: autoimmunity, viral, and certain histocompatibility antigens as well as a genetic component.
- Usual presentation is rapid with classic symptoms of polydipsia, polyphagia, polyuria, and weight loss.
- Most commonly seen in patients under age 30 but can be seen in older adults.

Type 2 diabetes mellitus was formerly known as noninsulin dependent diabetes mellitus or adult onset diabetes mellitus.

- Caused by a combination of insulin resistance and relative insulin deficiencyâ€”some individuals have predominantly insulin resistance, whereas others have predominantly deficient insulin secretion, with little insulin resistance.
- Approximately 90% of diabetic patients have type 2.
- Etiology: strong hereditary component, commonly associated with obesity.
- Usual presentation is slow and typically insidious with symptoms of fatigue, weight gain, poor wound healing, and recurrent infection.
- Found primarily in adults over age 30; however, may be seen in younger adults and adolescents who are overweight.
- Patients with this type of diabetes, but who eventually may be treated with insulin, are still referred to as having type 2 diabetes[(8).]

2.5. Classic symptoms of diabetes:

Symptoms of diabetes include excessive thirst, excessive urination, excessive hunger because glucose is unable to enter the cells, the cells starve, causing hunger the large amount of glucose in the blood causes an increase in serum concentration the renal tubules are un able to re absorb all the excess glucose that is filtered by the glumeruli and glycosuria result large amount of water are required to excrete this glucose causing polyuria and dehydration [(2).]

-The increased dehydration cause polydipsia also high blood glucose may also cause fatigue, blurred vision, abdominal pain and headache[(2).]

2.6. Diagnostic test:

Tests Include: -fasting plasma glucose, measured by laboratory the normal plasma glucose level is less than 100 mg/dl when the level is > 126 mg/dl diabetes is diagnose.

-Oral glucose tolerance test another test to diagnose diabetes after the patient drinks concentrated carbohydrate drink diabetes is diagnosed when the blood glucose level is >200 mg/dl after 2 hours.

- Glycosylated hemoglobin is used to gather baseline data and to monitor progress of diabetes control it reflects the average blood glucose level for previous 2 to3 months, normal glycosylated hemoglobin is 4% to 6%.Because diabetes affects so many body systems. additional test recommended for baseline data include a lipid profile, serum creatinine and electro cardiogram[(2).]

2.7. Medical management:

Treatment depends on many factors such as the type of diabetes and ability of the pancreas to manufacture insulin and involves of the following:

2.7.1. Diet and weight loss:

Is major component of treatment for every person with diabetes formulation of diabetic diet depend on the client sex, age activity level, occupation, the calories distributed according to the percentage of carbohydrates, fat, and protein that equal the total prescribed caloric amount, the client with diabetes who over weight is placed on a weight reduction diet. Moderate weight loss improves the body use of insulin, [5].

2.7.2. Exercise: Reduce the need for insulin because blood sugar can be lowered without it.

2.7.3. Insulin injections are required when the body produces little or no insulin, as with type 1 diabetes. They are also required for some people with type 2 diabetes when diabetes tablets, together with healthy eating and regular physical activity, are not enough to keep blood glucose levels within the recommended target range.

There are five classes of insulin ranging from short to long acting as insulin is classified according to how long it works in the body. Some insulins are clear in appearance, others cloudy.

- There are several different insulin types within each class:
  - Rapid onset-fast acting insulin.
  - Short acting insulin.

- Intermediate acting insulin.
- Mixed insulin.
- Long acting insulin.

- **Absorption is accelerated by:**

Injecting into an exercised area such as the thigh.

High temperatures (eg: shower, bath, hot water bottle, spa, sauna).

Injecting into muscle (the deeper the injection, the faster the insulin will be absorbed).

- **Absorption can be delayed by:**

-Smoking

- Scarring or lumps due to over-use of the same injection site, which causes the flesh to become hard and leads to erratic absorption of insulin.
- Cold insulin (eg: injecting immediately after taking insulin from the fridge)
- Variation in insulin absorption (either accelerated or delayed) can cause fluctuations in blood glucose levels
- Not mixing an insulin that requires reconstituting before injecting[,(6).]

2.7.4.Oral anti diabetic agent: Drug are prescribed for client with type II diabetes the list of oral hypoglycemic drug is sulfonylureas and meglitinides, diguanides and thizalinedlones and alpha-glycosidase inhibitors[,(5).]

2.8.Best herbs for managing diabetes:

2.8.1. Medicinal plants have always been an important source for finding new remedies for human health problems. Traditionally, numerous herbs have been recommended for treatment of diabetes. Also, antidiabetic effects of so many plants have been reported by many researchers. In most cases, however, these reports are confirmed by animal models and even in vitro studies and limited evidence exists

about their clinical usefulness. the current review focused on the medicinal plants, the hypoglycemic actions of which have been supported by different clinical studies on diabetic patients.

2.8.2 Anti diabetic herbs:

- Aegle marmelos:

Aegle marmelos, also known as bael, has been reported to have a number of medicinal attributes including antidiabetic effects.

- Allium cepa:

Preliminary, Mathew and Augusti (1975) reported that oral consumption of
Allium cepa (onion) can improve glycemic control in diabetes.

- Gymnema sylvestre:

Accumulating pieces of evidence demonstrates that leaves of Gymnema sylvestre can improve glycemic control in diabetes. evaluated effectiveness of G. sylvestre leaf extract in controlling hyperglycaemia in 27 TypeI patients under insulin therapy.

- Momordica charantia:

Momordica charantia has acquired a reputation for management of diabetes,
It has passed several animal studies and its clinical trials have been started since many years ago, administration of M. charantia seeds to six type I and fourteen type II patients significantly decreased PPBG level in both patient groups ,also, drinking an aqueous suspension of the vegetable pulp resulted in remarkable reduction of FBG and PPBG levels in 86 out of 100 cases. With moderate typeII

- Ocimum sanctum:

A significant decrease in diabetic symptoms (polydypsia, polyphagia and tiredness) has been seen in 30 type II patients consuming (2 g/day/for 3 months) leaf powder of Ocimum sanctum .

- **Silybum marianum:**

The fame of Silybum marianum seed in herbal medicine is owing to its therapeutic effects for liver-related disorders,[7].

2.9. Nursing management:

The assessment include the obtain a history of current problem, family history and general health of the patient, also perform a physical examination to asses for sign and symptoms of diabetes, general health of the patient and presence of complication,[8].

2.9.1 Nursing diagnoses include:

- Altered nutrition more than body requirements related to intake in excess of activity expenditure.

- Risk for injury hypoglycemia related to effects of insulin, in ability to eat.

Activity intolerance related to poor glucose control.

- Knowledge deficit related to use of oral hypoglycemic agent.

- Risk for impaired skin integrity related to decreased sensation and

Circulation to lower extremities,[8].

2.9.2. Nursing intervention:

- **Improving nutrition** by assess current timing and content of meals, advice patient on the importance of an individualized meal plan in meeting weight–loss goals, and discuss the goal of dietary therapy for the patient.

- Preventing injury: secondary to hypoglycemia by closely monitor blood glucose level, assess patient for sign and symptom hypoglycemia, treat with 10-15 of fast acting carbohydrate and encourage patient to wear an identification card.

- Improving activity tolerance: by instruct patient to plan exercise on a regular basis each day, avoid exercise when blood glucose levels exceed 250 mg/dl and encourage patient to eat a carbohydrate snack before exercising to avoid hypoglycemia.

- Providing information about oral anti diabetic agent by in courage active participation of the patient and family in the educational process, and teach the action, use and side effect of oral anti diabetic agent.

- Maintaining skin integrity by assess feet and legs for temperature, sensation, soft tissue injuries and maintain skin integrity by protecting feet from break down.

- Educating the patient include advanced skills and educational focus–Life style management includes sick day management, exercise, Foot care and dietary consideration.

2.9.3.Evaluation: by maintains ideal body weight, hypoglycemia identified and treated, exercise daily, appropriate use and action of oral hypoglycemic agent and no skin break down.[8]

2.10.Diabetic Emergencies:

Acute, life-threatening complications that can occur in patients with diabetes mellitus include diabetic ketoacidosis (DKA), hyperosmolar hyperglycemic syndrome (HHS), and hypoglycemia.

Patients with type 1 diabetes are most likely to experience DKA and patients with type 2 diabetes HHS.[9].

2.11.Complication:

2.11.1Acute complication:

- Hyperglycemia: when calories eaten exceed insulin available or glucose used high blood glucose (hyperglycemia) occurs, the most common cause of hyperglycemia is eating more than the meal plan prescribes, another major causes is stress, Stress cause the release hormones including epinephrine cortisol and glocagon these hormones all increase the blood glucose level[,(2).]

- Hypoglycemia: low blood glucose occurs when there is not enough glucose available in relation to circulating insulin .hypoglycemia is usually defined as an a blood glucose level below 50 mg/d, the symptom of low blood glucose include hunger, sweating, Tremor and headache. To treat low blood glucose Administer fast sugar, 15g of carbohydrate that will enter the blood stream quickly[,(2).]

- Hyper osmolare hyperglycemic non ketetc syndrome: Occur primarily in type 2 diabetes when blood glucose level as a result of stress or illness, occur more often in elderly as the blood glucose rises polyuria causes profound dehydration Producing the state blood glucose rise as high as high as 1500 mg/dl and electrolyte imbalance symptoms develop slowly and include extreme thirst, lethargy and mental confusion[,(2).]

2.11.2. Long term complication:

Is over time chronic hyperglycemia causes a variety of serious complication in person with diabetes these involve the circulatory system, eye, kidney, skin and nerves[,(2).]

2.12. Assessment of diabetic control:

2.12.1.Glycosylated haemoglobin (HBA1C):

Is one of three negatively charged minor hemoglobin compounds that are eluted on cation exchange resin chromatography before the main HBA peak, the beta chain Nterminus of HBA1C has a hexose attached (glycosylated haemoglobin) and has been Shown to be increased in diabetes It is now know that the process of glycosylation affects Other protein including albumin. it has been suggested that measurement of glycosylated Albumin might provide an accurate indication of Short-term diabetic control. glycosylated Haemoglobin as an indicator of long–term diabetic control[(4).]

2.12.2.Home blood glucose monitoring:

In addition to purely clinical criteria (control) in diabetes is still often Judged Simply by intermittent urine test and occasional blood glucose estimation these may be Adequate in the type 2 patient, the aim of management is allow diabetic patient to live as Normal a life as possible taking into a count the variations in activity level timing of meal And Other factor affect diabetic control various methods have been described either using Reflectance meter or by direct visual reading of reading of reagent strip.

- Most diabetologists would agree that the instruction of newly diagnosed patients in Home monitoring techniques is now as important. The earlier that self-monitoring is Introduced in the course of disease[(4).]

2.12.3.Fiber–rich in diabetes mellitus:

For several years there has been much interest in the possibility improving Diabetic control by the use of fiber-rich diet, the aim being to decrease Postprandial Hyperglycemia by delaying gastric emptying and by Slowing the rate of absorption of Glucose from the small intestinal lumen The use of high-fiber or high carbohydrate/high-Fiber diet reduced fasting Blood glucose and postprandial glucose levels[(4).]

2.12.4.Nutrition, meal planning:

control of total caloric intake to attain and maintain Body weight, control of blood glucose level and Normalization of lipid and blood Pressure to prevent heart disease, The American diabetes association recommended that for all levels Of caloric intake 50% to 60% of caloric should be derived from carbohydrate, 20% to 30% from fat and the remaining 10% to 20% from protein[(1).]

2.12.5.Insulin:

May be necessary a long –term basis to control glucose levels if meal planning And oral agents are in effective in whom Type2 diabetes is usually controlled by meal Planning alone or by anti diabetic agent may require insulin temporally during illness, Infection, pregnancy and surgery or some other stressful event. In many case insulin Injection administered two or more times daily to control the blood glucose Level[(1).]

2.12.6.Education: Because the medical nutritional therapy, physical activity and emotional stress affect diabetic control patient must be learn daily self-care skills to prevent acute Fluctuation in blood glucose, patient must become knowledgeable about nutrition, Exercise, blood glucose monitoring techniques, medication

effects and side effects in Addition they must learn the skill associated with monitoring and managing Diabetes,(1).

2.12.7.Exercise:

Is an important factor in controlling blood glucose and lipid level, exercise lowers blood glucose, both immediately and approximately 24 hours after the exercise .insulin Not needed for glucose to enter exercising muscle cells. Also improve blood lipid level And circulation which is important for person with diabetes who already has increased Risk of cardiovascular disease. Patient instructed to exercise or regular basis ideally 30mintiues most days of week to keep blood glucose level stable and promote health,(2).

2.13. Self Care Management:

In previous study about self care management ,Poor awareness and practices among diabetic patients are some of the important variables influencing the progression of diabetes and its complications, which are largely preventable through education.

A total of 117 diabetic patients consented and participated in the study of whom 71 (61.68%) were aware of importance of exercise for the control of disease while 88 (75.21%) said that modification in diet is essential for the control of the disease. 75 (64%) of the respondents had achieved glycemic control.

As evidenced by the study, patients who were regularly involved in self care practices have achieved better glycemic control,(9).

Diabetes self care management is challenging and considered as new trend to have patients take an active role in regulating their treatment and self care their disease.

-The American Association of Diabetes Educators and the American Diabetes Association (ADA) emphasize that DM self care management is the most important

part of DM care (ADA, 2013). A sufficient self care management behaviors has been revealed to lower gylcosylated hemoglobin levels (HbA1c), improve blood glucose levels, and improve dietary habits which considered as main step to decrease the occurrence of nephropathy and retinopathy (microvascular complications) and macrovascular ones, mainly cardiovascular diseases (ADA, 2013).

The topics related to self care management behaviors including: blood glucose monitoring, nutrition, exercise, medication, and foot care were described below[,(10).]

2.13.1. Blood Glucose Monitoring:

Motivation for self care management of blood glucose (SMBG) is a familiar problem in DM care, since many patients with DM find regular testing difficult to be maintained in the long term ,it requires motivation on the part of the patient; it also needs an understanding of the correct use of the glucose meter[,(10).]

2.13.2. Nutrition:

-Effective nutrition intervention in DM2 care management results in improved self-monitoring of blood glucose, blood lipids, HbA1c, blood pressure, and weight management that can lead to reductions in medication, frequency of hypoglycemia, hospitalization, and cost of overall health care[,(10).]

2.13.3.Excercise:

-The importance of exercise is considered for both the psychological and physiological health.

-The justification for using exercise as one component of the DM self care management behaviors for patients with DM2; exercise may be practiced in addition to caloric reduction for weight decrease and to enhance insulin sensitivity in the overweight insulin-resistant patient with DM2[,(10).]

2.13.4.Medication:

-Taking medication on regular bases represents a challenge both to patients with DM2 and to their health care providers. Treatments with several medications or regular dosages have a negative result on DM2 care adherence [,(10).]

2.13.5.Foot Care:

Diabetic foot is a heterogeneous disease entity defined as a group of symptoms that leads to tissue breakdown. Neuropathy and ischemia are considered as DM2 complications that increase the risk of infection for patient with DM2. [(10)]

-Addressing self care management issues for patient with DM2 is an important challenge for health-care providers and the health care system including all aspects of self care management including: blood glucose monitoring, nutrition, exercise, medication and foot care [,(10).]

3. Methodology & Material

3.1. Study design:

This was descriptive study conducted at almak nimer university hospital to assess the diabetic patient concept and compliance regarding self management in period extending from august to november 2016

3.2.Study area:

Shendi town including almak nimer north kartom its located eastern part of river. the economic activites are agriculture government employment and service provider commercial and social teaching almak nimer university hospital and military hospital, the town also has Shendi University with its different faculties. almak nimer hospital bult 2002 and contain of following department medicine, Surgery, gynocology and obstetric, bediatric, ophthalmic, ENT, dental, pharmacy.

3.3 Setting :

Outpatient clinic of diabetic located within the general outpatient centre, compose of doctor room, nurses room, and lab, patient came to clinic on Thursday from each week for fallow up in range 30-40 pt with type I, type II.

3.3 Study population:

This study includes patients with diabetes on regular follow up in outpatient clinic in almak nimer university hospital.

3.4.Sample:

3.4.1 Sample method:-

Convinces sampling technique was taken.

3.4.2 Sample size:

(70) patients whom attended in almek nimer university hospital outpatient clinic refer

3.5 Data collection tool:

The data was collected by questionnaire designed by researcher based on reviewing of literature, it **composed from (**22) questions develop to assess the diabetic patient concept and compliance regarding self Management .

Questionnaire from (1-7) general information about patient.

Questionnaire from (8-22) information about diabetes and self care management.

3.6 Data collection techniques:

Data collected within three week and interview questionnaire was filled by the researcher within 5-15 minute for every patient.

3.7. Scoring system:

Questionnaire:

Scoring system was established by researcher which the data was distributed four categories to measure the level of PT knowledge about diabetes general information and self care , if the PT respond to (3.4) choice it consider good knowledge, (2-3) choice consider fair knowledge, (0-1) choice consider poor knowledge

3.8.Ethical considerations:

The study was approved by ethical committee of research in the faculty of nursing sciences, before conducting the study, verbal permission was taken from patients.

3.9. Statistical Analysis: The data was analyzed by Statistical Package for the Social Sciences (SPSS) The collected, analyzed data, organized, categorized, tabulated in tables and chart.

4.Result

Table (1):the distribution of study group according to age, gender, and, resident, occupation:

Variable	Frequency	Percent
Age :		
<40	7	10%
41-50	18	26%
51-60	29	41%
>60	16	23%
Gender:		
Male	19	27%
Female	51	73%
Resident:		
City	29	41%
Village	41	59%
Rural area	0	0%
Occupation :		
Employed	**17**	**24%**
Un employed	**48**	**69%**
Retired	**5**	**7%**

Above table showed in the patient age 10% of patient <40 year , 26%of patient age from 41-50 years, 41%of patient age from 51-60 years, 23%of patient age >60 years,

in patient gender 27% of patient male,73%of patient female, in patient resident 41% of patient resident in city,59%of resident in village,0% of patient resident in rural area, in occupation 24%of patient employed 69%of patient unemployed.7%of patient is retired.

Table (2): the distribution of study group according to the duration of disease, educational level, and socioeconomic status:

Variable	Frequency	Percent
Duration of disease :		
<year	9	13%
1-5 yeas	16	23%
5-10 years	24	34%
>10years	21	30%
Educational level :		
Illiterate	34	48%
Basic school	18	26%
Secondary school	11	16%
Universal education	7	10%
Socioeconomic status :		
Upper class	6	9%
Middle class	56	80%
Lower class	8	11%

Above table showed in the duration of disease 13%of PT <years ,23%of PT duration from 1-5 years,34%of PT5-10 years,30%of PT duration of disease

>10years,in the educational level 48%of PT illiterate,26%of patient basic school ,16%of PT secondary school ,10% of PT is universal education, in the socioeconomic status 9%of PT is upper class socioeconomic status , 80% of PT is middle class socioeconomic status 11% of PT is lower class socioeconomic status .

Table (3): the distribution of study a group according to knowledge about the diabetes causes of diabetes sign and symptom of DM the management of diabetes:

Variable	Level of knowledge					
	Good		Fair		Poor	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Sign and symptom of DM	**44**	**63%**	**20**	**28%**	**6**	**9%**
The Management of diabetes	**1**	**1%**	**32**	**46%**	**37**	**53%**

Above table show the distribution of level of knowledge about sign and symptom 63%of PT is good, 28% of PT is fair ,9%of PT is poor ,about the management 1%of PT is good 32% of PT fair 53%of PT is poor.

Table(4): the distribution of study group according to uses of herbal to manage diabetes and the reasons of using herbal medicine:

Variable	Frequency	Percent
Uses of herbal to manage diabetes:		
Always:	**3**	**5%**
Often:	**34**	**48%**
do not use:	**33**	**47%**
reasons of using herbal medicine:		
Low cost:	**9**	**13%**
traditionally belief in efficiency of herbal medicine :	**33**	**47%**
Do not know :	**28**	**40%**

Above table showed in the PT use of herbal to manage diabetes about 5% of PT use herbal always, 48% of PT is often use, 47% of PT do not use herbal, about the reason of using herbal medicine % 13 of PT is low cost ,47 % of PT traditionally belief is efficiency ,40% of PT is do not know.

Table(5): the distribution of study group according to knowledge of PT about the acute complication of diabetes and long term complication of DM:

Variable	Level of knowledge					
	Good		Fair		Poor	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Acute complication of DM:	22	31%	42	60%	6	9%
Long term complication of DM:	37	53%	29	41%	4	6%

Above table showed the knowledge about the acute complication 31% of PT s is good, 60% of PT is fair, 9% of PT is poor knowledge, in the knowledge about long term complication 53%of PT is good, 41% of PT is fair, 6% of PT is poor.

Table(6): the distribution of study group according to about attacks of hypo-hyper glycaemia in the last 6 month

Attacks	Never		Once		Twice		More		Total	
	f	P	F	P	f	P	F	p	f	P
Hypoglycemia	**42**	**60%**	**17**	**24%**	**6**	**9%**	**5**	**7%**	**70**	**100%**
Hyperglycemia	**14**	**20%**	**28**	**40%**	**15**	**21%**	**13**	**19%**	**70**	**100%**

Above table showed in the attacks of hypoglycaemia 60% of PT never, 24% of PT once, 9%of PT twice, 7% of PT is more attacks of hypoglycaemia, about attacks of hyperglycaemia 20% of PT is never, 40% of patent is once, 21% of PT twice, 19% of PT is more attacks of hyperglycaemia

Table(7): the distribution of study group according to their knowledge and practice regarding self-care:

Variable	Level of self care knowledge and practice					
	Good		Fair		Poor	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
investigation has affection on diabetes control	8	11%	30	43%	32	46%
Self-care measures to prevent/control diabetes to avoid complications	43	61%	22	31%	5	8%
kind of food diabetic patients should eat	21	30%	37	53%	12	17%

Above table showed in the level of Level of self care knowledge and practice , in the investigation has affectation diabetes control 11% is good knowledge ,43% is fair knowledge , 46% is poor knowledge , about the self care measure to prevent /control diabetes and avoid complication 61% of PT is good knowledge ,31% of PT

is fair knowledge , 8%of PT is poor knowledge , , about kind of food diabetic patent is should eat 30% of PT is good knowledge 53% of PT is fair knowledge, 17% of PT is poor knowledge.

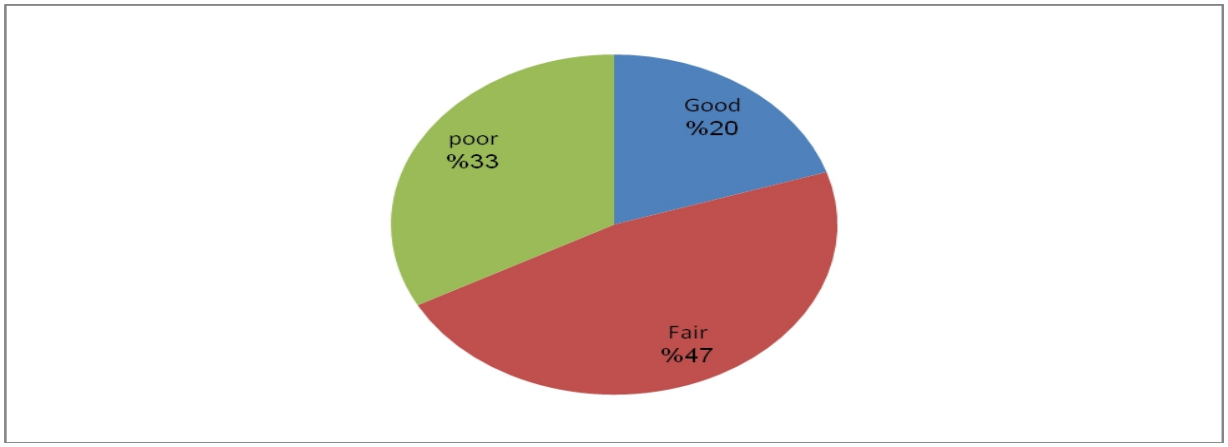

Figure (1) the distribution of study group according to knowledge and practice of foot care:

Above figure showed about knowledge and practice of foot care 20% of PT good knowledge , 47% of PT is fair knowledge , 33% of PT is poor knowledge.

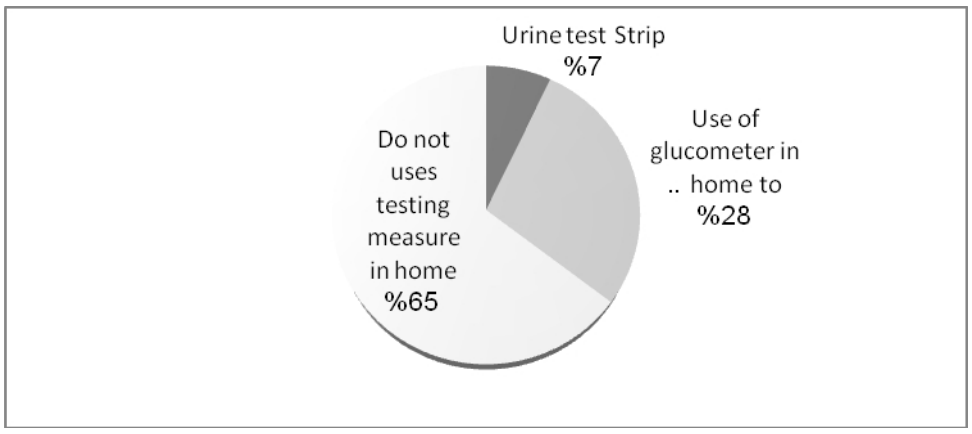

Figure (2) the distribution of study group according to Self-care measure in testing for sugar at home.

Above figure showed the 7%% of PT use Urine Test Strip, 28% of PT use of glucometer in home to regular check up , 65% of PT Do not uses testing measure in home .

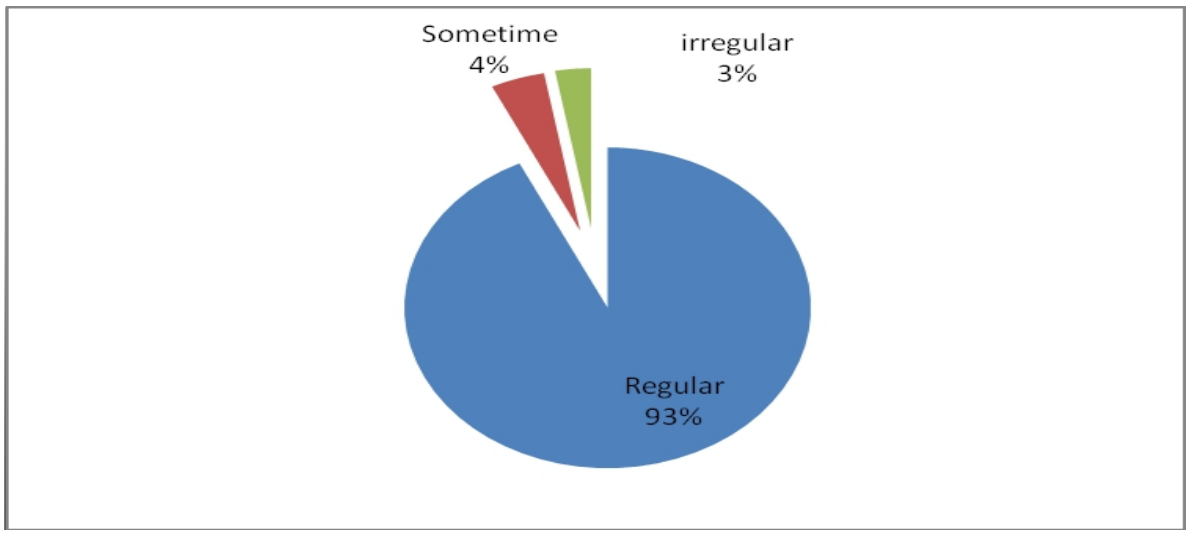

Figure (3) the distribution of study group regard your PT management take it

Above figure showed 93% of PT is Regular management, 4 % of Pt sometime management,2 % of PT is Irregular management .

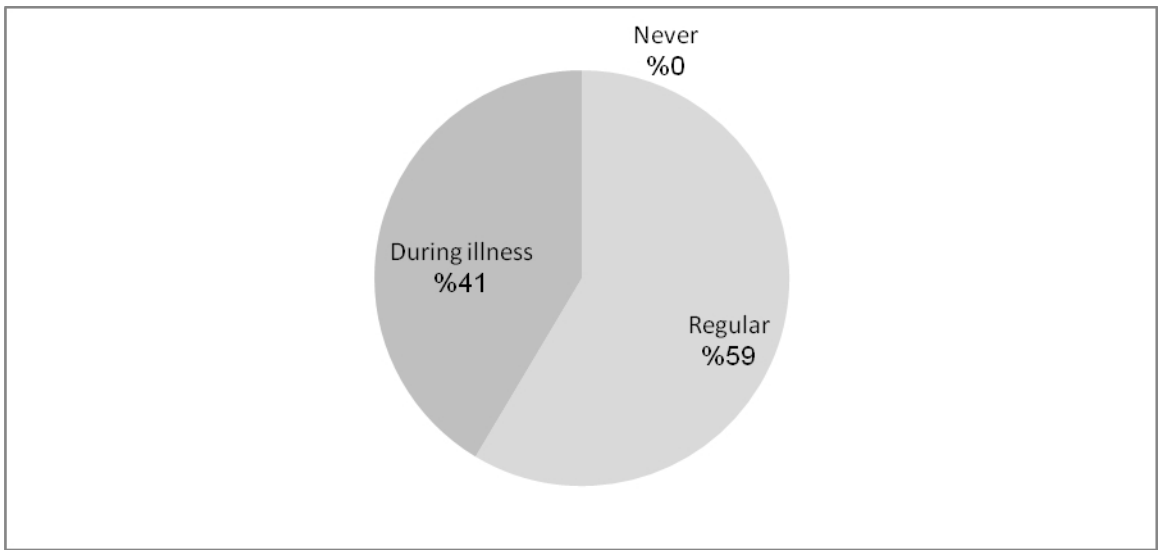

Figure (4) the distribution of study group regarding the PT fallow up

The above fig her showed 59% of PT Regular fallow up 41% of PT is fallow up during illness 0% of PT is never fallow up.

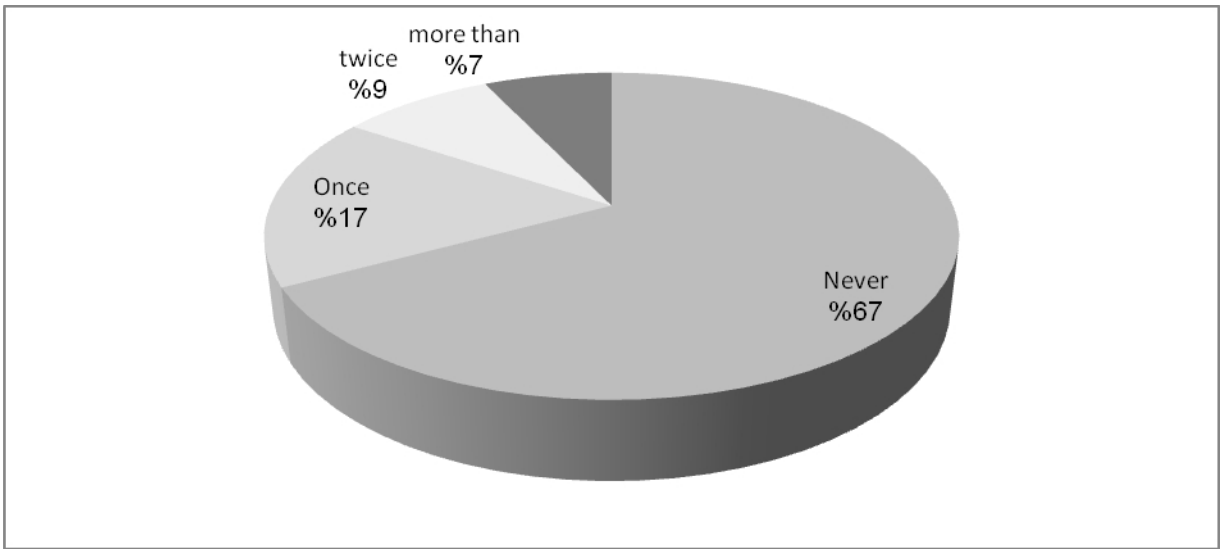

Figure (5) the distribution of study group according to the feet injury during the last 6month:

Above figure showed 67% of PT is never feet injury, 17% of PT is once feet injury, 9% of PT is twice feet injury7 % of PT is more than feet injury

Table (8) cross tabulation between study group Gender and the knowledge about long term complication of diabetes

N=70

Gender			the long term complication of diabetes			Total	Asymp. Sig. (2-sided)
			Good	Fair	Poor		
	Male		8	9	2	19	.397
			11.4%	12.9%	2.9%	27.1%	
	Female		29	20	2	51	
			41.4%	28.6%	2.9%	72.9%	
Total			37	29	4	70	
			52.9%	41.4%	5.7%	100.0%	

P=.397

Table (9) cross tabulation between Duration of disease the knowledge about long term complication of diabetes

N=70

Duration of disease	the long term complication of diabetes			Total	Asymp. Sig. (2-sided)
	Good	Fair	poor		
< 1 years	4	4	1	9	.633
	5.7%	5.7%	1.4%	12.9%	
1-5 years	9	5	2	16	
	12.9%	7.1%	2.9%	22.9%	
5-10 years	12	12	0	24	
	17.1%	17.1%	0.0%	34.3%	
> 10 years	12	8	1	21	
	17.1%	11.4%	1.4%	30.0%	
Total	37	29	4	70	
	52.9%	41.4%	5.7%	100.0%	

P=.508

Table (10) cross tabulation between Level of education and the knowledge about long term complication of diabetes

N=70

level of education	the long term complication of diabetes			Total	Asymp. Sig. (2-sided)
	Good	fair	poor		
Illiterate	17 24.3%	16 22.9%	1 1.4%	34 48.6%	.692
basic school	9 12.9%	7 10.0%	2 2.9%	18 25.7%	
secondary school	7 10.0%	4 5.7%	0 0.0%	11 15.7%	
University	4 5.7%	2 2.9%	1 1.4%	7 10.0%	
Total	37 52.9%	29 41.4%	4 5.7%	70 100.0%	

P=.692

Table (11) cross tabulation between study group Gender and how many attacks our for your day the last 6 month (Hypoglycemia)

N=70

Gender	Hypoglycemia				Total	Asymp. Sig. (2-sided)
	Never	Once	twice	More		
male	13 18.6%	4 5.7%	1 1.4%	1 1.4%	19 27.1%	.830
female	29 41.4%	13 18.6%	5 7.1%	4 5.7%	51 72.9%	
Total	42 60.0%	17 24.3%	6 8.6%	5 7.1%	70 100.0%	

P=.830

Table (12) cross tabulation between gender and How many attacks our for your day the last 6 month (Hyperglycemia)

N=70

Gender	Hyperglycemia				Total	Asymp. Sig. (2-sided)
	Never	Once	twice	More		
Male	2 2.9%	10 14.3%	4 5.7%	3 4.3%	19 27.1%	.509
female	12 17.1%	18 25.7%	11 15.7%	10 14.3%	51 72.9%	
Total	14 20.0%	28 40.0%	15 21.4%	13 18.6%	70 100.0%	

P=.509

Table (13) cross tabulation between the Duration of disease and How many attacks our for your day the last 6 month (Hypoglycemia)

N=70

Duration of disease	(Hypoglycemia)				Total	Asymp. Sig. (2-sided)
	Never	Once	twice	More		
< 1 years	8 11.4%	1 1.4%	0 0.0%	0 0.0%	9 12.9%	.414
1-5 years	8 11.4%	4 5.7%	1 1.4%	3 4.3%	16 22.9%	
5-10 years	14 20.0%	6 8.6%	2 2.9%	2 2.9%	24 34.3%	
> 10 years	12 17.1%	6 8.6%	3 4.3%	0 0.0%	21 30.0%	
Total	42 60.0%	17 24.3%	6 8.6%	5 7.1%	70 100.0%	

P=.414

Table(14) cross tabulation between Duration of disease and How many attacks our for your day the last 6 month (Hyperglycemia)

N=70

Duration of disease	Hyperglycemia				Total	Asymp. Sig. (2-sided)
	Never	Once	twice	More		
< 1 years	4 5.7%	4 5.7%	1 1.4%	0 0.0%	9 12.9%	.024
1-5 years	4 5.7%	6 8.6%	3 4.3%	3 4.3%	16 22.9%	
5-10 years	3 4.3%	9 12.9%	10 14.3%	2 2.9%	24 34.3%	
> 10 years	3 4.3%	9 12.9%	1 1.4%	8 11.4%	21 30.0%	
Total	14 20.0%	28 40.0%	15 21.4%	13 18.6%	70 100.0%	

P=.024

Table (15) cross tabulation between the level of education and How many attacks our for your day the last 6 month (Hypoglycemia)

N=70

level of education	Hypoglycemia					Asymp. Sig. (2-sided)
	Never	Once	Twice	more	Total	
Illiterate	23 32.9%	7 10.0%	2 2.9%	2 2.9%	34 48.6%	.679
basic school	9 12.9%	4 5.7%	2 2.9%	3 4.3%	18 25.7%	
secondary school	7 10.0%	3 4.3%	1 1.4%	0 0.0%	11 15.7%	
University	3 4.3%	3 4.3%	1 1.4%	0 0.0%	7 10.0%	
Total	42 60.0%	17 24.3%	6 8.6%	5 7.1%	70 100.0%	

P=.679

Table (16) cross tabulation between the Level of education and How many attacks our for your day the last 6 month (Hyperglycemia)

N=70

level of education	Hyperglycemia				Total	Asymp. Sig. (2-sided)
	Never	Once	twice	More		
Illiterate	11 15.7%	10 14.3%	7 10.0%	6 8.6%	34 48.6%	.319
basic school	1 1.4%	9 12.9%	4 5.7%	4 5.7%	18 25.7%	
secondary school	2 2.9%	6 8.6%	1 1.4%	2 2.9%	11 15.7%	
University	0 0.0%	3 4.3%	3 4.3%	1 1.4%	7 10.0%	
Total	14 20.0%	28 40.0%	15 21.4%	13 18.6%	70 100.0%	

P=.319

Table (17) cross tabulation Gender and the knowledge about investigation has affection on diabetes

N=70

Gender	the investigation has affection on diabetes			Total	Asymp. Sig. (2-sided)
	Good	Fair	poor		
Male	2 2.9%	7 10.0%	10 14.3%	19 27.1%	.774
Female	6 8.6%	23 32.9%	22 31.4%	51 72.9%	
Total	8 11.4%	30 42.9%	32 45.7%	70 100.0%	

P=.774

Table (18) cross tabulation between the Duration of disease and the knowledge about investigation has affection on diabetes

N=70

Duration of disease	**the investigation has affection on diabetes**				Asymp. Sig. (2-sided)
	Good	Fair	Poor	Total	
< 1 years	2 2.9%	3 4.3%	4 5.7%	9 12.9%	.742
1-5 years	1 1.4%	9 12.9%	6 8.6%	16 22.9%	
5-10 years	3 4.3%	8 11.4%	13 18.6%	24 34.3%	
> 10 years	2 2.9%	10 14.3%	9 12.9%	21 30.0%	
Total	8 11.4%	30 42.9%	32 45.7%	70 100.0%	

P=.742

Table (19) cross tabulation between the level of education and the knowledge about the investigation has affection on diabetes

N=70

level of education	the investigation has affection on diabetes			Total	Asymp. Sig. (2-sided)
	Good	fair	Poor		
Illiterate	3 4.3%	11 15.7%	20 28.6%	34 48.6%	.537
basic school	3 4.3%	9 12.9%	6 8.6%	18 25.7%	
secondary school	1 1.4%	6 8.6%	4 5.7%	11 15.7%	
University	1 1.4%	4 5.7%	2 2.9%	7 10.0%	
Total	8 11.4%	30 42.9%	32 45.7%	70 100.0%	

P=.537

Table (20) cross tabulation between the Gender and the patient knowledge and practice of foot care

N=70

Gender	knowledge and practice of foot care			Total	Asymp. Sig. (2-sided)
	Good	Fair	Poor		
Male	1 1.4%	11 15.7%	7 10.0%	19 27.1%	.166
female	13 18.6%	22 31.4%	16 22.9%	51 72.9%	
Total	14 20.0%	33 47.1%	23 32.9%	70 100.0%	

P=.166

Table (21) cross tabulation between the Duration of disease and the patient knowledge and practice of foot care:N=70

Duration of disease	knowledge and practice of foot care			Total	Asymp. Sig. (2-sided)
	Good	Fair	poor		
< 1 years	4 5.7%	1 1.4%	4 5.7%	9 12.9%	.233
1-5 years	2 2.9%	7 10.0%	7 10.0%	16 22.9%	
5-10 years	4 5.7%	14 20.0%	6 8.6%	24 34.3%	
> 10 years	4 5.7%	11 15.7%	6 8.6%	21 30.0%	
Total	14 20.0%	33 47.1%	23 32.9%	70 100.0%	

P=.233

Table (22) cross tabulation between the level of education and the patient knowledge and practice of foot care:N=70

level of education	knowledge and practice of foot care			Total	Asymp. Sig. (2-sided)
	Good	Fair	Poor		
Illiterate	7 10.0%	13 18.6%	14 20.0%	34 48.6%	.108
basic school	6 8.6%	7 10.0%	5 7.1%	18 25.7%	
secondary school	1 1.4%	9 12.9%	1 1.4%	11 15.7%	
University	0 0.0%	4 5.7%	3 4.3%	7 10.0%	
Total	14 20.0%	33 47.1%	23 32.9%	70 100.0%	

P=.108

5.1. Discussion

I have conducted this study to assess the diabetic patient concept and compliance regarding self Management in almak nimer university hospital.

Based on data analysis and result regarding to age of PT the Major percentage of study group 41% of PT age in range from 51-60 years and 10%of pt <40 as in literature review,[1] *" It occurs more commonly among people who are older than 30 years"* ,more than two third of study group 73% is female.

Regarding the resident and occupation of patient, more than half of study group 59% resident in village, and also more than two third of study group 69% is unemployed.

Regarding the duration of disease the major percentage 34% of PT the duration of disease range in 5-10 years and 13% of duration is <year

Regarding the educational level and socioeconomic status of the study group the result of the present study less than half of study sample 48% is illiterate,80%of PT is middle socioeconomic while other previous study,[10] "*(64.10 %) belonged to lower class"*.

Regard the knowledge of pt about sign and symptom and management of diabetes more than two third of the study group 63% good knowledge about S/S of diabetes, in the PT knowledge of management 53% is poor, and 46% is moderate knowledge.

Regarding the use of herbal to manage diabetes and the reason for uses herbal 48% of study group often use of herbal and 47% of study sample do not use herbal, about the reason of use herbs 47%of study sample mentioned traditionally belief is efficiency disagreement with the previous study of ,[13]." *more than two third of sample74% mentioned traditionally belief is efficiency"*.

Regarding the knowledge of study group about acute and long term complication of diabetes, in acute complication more than half of study sample 60% of PT is moderate knowledge, and 31% of study sample is good knowledge about acute

complication, more than half of group 53% is good knowledge about long term complication 41% is moderate knowledge ,6% of study sample is poor knowledge about long term compilation of diabetes,

Regarding attacks of hypoglycaemia and hyperglycaemia in last 6month more than half of study group 60% is never occur attacks of hypoglycaemia , 7% of sample more attacks and 40% of study group once attacks of hyperglycaemia,19% of study sample occur more than once, twice attacks of hyper glycaemia.

Regarding the knowledge of PT about the investigation has affection in diabetic control 46% of study group is poor knowledge, 43% is moderate , and 11% of study group is good knowledge.

Regarding the knowledge of PT about self care measure to prevent, control to avoid complication more than half of study group 61% is good knowledge and only 8%of study group is poor knowledge. Agreement with previous study of [10]. *"mentioned almost tow third respondent were aware of important of exercise, diet control, and drug compliance and 64% is achieved glycemic control"*.

Regarding knowledge of kind of food diabetic PT should eat more than half of study group 53% of study sample is fair knowledge and 30% of sample is good knowledge about kind of food.

Regarding the knowledge and practice of foot care 47% of study group is moderate knowledge and only 20%of study group is good knowledge and practice about foot care.

Regarding self care measures in testing for sugar at home more than two third of study group 65% do not use testing measure in home, and low percentage only 28% of study group use glucometer in home to regular check up, while in the previous

study[12]. there was agreement also low percentage *"only 8.6% of participant use regular testing blood glucose in home".*

Regarding the managements the majority of PT 93% of study group take it in regular ,and only 3% of pt irregular take of management.

Regarding fallow up 59% of study sample is regular fallow up 41%of study group fallow up during illness, disagreement with the previous study of [12]. *"mentioned only 4.3%of study sample fallow up regularly".*

Regarding the occur of any feet injury in the last 6 month 67% of study group was never feet injury, and 7% of study group occur feet injury more than once, twice.
The Correlation analysis was detailed break down illustrating the correlation between three of independent variables :level of education ,duration of disease ,and level of education as well as the scores on question(14); PT knowledge about long term complication about diabetes ,question(15)the attaches of hypoglycemia and hyperglycemia in our day in last 6 mouth ago, question (16) PT knowledge about the investigation has an affection on diabetes control ,question (19) PT knowledge and practice of foot care.
There was no significant between gender and PT knowledge about long term complication of diabetes (P= .397), no significance between duration of disease (P=.633) and also no significance between level of education (P=.692) although more than half of study group 53% is good knowledge about long term complication of diabetes there was no significance between level of education and knowledge about long term complication.
There was no significance between gender and attacks of hypoglycemia (P=.830),no significance between duration of disease and attacks of hypoglycemia (P=.414) and also there was no significant between level of education and attacks of

hypoglycemia (p=.679),although more than half of study group60% of population never attacks of hypoglycemia.

There was no significance between gender and attacks of hyperglycemia (p=.509), there was high significance between duration of disease and attacks of hyperglycemia (p=.024),and no significance between level of education and attacks of hyperglycemia (p=.319).

There was no significance between gender and PT knowledge about the investigation has an affection on diabetes control (p=.774), also no significance between the duration of disease (p=.742),and also no significance between levels of education(p=.537)although 43% of study population is moderate knowledge.

There is no significance between gender and PT level of knowledge and practice of foot care (p=.166),also no significance between duration of disease (p=.233),and also no significance between level of education (p=.108) although 47% of study population moderate knowledge and practice of foot care

5.2. Conclusion

By the end of this study about the assess the diabetic patient concept and compliance regarding self Management,We found more than half of study group is moderate awareness of general information about diabetes ,and more than half of study group have 61% of sample good knowledge about self care measure to control diabetes and prevent complication. and 8%of sample is poor knowledge.

The majority of study sample 94% take it management regularly, and more than half of study fallow up regular .

The study group have moderate knowledge kind of diabetic PT food and also moderate knowledge about the items of knowledge and practice of foot care.

5.3. Recommendation

Because diabetes is a chronic disease the recommendation should be considered:

- Appropriate patient education program should be planned and future research is needed to assess diabetic PT compliance regarding self care management.
- The study recommended that, nurses and other medical staff have to include patient education in their plan of care, poster, hand book should be available for patient.
- Teaching PT about practice of self care and demonstrate it in proper methods.
- Teaching patient about the importance of exercise and diabetic management and continues regular investigation to prevent complication and good control.
- The health care provider should be considered the availability of Treatment and support the patient to continue monitoring of diabetes.

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بسم الله الرحمن الرحيم

كلية الدراسات العليا والبحث العلمي

Questionnaire about the Diabetic patient concept and compliance regarding self management in almek nimer university hospital.

1. . Age:-

   A- < 40 years ( ) B- 41-50 years ( ) C- 51-60 years ( )

   D- > 60 years ( )

2. Gender :- A-Male ( ) B-Female ( )

3. Resident:- A-city ( ) B-village ( ) C- rural area ( )

4. Occupation :- A- Employed ( ) B-Unemployed( ) C-Retired( )

5. Duration of disease:-

   A- < 1 year ( ) B- 1-5 years ( ) C- 5-10 years ( ) D- > 10 years ( )

6. Educational level:-

   A-Illiterate ( ) B-basic school ( ) C-secondary school ( )

   D- Universal education ( )

7. Socioeconomic status:-

   A- Upper class ( ) B- Middle class ( ) C- Lower class ( )

8. Signs and symptoms of diabetes mellitus:-

   A- Excessive thirst ( ) B-excessive hunger ( ) C-excessive urination ( )

   D- Weight loss ( )

9. The Management of diabetes:-

   A- Lifestyle changes ( ) B- Oral hypoglycemic pills ( ) C-Insulin therapy ( )

   D- Oral Hypoglycemia and insulin ( )

10.Uses of herbal to manage diabetes:-

A- Always ( ) B- often ( ) C- do not use ( )

11.The reasons of using herbal medicine :-

A-Low cost ( ) B- traditionally belief in efficiency of herbal medicine ( ) C- Do not know ( )

12.The acute complication of diabetes:-

A- Hyperglycemia ( ) B- hypoglycemia ( ) C- DKA ( )
D-HONKS ( )

13. The long term complication of diabetes:-

A-Effect on eye ( ) B-effect on skin and nerve ( ) C-effect on kidneys ( ) D-Involve circulatory system ( )

14.How many attacks hypo-hyperglycemia in the last 6 month ago :-

Attacks	Never	Once	Twice	More
Hypoglycemia				
Hyperglycemia				

15.The investigation has affection on diabetes control :-

A-glucose in blood ( ) B-sugar in urine ( ) C-HBA1C ( )

16.The Self-care measures to prevent/control diabetes to avoid complications:-

A-Engage in regular exercise ( ) B- Embrace healthy eating plan ( ) C- Avoid intake of starchy food ( ) D-Take drug therapy ( )

17.The kind of food diabetic patients should eat:-

A- A lot of beans and meat ( ) B- A lot of whole grains, fresh ( ) C- vegetables and a lot of fruits ( ) D- avoid starchy food

18.Knowledge and practice of foot care:-

A- Pitting nail( ) B-Inspect inside of footwear( ) C-Keep foot clean and dry in between toes ( )

19.Self-care measure in testing for sugar at home:-

A-Urine Test Strip ( ) B- use of glucometer in home to regular check up ( ) C-Do not uses testing measure in home ( )

20.Regard your management take it:-

A- Regular ( ) B- sometime( ) C- Irregular( )

21.Regard your fallow up:-

A- Regular fallow up ( ) B- During illness ( ) C- Never ( )

22.Do you have any feet injury during the last 6month :-

A-Never feet injury ( ) B- Once ( ) C- twice ( ) D- More than ( )