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College of Medicine



Knowledge, Attitude and Practices about Diabetes
among Patients with Diabetes type 2 in Karbala City,
2023

A thesis submitted to the Council of College of Medicine at the
University of Kerbala in partial fulfillment of the requirements for high
diploma degree

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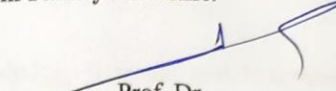

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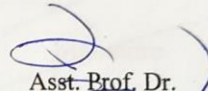

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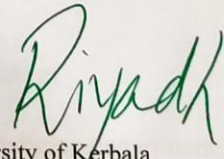
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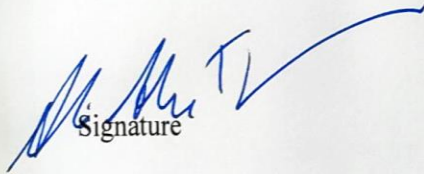
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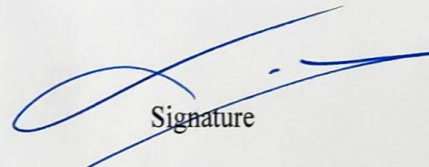

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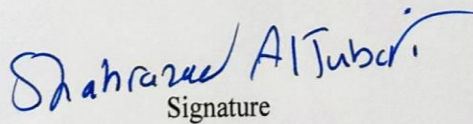
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Dedication

Dedicated to my cherished family, whose unwavering love, support, and encouragement have been the cornerstone of my academic journey.

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List of Abbreviations

Subject	Abbreviations
BMI	Body Mass Index
DM	Diabetes Mellitus
DSME	Diabetes self-management education
GDM	Gestational Diabetes Mellitus
KAP	Knowledge, Attitude, and Practice
MENA	Middle East and North Africa
NCD	Non-communicable disease
n	Total sample
No.	Number of patients
St.D	Standard deviation
T2DM	Type 2 Diabetes Mellitus
USD	United States Dollars
WHO	World Health Organization

Abstract:

Background:

Diabetes is a serious health problem that has reached an alarming scale, with over 500 million individuals affected globally. Type 2 diabetes is the most common type of diabetes, accounting for over 90% of all diabetes worldwide. The Middle East and North Africa (MENA) region has the greatest regional prevalence of diabetes (16.2%) with an estimated 136 million individuals by 2045. Diabetes is one of Iraq's top ten causes of death.

Objective:

The objectives of this study is to assess the knowledge, attitudes, and practices of diabetes among type 2 diabetic patients in Karbala City and assess the factors associated with their knowledge, attitude, and practice.

Patients and methods:

A cross-sectional study was conducted on 252 type 2 diabetic patients in multiple health institutes in Karbala City. The data collection was conducted using convenience sampling over eight months through face-to-face interviews. The questionnaire used consisted of four parts and was developed by the University of Michigan Diabetes Research and Training Centre (MDRTC). The means of the groups were compared using independent samples t-test and ANOVA by SPSS version 22.00.

Results:

The mean age of the patients was 56 ± 9.83 years. 64.3% of the patients were females. 42.1% of the patients completed the primary level and 24.6% of them

were classified as illiterate. The mean duration of diabetes was 10.1 ± 6.82 years. The mean score of the Diabetic Knowledge Test (DKT) was 6.5 ± 2.09 out of 11. The mean attitude score was 31.55 out of 50 and the mean practice score was 4.4 out of 8.

Conclusions:

Most patients had moderate knowledge, attitude, and practice levels, and despite having relatively adequate knowledge about diabetes, there is still room for improvement in understanding, compliance, and management. Continuous education programs and healthcare attention are needed to enhance patients' knowledge and attitude toward the disease and its complications, as well as to promote adherence to practices.

Chapter One

Introduction

1.1. Diabetes epidemiology

Diabetes is a serious health problem that has reached an alarming scale, with over 500 million individuals affected globally. According to estimates from the International Diabetes Federation (IDF), the number of persons with diabetes has increased alarmingly, more than tripling from 151 million in 2000 to an estimated 537 million in 2021 (**International Diabetes Federation, 2021**).

Its prevalence increased from 108 million in 1980 to 422 million in 2014 (**World Health Organization, 2022**). A total of 1.5 million deaths were directly related to diabetes in 2019, and 48% of these deaths occurred among those under the age of 70. It contributed to an additional 460,000 renal disease deaths, and high blood glucose is responsible for 20% of cardiovascular fatalities (**Institute for Health Metrics and Evaluation, 2019**).

Age-specific diabetes mortality rates increased by 3% between 2000 and 2019 and diabetes-related mortality increased by 13% in lower-middle-income countries. It is a significant contributor to renal disease, heart attacks, strokes, blindness, and lower limb amputation. An estimated 2 million people died in 2019 from diabetes-related renal damage (**World Health Organization, 2022**). Diabetes can damage the micro blood vessels that supply blood to several organs such as the retinas, kidneys, nerves, and feet leading to diabetic retinopathy, nephropathy, neuropathy, and diabetic foot complications (**Taher et al., 2023**).

Over time, diabetes may cause damage to blood vessels in the kidneys, eyes, heart, and nerves. Diabetes causes many people to suffer from foot problems

due to nerve damage and inadequate blood flow. This may result in foot ulcers that may require amputation (**World Health Organization, 2022**).

Between 2000 and 2019, the number of deaths attributable to diabetes grew by 70% worldwide (**NCDs, 2021**).

Type 2 diabetes is the most common type of diabetes, accounting for over 90% of all diabetes worldwide (**International Diabetes Federation, 2021**).

Over the past few decades, there has been a consistent rise in both the incidence and prevalence of diabetes. Over the last three decades, the prevalence of type 2 diabetes has risen substantially in countries of all income levels. The vast majority of diabetics reside in low- and middle-income countries, and diabetes is directly responsible for 1.5 million fatalities per year (**Hasan et al., 2023**). A global goal is to halt the rise in diabetes and obesity by 2025 (**World Health Organization, 2023**). Compared to high-income countries, prevalence has been increasing more quickly in middle- and low-income countries (**World Health Organization: WHO, 2018**).

Type 2 diabetes can be prevented or delayed by maintaining a healthy diet, engaging in regular physical activity, maintaining normal body weight, and abstaining from tobacco use. Diet, exercise, medication, and routine screening and treatment for complications can all help treat diabetes and delay or prevent its effects (**World Health Organization, 2022**).

Type 2 diabetes is typically difficult to determine exactly when it first started. As a result, there is sometimes a lengthy pre-diagnosis interval, and up to one-third to half of type 2 diabetics in the population may go undetected (**Gregg et al., 2014; King et al., 1999**).

Diabetes is a significant public health issue in the Eastern Mediterranean Region, where it affects around 14% of people. In this region, the burden of diabetes could affect more than 100 million people by 2045. This region has the highest rates of diabetes worldwide and it contains six of the ten nations with the highest rates of diabetes in the world (**NCDs, 2021**).

The Middle East and North Africa (MENA) region has the greatest regional prevalence of diabetes (16.2%) and the second-largest expected increase (86%) in the number of people with diabetes, with an estimated 136 million individuals by 2045. One in six adults (73 million) in the MENA region has diabetes, which is the highest proportion among the International Diabetes Federation (IDF) Regions. The majority (24.5%) of deaths in adults of working age from diabetes occur in this region. Even though this region is home to 13.6% of the world's diabetics, only 32.6 billion USD, or 3.4% of the entire global budget, was spent there (**International Diabetes Federation, 2021; International Diabetes Federation, 2023**).

Diabetes is one of Iraq's top ten causes of death (**Iraqi Ministry of Health, 2022**).

1.2. Diabetes causes

The causes of type 2 diabetes are not totally known; however, there is a clear association with being overweight or obese, increasing age, ethnicity, and family history. Similar to type 1 diabetes, factors that contribute to type 2 diabetes have been suggested to involve polygenic and environmental factors (**ADA, 2021**).

The risk factors for developing type 2 diabetes include age, obesity, and decreased physical activity, women with prior gestational diabetes mellitus

(GDM) or polycystic ovary syndrome. It is also more common in people with hypertension or dyslipidemia and in certain racial/ethnic groups (African American, Native American, Hispanic/Latino, and Asian-American). Type 2 diabetes is associated with a strong genetic predisposition or family history in first-degree relatives (more than type 1 diabetes). However, till now, the genetics of type 2 diabetes are poorly understood despite being thoroughly researched (ADA, 2021).

1.3. The importance of knowledge, attitude, and practice studies on Diabetes

Recent studies that evaluated the knowledge, attitudes, and practices of T2DM patients revealed the need for increased patient awareness regarding preventing, diagnosing, lowering risk factors, and minimizing the complications of this disease (AbuAmara et al., 2019; Aljofan et al., 2019; Asmelash et al., 2019; Chawla et al., 2019).

Patients must be motivated since managing diabetes is a long-term procedure. In the long term, a more positive attitude and practice can be facilitated by patients having a basic understanding of diabetes. As a result, it may be easier to identify illnesses early and minimize complications (Mounica, 2015).

Education is the cornerstone of diabetes care. Successful management of diabetes requires a high degree of patient participation; this can be achieved by providing diabetic persons with the knowledge and skills to perform self-care on a day-to-day basis. Thus, the study of diabetics' knowledge, attitudes and practices toward their condition is regarded as a fundamental initial step in the educational process (Khurshid and Othman, 2014).

Given that diabetes is a self-managed illness, glycemic control-related information, attitudes, and behaviors can have a significant impact on both the overall course of therapy and the development of complications in DM patients. Patients must be well-informed about their illness and how to take care of themselves in order to achieve their treatment objectives and play a major role in the management of their condition (**Mekonnen and Hussien, 2021**).

Glycemic control, lipid profile, and BMI can all be significantly improved with Diabetes self-management education (DSME) programs. As such, they can lower the chances of complications from diabetes. DSME can also greatly enhance patient self-efficacy, quality of life, medication adherence, diabetes understanding, and DSM behaviors (**Mikhael et al., 2020**).

Health education is crucial in regions with limited resources like ours, where diabetes mellitus (DM) causes a significant financial burden and necessitates the immediate involvement of clinicians at all levels, particularly primary care physicians, who are typically the first to provide care and frequently encounter both newly diagnosed and known diabetics. Primary care physicians can provide health education and counseling to these patients so they can adopt healthy lifestyle habits, stay motivated to test their glucose status on a regular basis and understand the complications of diabetes. For diabetic patients to achieve glycemic control and avoid the onset of complications from their disease, adjustments in their knowledge, attitudes, and practices are therefore essential (**Chawla, et al., 2019**).

Determining patient knowledge, attitudes, and practices regarding glycemic control would help develop patient prevention and treatment plans (**Asmelash**

et al., 2019). The results of this type of research will aid in determining the population's diabetes knowledge gap and practices, which will direct the creation of preventive programs in the country (**Maina et al., 2011**).

Having an insight into the amount of knowledge, opinion, and behavior of people with the disease may help us to improve education and raise awareness of diabetes among them. Correct education and awareness initiatives which are created according to the needs of the society can help in the improvement of patient education, attitude modification, and dietary habits (**Mahzari et al., 2022**).

For the patients to achieve the disease-management goals and avert complications, they must possess the required knowledge, attitude, and self-care behaviors (KAP) regarding diabetes (**Alaofè et al., 2021**).

The first step of a plan that aims to promote diabetes prevention and to reduce complications and expenditure is to do research that helps to identify the baseline KAP (Knowledge, Attitude, and Practices) level of the target group (**Karbalaeifar et al., 2016**).

A person's understanding and attitudes towards the health disorder have a direct impact on his or her motivation to adhere to the prescribed treatment plan (**RavMarathe et al., 2016**).

Generally, the KAP studies about type 2 diabetes bring up several important points. They are a key element in determining diabetic patients' level of education, attitude, and behavior. These studies can evaluate how much patients with diabetes know about self-care, such as diet, foot care, and proper schedule of check-ups. Additionally, they can examine the patients' attitudes towards diabetes and its complications, which will contribute to the detection

of any common errors or beliefs that may negatively impact self-care. Also, KAP studies serve as an assessment tool for the patients' behavior, that is, adherence to medication, exercise, and lifestyle modifications, which offers insights into areas that require improvement (**Gani et al, 2023**).

Research in this area can show the challenges in teaching about diabetes and indicate ways that patient knowledge can be improved as well as how behavior can be changed. These kinds of studies also contribute to evaluations of patients' knowledge and understanding of diabetic complications. They can furnish information about how different treatment approaches, including adjuvant therapy and lifestyle modifications, perform. KAP studies also help to identify factors that impact patient knowledge and behavior such as age, the duration of diabetes, and glycemic control (**Mousavi and Shojaei, 2021**).

Through a process of highlighting the current gaps in patient knowledge, attitudes, and practices, stakeholders and healthcare workers can devise specific interventions and programs and thus they can improve diabetes management and ensure that complications are of minimal risk. These surveys are also useful in the design of healthcare services targeted at locally specific demographic factors that include age, educational level, and residence (**Asante et al., 2023**).

Hence, KAP studies are one of the key elements in better diabetes management and prevention as they help healthcare workers understand the problems that their patients face.

One of the values of this research is that it will uplift our understanding of patients' behaviors, attitudes, and beliefs toward this illness. So future education programs could target the weak points, false beliefs, or practices.

1.4. Objectives of the study

The objectives of this study are:

- 1- To assess the knowledge, attitudes, and practices of diabetes among type 2 diabetic patients in Karbala city.
- 2- To assess the factors associated with their knowledge, attitude, and practice.

Chapter Two

Patients and methods

2.1. Study design and settings

A cross-sectional study that was conducted on type 2 diabetic patients in Karbala City in:

- Al-Imam Al-Hussein Medical City
- Al-Imam Al-Hassan Center for Endocrinology and Diabetes (HMEDC) which is the only specialized diabetes center in the governorate
- Al-Imam Al-Hassan Al-Mujtaba Teaching Hospital
- Two Primary Health Care Centers which included Al-Ghadeer and Al-Abbasiya Al-Gharbiya
- Three Medical Public Clinics that provide their medical services in the afternoon period which included Al-Ghadeer, Al-Iskan, and Al-Abbasiya Al-Gharbiya

2.2. Sample size and sampling technique

The number of the sample was 252 type 2 diabetic patients and the data collection was conducted using convenience sampling.

2.3. Study tool and data collection

The data collection was conducted over eight months duration from 1st of February 2023 to 1st of October 2023 through face-to-face interviews with the patients using a questionnaire as the data collection instrument.

The questionnaire consisted of four parts. The first part of the questionnaire consisted of 21 questions regarding the studied variables including gender, date of birth, marital status, educational level, job type, residence, economic status, smoking, duration of diabetes, type of treatment, disease control,

complications due to diabetes, family history of diabetes, source of advice about diabetes and past medical history.

The disease control variable (Disease under control) expresses the patients' own belief that the disease is under control and is not based on the glycated hemoglobin test to indicate the patients' control over their diabetes.

The complications due to diabetes variable (Complication) included any one or more of these complications: Diabetic neuropathy, Diabetic nephropathy, Diabetic retinopathy, Diabetic foot, Coronary heart disease, Stroke, Peripheral vascular disease, Hypoglycemia, Cataract, Sexual dysfunction, and Others.

The past medical history variable (Other chronic diseases) included any one or more of these chronic diseases: Hypertension, Heart diseases, Stroke, Kidney diseases, Dyslipidemia, Thyroid diseases, and Others.

The second part consisted of 11 questions on the knowledge of type 2 diabetic patients regarding their disease and these questions were taken from the University of Michigan Diabetes Research and Training Centre (MDRTC) and is known as the Michigan Diabetic Knowledge Test (MDKT) (**Fitzgerald et al., 1998**).

The third part consisted of 10 questions (statements) on the attitude of the patients regarding their disease and was taken from the diabetic care profile, which was developed by the University of Michigan (**Fitzgerald et al., 1996**).

The fourth part consisted of 9 questions on the practices of the patients regarding lifestyle, blood sugar monitoring, weight measurement, dietary habits, medication compliance, eye examination, and foot care taken from (**Mukhopadhyay et al., 2010**).

English was the questionnaire's original language, and two bilingual translators (Google Translate and Britannica English-Arabic Translator) were used to translate English to Arabic (Appendices 1,2).

The questionnaire was evaluated by expertises from the Department of Community Medicine at the University of Kerbala / College of Medicine (Appendix 3), the Department of Internal Medicine at the University of Al-Ameed / College of Medicine (Appendix 4), and by a specialist of Internal Medicine at Karbala health directorate / Al-Imam Al-Hassan Center for Endocrinology and Diabetes (HMEDC) (Appendix 5).

After collecting information from each patient and filling out his questionnaire, three brochures were distributed to each patient for health education and health promotion. These included a brochure entitled (Type 2 diabetes (non-insulin dependent), its definition, causes, symptoms, and complications), issued by the Iraqi Ministry of Health, Public Health Department, Nutrition Research Institute (Appendix 6). The second brochure was entitled (Foot Care for People with Diabetes), issued by the Department of Public Health/Health Promotion Department in cooperation with the Department of Prevention and Control of Non-communicable Diseases (Appendix 7). The third brochure was entitled (Nutrition Guide for Diabetics), one for those with high weight and the other for those with low or normal weight, issued by nutrition specialist doctors in the Holy Governorate of Karbala (Appendix 8).

2.4. Inclusion criteria

All patients who had type 2 diabetes, aged more than 18 years, and diagnosed with diabetes for more than six months were included.

2.5. Exclusion criteria

The study excluded patients who were pregnant, and those who had other types of diabetes.

2.6. Pilot study

A pilot study was done on 20 patients who were excluded from the study sample in a 3-week duration extended from 1st of February 2023 to 22nd of February 2023 to find out if there was any linguistic problem and the duration of each patient interview was about 30 minutes.

2.7. Assessment of Economic Status

Two variables were used for patients' Economic Status; The first was according to the patients' own assessments and the second was according to the Crowding Index Level.

The Crowding Index Level was calculated from The Crowding Index which is the proportion of all the individuals living in the house and all the house rooms apart from the kitchen and bathroom (**World Health Organization, 2018**). Patients with a Crowding Index of (less than 1) were considered as having a Low Crowding Index Level, whereas patients with a Crowding Index of (1-2.99) and (more than or equal to 3) were considered as having a Medium and High Crowding Index Levels respectively (**Iraqi Ministry of Planning, 2014**). The Low, Medium and High Crowding Indexes were converted to Good, Average and Weak Economic Statuses respectively.

2.8. Assessment of knowledge scores

Each patient was told to choose one possible answer to the four-choice questions. The correct answer was scored one point and the incorrect answer was scored zero. The knowledge scores ranged from (0-11).

2.9. Assessment of attitude scores

Each item was assessed using one of five subscales: 1 = strongly disagree (SD), 2 = disagree (DA), 3 = neutral (NE), 4 = agree (A), and 5 = strongly agree (SA). The maximum score was 50. The scores were reversed for negatively-worded items (1,2,3,9) before data analysis. The attitudes were divided into positive, and negative attitudes. The neutral attitudes were regarded as negative attitudes.

2.10. Assessment of practice scores

Practice scores were calculated for the patients depending on eight practice areas, including regular exercise of more than 30 minutes, home blood glucose monitoring, weight monitoring last month, diet intake as advised by a physician or dietician, medication adherence last month, at least 1 eye exam in the last year, at least 1 foot exam in the last year and always wearing covered shoes outdoors (**Mohammadi et al., 2015**).

Each patient scored one point for good practice in each area and zero for poor practice in these areas. The patients' practice scores ranged from (0-8). Those with scores (0-3) were considered to have poor practice level and those with scores (4,5) and (6-8) were considered to have moderate and good practice levels respectively.

Item	Practice area	Good practice (Scored one point)	Poor practice (Scored zero point)
1	Regular exercise of more than 30 minutes	Took part in any moderate physical activity lasting more than half an hour for more than 5 days a week and 2–5 days a week for the past month	Other choices
2	Home blood glucose monitoring	Had a device to monitor blood sugar at home	Didn't have a device
3	Weight monitoring last month	Measured their weight in the last month once or more	Didn't measure their weight
4	Diet intake as advised by a physician or dietician	Modified their diet as per the doctor's or dietician's advice	Didn't modify their diet
5	Medication adherence last month	Didn't ever forget to take diabetes medications prescribed by their doctor in the last month	Forgot to take diabetes medications
6	At least 1 eye exam in the last year	Had at least one eye exam in the last year	Didn't do any eye exam
7	At least 1 foot exam in the last year	Had at least one foot exam in the last year	Didn't do any foot exam
8	Always wearing covered or closed shoes outdoors	Always wore covered or closed shoes when outdoors	Didn't always wear covered or closed shoes

2.11. Assessment of knowledge, attitude, and practice levels

Three categories were created based on the respondents' scores. The following cut-off points were used to determine the knowledge, attitude, and practice scoring level: 75%–100%, 50%–74%, and 0%–49% for good, moderate, and poor levels, respectively (AIMutawaa et al., 2022).

2.12. Ethical approval

- Ethical approval was taken from the Medical Research Bioethical Committee at the University of Kerbala – College of Medicine (Number: 13 at 6/3/2023) (Appendix 9).
- Approval was taken from the Karbala Health Directorate (Appendix 10).
- Verbal consent was taken from the participants.

2.13. Statistical analysis

The Statistical Package for the Social Sciences (SPSS) version 22.00 and Microsoft Excel 16 were utilized to compute descriptive and inferential statistics. The significance level for all statistical tests was set at 0.05. Mean \pm standard deviation (St.D) was the interpretation used for continuous variables and frequencies and percentages were used to represent categorical data. The means of two groups were compared using an independent samples t-test and the means of three or more groups were compared using Analysis of Variance (ANOVA) and Tukey's post hoc tests. Using Pearson's rank correlation coefficient test, relationships between diabetic knowledge, attitude, and practice scores were investigated.

Chapter Three

Results

3.1. Sociodemographic characteristics of the patients

The patients' sociodemographic details are shown in Table 3.1.

The mean age of the patients was 56 ± 9.83 years. 64.3% of the patients were females. 79.0% of the patients were married. Regarding the educational level, 42.1% of the patients completed the primary level and 24.6% of them were classified as illiterate (Neither reads nor writes).

Regarding the job type, 11.9% of the patients were government employees, 16.3% of them were retired and 56.7% of them were housewives.

Regarding the residence, 91.3% of the patients lived in urban areas. 55.2% of the patients lived in owned houses, 17.1% lived in rented houses, 17.1% lived in houses built in agricultural areas and 10.7% lived in houses built in slum areas.

Regarding economic status according to the patients' assessments, 127 (50.4%) patients considered themselves as having weak economic status, 111 (44.0%) as having average economic status and 14 (5.6%) as having good economic status. Regarding economic status according to the Crowding Index Level, 64 (25.4%) patients were considered as having weak economic status, 167 (66.3%) as having average economic status and 21 (8.3%) as having good economic status. 74.2% of the patients were non-smokers.

Table 3.1: Sociodemographic characteristics of the patients

Variables	Categories	Frequency (n=252)	Percentage (100%)
Gender	Male	90	35.7
	Female	162	64.3
Age Groups / years	Under 45	30	11.9
	45 - <55	87	34.5
	55 - <65	80	31.7
	65 - <75	46	18.3
	75 and older	9	3.6
Marital Status	Single	3	1.2
	Married	199	79
	Widower / Widow	46	18.3
	divorced	4	1.6
Educational level	Neither reads nor writes	62	24.6
	Primary	106	42.1
	Intermediate	34	13.5
	Preparatory	20	7.9
	University \ Institute	25	9.9
	Postgraduate	5	2
Job type	Government employee	30	11.9
	Retired	41	16.3
	Free Business	32	12.7
	Not working	6	2.4
	Housewife	143	56.7
Residence	Urban	230	91.3
	Rural	22	8.7
House type	Owned	139	55.2
	Rented	43	17.1
	Slum	27	10.7
	Agricultural	43	17.1
Economic Status according to the patients' assessments	Weak	127	50.4
	Average	111	44
	Good	14	5.6
Economic status according to Crowding Index Level	Weak	64	25.4
	Average	167	66.3
	Good	21	8.3
Smoking	Yes	31	12.3
	No	187	74.2
	Ex-smoker	34	13.5

3.2. Clinical data about diabetes mellitus among patients

The patients' clinical data about diabetes mellitus is shown in Table 3.2.

The mean duration of diabetes was 10.1 ± 6.82 years.

250 patients (99.2% of the patients) took treatment, including any one or more of these types (diet-only, oral pills-only, insulin-only, oral pills and insulin, herbals-only). 71.0% of the patients had their treatment included oral pills-only, 70.6% included diet-only, 15.1% included oral pills and insulin, 15.1% included herbals-only and 9.9% included insulin-only. 2 patients (0.8%) didn't take any kind of treatment, not even diet-only treatment.

40.9% of the patients reported that their disease was not under control and 34.5% reported that it was somewhat under control.

96.0% of the patients had complications due to diabetes. The percentage of complications among type 2 diabetic patients is shown in Figure 3.1. 217 (86.1%) of the patients reported that they suffer from diabetic neuropathy, 122 (48.4%) from hypoglycemia, 92 (36.5%) from cataract, 70 (27.8%) from sexual dysfunction (all were males), 60 (23.8%) from diabetic retinopathy, 54 (21.4%) from coronary heart disease, 37 (14.7%) from diabetic foot, 11 (4.4%) from peripheral vascular disease, 10 (4.0%) from stroke, 8 (3.2%) from diabetic nephropathy and 59 (23.4%) reported that they suffer from other complications. Concerning other complications that were mentioned by the patients, 17 (29%) of them reported they suffered from weight loss, 15 (25%) from non-alcoholic fatty liver disease, 12 (20%) from glaucoma, 5 (8%) from recurrent urinary tract infection, 4 (7%) from joint pain, 2 (3%) from amputation in the foot and gingivitis, weight gain, dry eye and paronychia with abscess formation were reported by one patient (2%) for each of them.

77.0% of them reported that they had a first-degree family member with type 2 diabetes (father, mother, brother, sister, son, daughter).

The sources of information about diabetes are shown in Figure 3.2. 231 patients (91.7%) took their information from physicians, 190 (75.4%) from family members, 168 (66.7%) from social media, 147 (58.3%) from relatives and friends, 111 (44.0%) from nurses, 101 (40.1%) from TV, radio and newspapers and 2 (0.8%) from other source which was from pharmacists.

90.9% of them said that they had other diseases besides type 2 diabetes. 180 (71.4%) of them had dyslipidemia, 152 (60.3%) had hypertension, 71 (28.2%) had heart diseases, 28 (11.1%) had thyroid diseases, 11 (4.4%) had stroke, 7 (2.8%) had kidney diseases and 46 (18.3%) had other types of diseases.

Table 3.2: Clinical data about diabetes mellitus among patients

Variables	Categories	Frequency (n=252)	Percentage (100%)
Diabetes duration	5 years or less	79	31.3
	>5 - 10 years	74	29.4
	>10 - 15 years	50	19.8
	>15 - 20 years	32	12.7
	More than 20 years	17	6.7
Take treatment	Yes	250	99.2
	No	2	0.8
Type of treatment	Diet only	178	70.6
	Oral pills only	179	71
	Insulin only	25	9.9
	Oral pills and insulin	38	15.1
	Herbals only	38	15.1
Disease under control	Yes	62	24.6
	Somewhat	87	34.5
	No	103	40.9
Complication	Yes	242	96
	No	10	4
Family history	Yes	194	77
	No	58	23
Other chronic diseases	Yes	229	90.9
	No	23	9.1

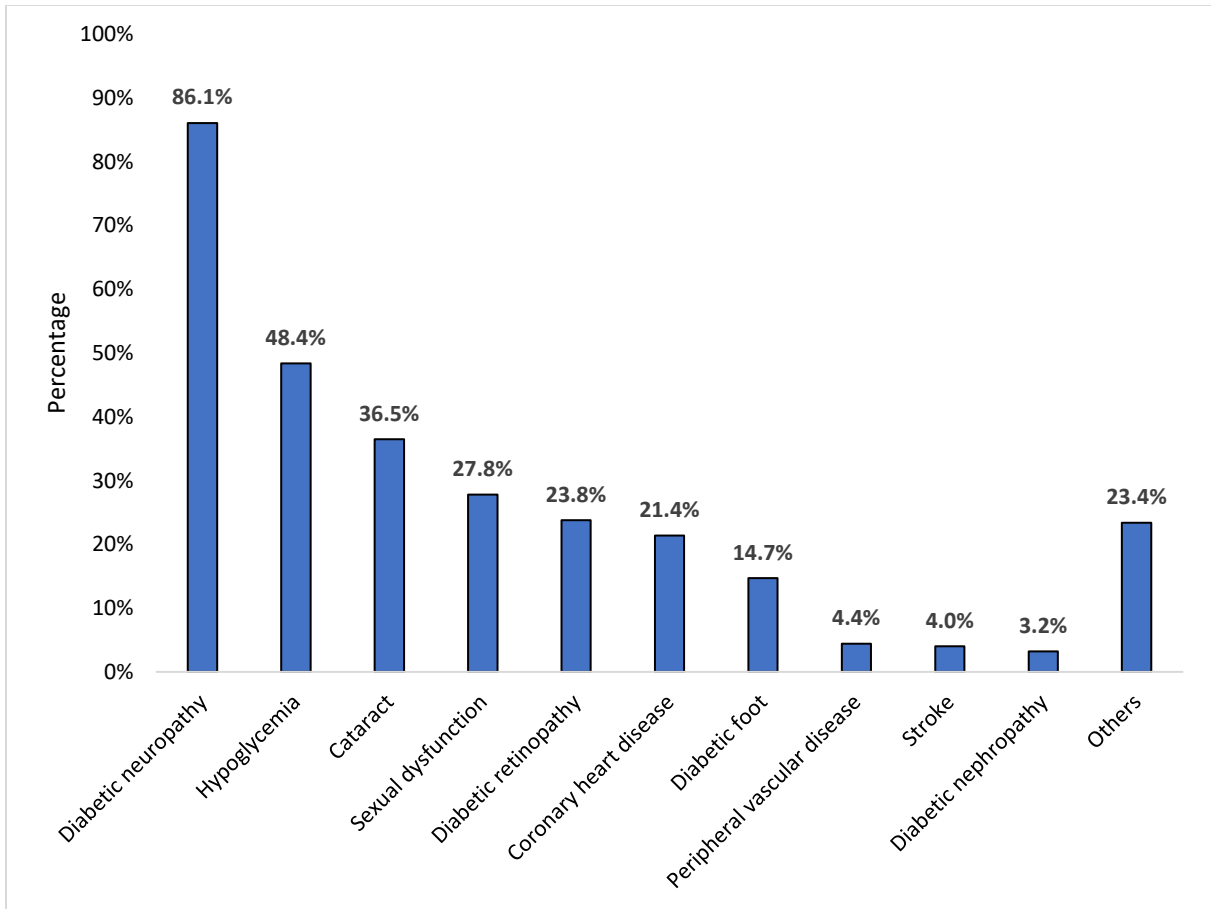


Figure 3.1: Percentage of complications among type 2 diabetic patients

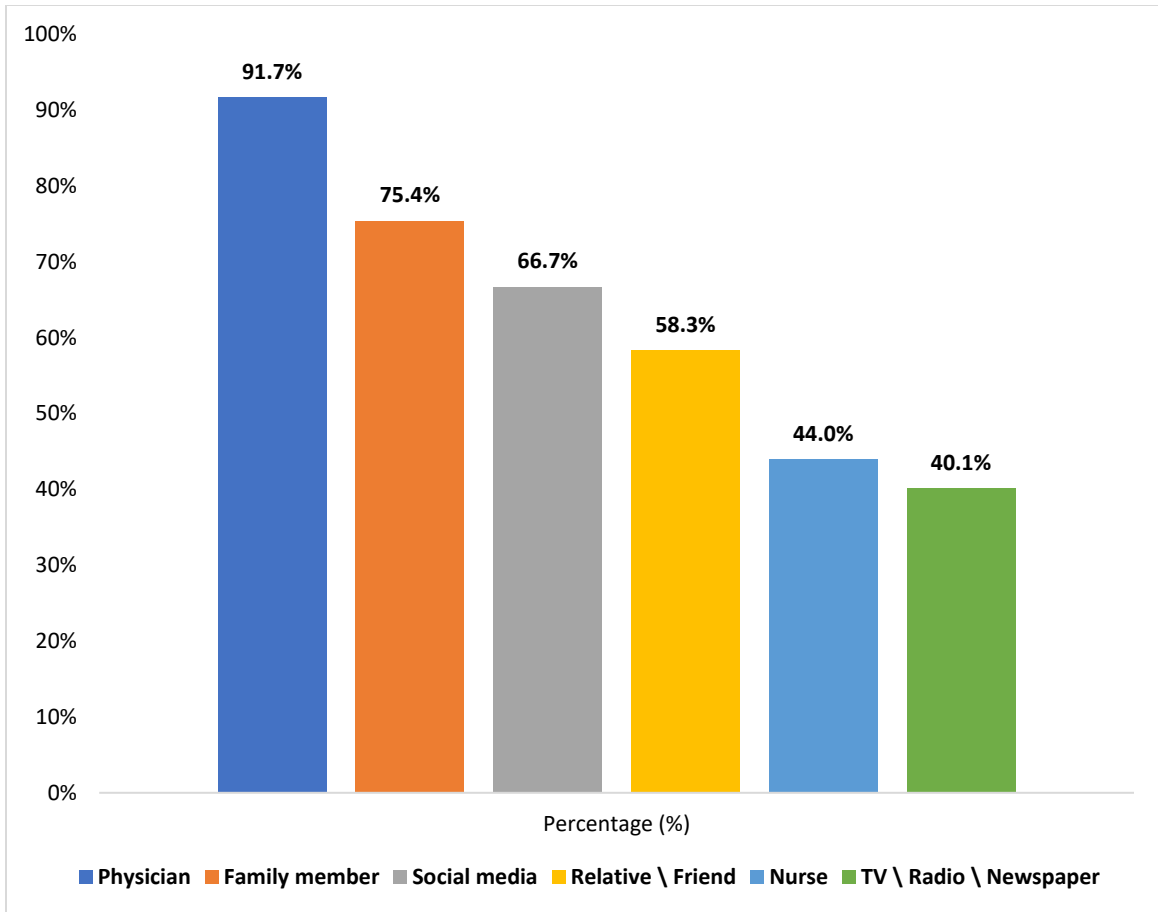


Figure 3.2: Responses of patients regarding sources of information about diabetes (More than one answer)

3.3. Assessment of knowledge scores

The mean score, mean score percentage, and its 95% Confidence Interval of the knowledge of the patients are shown in Table 3.3.

The mean score of the Diabetic Knowledge Test (DKT) was 6.5 ± 2.09 and the median score was 7.

The knowledge levels are shown in Figure 3.3.

More than half of the patients (55.2%) which equals 139 patients had a moderate knowledge level, 72 patients (28.6%) had a poor knowledge level and 41 patients (16.3%) had a good knowledge level.

Table 3.4 presents the diabetes-related knowledge that the patients reported. It shows the DKT questions that were correctly or incorrectly answered.

Regarding the questions of the DKT, the most incorrectly answered question was related to the target value of glycosylated hemoglobin (hemoglobin A1C) that the patient must meet to control diabetes (73.8% of the patients answered it incorrectly).

There was also a tendency to give incorrect answers to questions on the best way to take care of diabetic patients' feet (57.9% were incorrect); which should not be used to treat low blood glucose (56.7% were incorrect); what does unsweetened fruit juice have on blood glucose (55.6% were incorrect); and (50.8%) of the patients incorrectly answered the question on which foods had the highest fat content. However, the percentages of incorrect answers to questions 11, 5, 4, 9, 7 and 6 were 40.9%, 36.5%, 33.7%, 24.6%, 9.9% and 9.1% respectively.

Table 3.3: The patients' mean scores, mean score percentages, and their 95% Confidence Intervals of knowledge, attitude, and practices (n = 252)

Scores	Minimum	Maximum	Mean	Mean percentage %	95% Confidence Interval of Mean percentage %
Knowledge score	0	11	6.50	59.12	56.89 - 61.44
Attitude score	19	48	31.55	63.10	61.64 - 64.69
Practice score	0	8	4.40	54.96	52.48 - 57.39

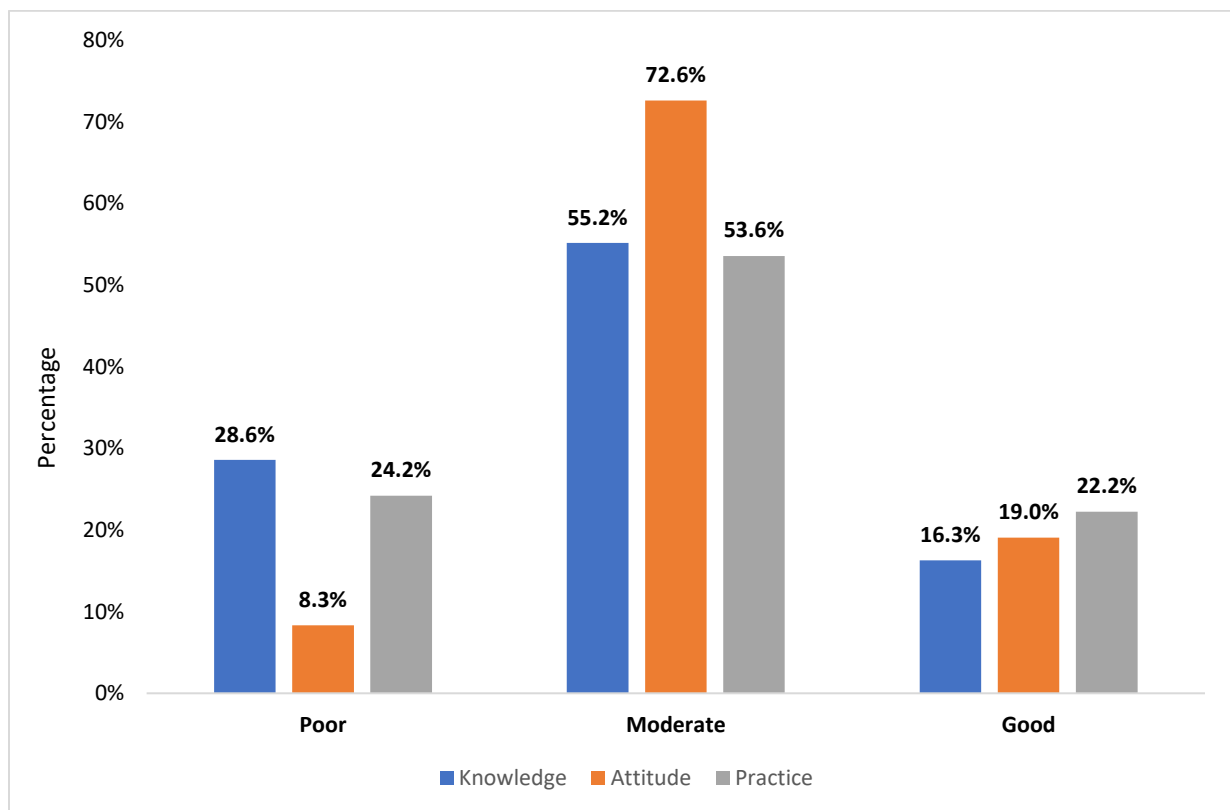


Figure 3.3: The distribution of Knowledge, Attitude, and Practice levels among patients (n = 252)

Table 3.4: Percentage of incorrect answers of the patients for the Diabetes Knowledge Test (n = 252)

Item	Question (The correct answer is in bold)	Incorrect (100%)
8	The value of Glycosylated hemoglobin (hemoglobin A1C) as a target that you must reach to control diabetes is? a. Less than 6 % b. Less than 7 % c. Less than 8 % d. Less than 10 %	73.8
10	The best way to take care of your feet is to? a. Look at and wash them each day b. Massage them with alcohol each day c. Soak them for one hour each day d. Buy shoes a size larger than usual	57.9
1	Which should not be used to treat low blood glucose? a. 3 hard candies b. 1/2 cup orange juice c. 1 cup diet soft drink d. 1 cup skim milk	56.7
3	What does unsweetened fruit juice have on blood glucose? a. Lowers it b. Raises it c. Has no effect	55.6
2	Which of the following has the highest fat content? a. Low-fat milk b. Orange juice c. Corn d. Honey	50.8
11	Numbness and tingling may be symptoms of? a. Kidney disease b. Nerve disease c. Eye disease d. Liver disease	40.9
5	Which of the following is highest in carbohydrates? a. Baked chicken b. Cheese c. Baked potato d. Butter	36.5
4	Glycosylated hemoglobin (hemoglobin A1C) is a test that measures your average blood glucose level for the past? a. Week b. Month c. Three months d. Six months	33.7
9	Infection is likely to cause? a. An increase in blood glucose b. A decrease in blood glucose c. No change in blood glucose	24.6
7	The diabetes diet is? a. The way most Iraqi people eat b. A healthy diet for most people c. Too high in carbohydrates for most people d. Too high in protein for most people	9.9
6	Which is the best method for testing blood glucose? a. Urine testing b. Blood testing c. Both are equally good	9.1

3.4. Diabetes knowledge and sociodemographic characteristics

The relationship between the knowledge scores and the sociodemographic characteristics of the patients is displayed in Table 3.5.

There was a significant relationship between the knowledge scores and the age groups of the patients using the ANOVA test ($P = 0.01$), where the patients under 45 years old had higher knowledge scores than those 75 years and older (6.97 ± 1.938 vs. 4.78 ± 1.856) and the patients aged 45 - <55 years had higher scores than those aged 75 years and older (6.92 ± 1.767 vs. 4.78 ± 1.856).

There was a highly significant relationship between the knowledge scores and the educational level of the patients ($P < 0.001$), where the knowledge scores increased as the educational level increased (8.00 ± 2.449 for Postgraduate level vs. 4.95 ± 2.06 for Neither reads nor writes level).

There was a significant relationship between the knowledge scores and the job type ($P = 0.002$), where the Government employee had higher scores than Free business and Not working (7.47 ± 1.852 vs. 5.88 ± 1.879 and 7.47 ± 1.852 vs. 4.33 ± 3.011) respectively and the Retired patients had higher scores than Not working patients (6.85 ± 1.905 vs. 4.33 ± 3.011).

Also, there was a highly significant relationship between Economic Status according to the patients' own assessments and knowledge scores ($P < 0.001$), where the knowledge scores increased as the Economic Status increased (6.00 ± 2.153 vs. 6.89 ± 1.865 and 6.00 ± 2.153 vs. 8.00 ± 2.00 for Weak vs. Average and Weak vs. Good Economic Status) respectively.

Table 3.5: Sociodemographic characteristics of the patients with differences in knowledge scores

Variables	Categories	No.	Knowledge score			
			Mean	±	St.D	P
Gender	Male	90	6.6	±	2.081	0.588
	Female	162	6.45	±	2.103	
Age Groups / years	Under 45	30	6.97	±	1.938	0.010*
	45 - <55	87	6.92	±	1.767	
	55 - <65	80	6.24	±	2.094	
	65 - <75	46	6.22	±	2.538	
	75 and older	9	4.78	±	1.856	
Marital Status	Single	3	5	±	1.732	0.181
	Married	199	6.62	±	2.031	
	Widower / Widow	46	6.04	±	2.328	
	divorced	4	7.25	±	1.893	
Educational level	Neither reads nor writes	62	4.95	±	2.06	<0.001*
	Primary	106	6.57	±	1.821	
	Intermediate	34	7.38	±	1.436	
	Preparatory	20	7.85	±	1.694	
	University \ Institute	25	7.52	±	2.002	
	Postgraduate	5	8	±	2.449	
Job type	Government employee	30	7.47	±	1.852	0.002*
	Retired	41	6.85	±	1.905	
	Free Business	32	5.88	±	1.879	
	Not working	6	4.33	±	3.011	
	Housewife	143	6.43	±	2.098	
Residence	Urban	230	6.5	±	2.137	0.923
	Rural	22	6.55	±	1.595	
House type	Owned	139	6.47	±	2.198	0.390
	Rented	43	6.6	±	2.392	
	Slum	27	5.96	±	1.786	
	Agricultural	43	6.84	±	1.511	
Economic Status according to the patients' assessments	Weak	127	6	±	2.153	<0.001*
	Average	111	6.89	±	1.865	
	Good	14	8	±	2	
Economic Status according to Crowding Index Level	Weak	64	6.09	±	1.958	0.170
	Average	167	6.62	±	2.062	
	Good	21	6.86	±	2.613	
Smoking	Yes	31	6.32	±	1.739	0.544
	No	187	6.59	±	2.122	
	Ex-smoker	34	6.21	±	2.24	

3.5. Diabetes knowledge and Clinical data about diabetes mellitus among patients

The relationship between the knowledge scores and the Clinical data about diabetes mellitus among patients is displayed in Table 3.6.

There was no significant relationship between the knowledge scores and any of the Clinical data about diabetes mellitus among patients.

Table 3.6: Clinical data about diabetes mellitus among patients with differences in knowledge scores

Variables	Categories	No.	Knowledge score			
			Mean	±	St.D	P
Diabetes duration	5 years or less	79	6.32	±	2.256	0.760
	>5 - 10 years	74	6.64	±	1.66	
	>10 - 15 years	50	6.42	±	2.011	
	>15 - 20 years	32	6.84	±	2.343	
	More than 20 years	17	6.41	±	2.785	
Take treatment	Yes	250	6.51	±	2.098	0.733
	No	2	6	±	1.414	
Type of treatment	Oral pills only	179	6.44	±	2.115	0.867
	Insulin only	25	6.68	±	2.495	
	Oral pills and insulin	38	6.71	±	1.887	
Disease under control	Yes	62	6.53	±	2.171	0.275
	Somewhat	87	6.23	±	2.111	
	No	103	6.72	±	2.022	
Complication	Yes	242	6.55	±	2.025	0.063
	No	10	5.3	±	3.268	
Family history	Yes	194	6.53	±	2.052	0.709
	No	58	6.41	±	2.24	
Other chronic diseases	Yes	229	6.54	±	2.097	0.370
	No	23	6.13	±	2.052	

3.6. Attitude assessment

The mean score, mean score percentage, and its 95% Confidence Interval of the attitudes of the patients are shown in Table 3.3.

About three-quarters of the patients (72.6%) had a moderate attitude level. The attitude levels are shown in Figure 3.3.

The number and percentage of patients who expressed positive or negative attitudes toward each item in the attitude questionnaire are shown in Table 3.7.

The choices strongly disagree (SD) and disagree (DA) for items 1, 2, 3 and 9 and the choices agree (A) and strongly agree (SA) for items 4, 5, 6, 7, 8 and 10 both corresponded to a positive attitude. The neutral choices (NE) were included in the negative attitudes.

221 (87.7%) of the patients found it hard to believe that they really had diabetes. 190 (75.4%) felt unhappy and depressed because of their diabetes. 191 (75.9%) felt they were not as good as others because of their diabetes. 103 (40.8%) could do just about anything they set out to do. 244 (96.8%) said they should control their weight to control diabetes. Only 74 (29.3%) thought that things were going very well for them right now. 247 (98.0%) said they should monitor their blood glucose at home. 39 (15.4%) thought that diabetes did not affect their life at all. Only 22 (8.8%) said that eating restrictions were no longer required once diabetes was controlled. 250 (99.2%) thought regular exercise helped keep diabetes under control.

Table 3.7: The responses of the patients regarding their attitudes towards diabetes (n = 252)

Attitudes	SD No. (100%)	DA No. (100%)	NE No. (100%)	A No. (100%)	SA No. (100%)	Positive No. (100%)	Negative No. (100%)
1. I find it hard to believe that I really have diabetes	9 (3.6)	22 (8.7)	4 (1.6)	63 (25.0)	154 (61.1)	31 (12.3)	221 (87.7)
2. I feel unhappy and depressed because of my diabetes	15 (6.0)	47 (18.7)	8 (3.2)	39 (15.5)	143 (56.7)	62 (24.7)	190 (75.4)
3. I feel I am not as good as others are because of my diabetes	15 (6.0)	46 (18.3)	10 (4.0)	77 (30.6)	104 (41.3)	61 (24.3)	191 (75.9)
4. I can do just about anything I set out to do	68 (27.0)	78 (31.0)	3 (1.2)	54 (21.4)	49 (19.4)	103 (40.8)	149 (59.2)
5. People with diabetes should control their weight	1 (0.4)	1 (0.4)	6 (2.4)	53 (21.0)	191 (75.8)	244 (96.8)	8 (3.2)
6. Things are going very well for me right now	57 (22.6)	80 (31.7)	41 (16.3)	57 (22.6)	17 (6.7)	74 (29.3)	178 (70.6)
7. People with diabetes should monitor their own blood glucose at home	0 (0)	2 (0.8)	3 (1.2)	17 (6.7)	230 (91.3)	247 (98.0)	5 (2.0)
8. Diabetes does not affect my life at all	153 (60.7)	53 (21.0)	7 (2.8)	23 (9.1)	16 (6.3)	39 (15.4)	213 (84.5)
9. Once diabetes is controlled, eating restrictions are no longer required	66 (26.2)	164 (65.1)	3 (1.2)	13 (5.2)	6 (2.4)	230 (91.3)	22 (8.8)
10. Regular exercise helps in keeping diabetes under control	0 (0)	0 (0)	2 (0.8)	30 (11.9)	220 (87.3)	250 (99.2)	2 (0.8)

*SD = Strongly Disagree, DA = Disagree, NE = Neutral, A = Agree, SA = Strongly Agree

3.7. Attitudes and sociodemographic characteristics

The relationship between the attitude scores and the sociodemographic characteristics of the patients is displayed in Table 3.8.

There was a significant relationship between the attitude scores and the gender of the patients ($P = 0.01$), where the male patients had higher attitude scores than the female patients (32.89 ± 6.668 vs. 30.81 ± 5.790).

There was a highly significant relationship between attitude scores and the educational level of the patients ($P < 0.001$), where the attitude score increased as the educational level increased, where the mean attitude score for neither reads nor writes versus preparatory, university \ institute and postgraduate educational levels was (29.55 ± 6.535 vs. 35.55 ± 5.176 , 34.56 ± 6.609 and 37.4 ± 7.301) respectively.

There was a highly significant relationship between attitude scores and job type ($P < 0.001$), where the government employee had higher attitude scores than the housewives (34.43 ± 6.372 vs. 30.39 ± 5.684) and the retired patients had higher attitude scores than the housewives (34.1 ± 6.629 vs. 30.39 ± 5.684).

There was a highly significant relationship between attitude scores and economic status (according to the patients' assessments) ($P < 0.001$), where the attitude scores increased as the economic status increased, where the mean attitude score for good economic status versus average and weak economic status was (37.64 ± 5.969 vs. 32.58 ± 6.036 and 29.98 ± 5.764) respectively.

Table 3.8: Sociodemographic characteristics of the patients with differences in attitude scores

Variables	Categories	No.	Attitude score			
			Mean	±	St.D	P
Gender	Male	90	32.89	±	6.668	0.010*
	Female	162	30.81	±	5.79	
Age Groups / years	Under 45	30	32.27	±	7.46	0.605
	45 - <55	87	31.14	±	5.587	
	55 - <65	80	31.7	±	6.327	
	65 - <75	46	32.11	±	6.287	
	75 and older	9	29	±	5.701	
Marital Status	Single	3	27.33	±	4.933	0.435
	Married	199	31.78	±	6.23	
	Widower / Widow	46	31.09	±	6.099	
	divorced	4	28.75	±	5.56	
Educational level	Neither reads nor writes	62	29.55	±	6.535	<0.001*
	Primary	106	30.52	±	4.925	
	Intermediate	34	33	±	6.814	
	Preparatory	20	35.55	±	5.176	
	University \ Institute	25	34.56	±	6.609	
	Postgraduate	5	37.4	±	7.301	
Job type	Government employee	30	34.43	±	6.372	<0.001*
	Retired	41	34.1	±	6.629	
	Free Business	32	31.47	±	6.278	
	Not working	6	27.83	±	3.71	
	Housewife	143	30.39	±	5.684	
Residence	Urban	230	31.67	±	6.324	0.311
	Rural	22	30.27	±	4.399	
House type	Owned	139	32.15	±	6.138	0.173
	Rented	43	31.51	±	6.84	
	Slum	27	29.37	±	6.488	
	Agricultural	43	31.02	±	5.244	
Economic Status according to the patients' assessments	Weak	127	29.98	±	5.764	<0.001*
	Average	111	32.58	±	6.036	
	Good	14	37.64	±	5.969	
Economic status according to Crowding Index Level	Weak	64	30.11	±	5.538	0.096
	Average	167	32.02	±	6.373	
	Good	21	32.19	±	6.129	
Smoking	Yes	31	30.97	±	5.32	0.531
	No	187	31.46	±	6.137	
	Ex-smoker	34	32.59	±	7.182	

3.8. Attitudes and Clinical data about diabetes mellitus among patients

The relationship between the attitude scores and the Clinical data about diabetes mellitus among patients is displayed in Table 3.9.

There was a significant relationship between the attitude scores and Diabetes duration ($P = 0.011$), where the attitude scores increased as the diabetes duration decreased, where the mean attitude score for those patients who had diabetes for 5 years or less was higher than that for those patients who had diabetes for >5 - 10 years (33.58 ± 7.185 vs. 30.85 ± 5.804) and also was higher than that for those patients who had diabetes for >10 - 15 years (33.58 ± 7.185 vs. 30.52 ± 4.892).

There was a significant relationship between the attitude scores and the type of treatment ($P = 0.005$), where the patients who took oral pills-only had higher attitude scores than those who took insulin-only (32.25 ± 6.47 vs. 28.84 ± 5.86).

There was a highly significant relationship between attitude scores and the patients' perceptions that their disease was under control ($P < 0.001$), where the patients who responded yes had higher attitude scores than both those who responded somewhat and no (35.65 ± 7.70 vs. 31.75 ± 5.43 and 28.92 ± 4.09) respectively.

There was a highly significant relationship between attitude scores and the presence of complications ($P < 0.001$), where the patients who didn't have complications had higher attitude scores than those who had complications (39.40 ± 4.88 vs. 31.23 ± 6.02).

Table 3.9: Clinical data about diabetes mellitus among patients with differences in attitude scores

Variables	Categories	No.	Attitude score			
			Mean	±	St.D	P
Diabetes duration	5 years or less	79	33.58	±	7.185	0.011*
	>5 - 10 years	74	30.85	±	5.804	
	>10 - 15 years	50	30.52	±	4.892	
	>15 - 20 years	32	30.69	±	5.337	
	More than 20 years	17	29.82	±	5.982	
Take treatment	Yes	250	31.58	±	6.204	0.485
	No	2	28.5	±	0.707	
Type of treatment	Oral pills only	179	32.25	±	6.466	0.005*
	Insulin only	25	28.84	±	5.857	
	Oral pills and insulin	38	29.47	±	4.065	
Disease under control	Yes	62	35.65	±	7.691	<0.001*
	Somewhat	87	31.75	±	5.429	
	No	103	28.92	±	4.091	
Complication	Yes	242	31.23	±	6.025	<0.001*
	No	10	39.4	±	4.881	
Family history	Yes	194	31.41	±	5.916	0.499
	No	58	32.03	±	7.049	
Other chronic diseases	Yes	229	31.41	±	6.044	0.269
	No	23	32.91	±	7.471	

3.9. Practice assessment

The mean score, mean score percentage, and its 95% Confidence Interval of the practices of the patients are shown in Table 3.3.

More than half of the patients (53.6%) had a moderate practice level. The practice levels are shown in Figure 3.3.

The responses of the diabetic patients regarding their practices are shown in Table 3.10.

Regarding the practice question related to exercise and physical activity for the past month, 93 (36.9%) of the patients reported that they took part in any moderate physical activity lasting more than half an hour (such as light sports, physical exercise, gardening or taking long walks) for more than 5 days a week; 82 (32.5%) reported that they participated in moderate physical activity for 2–5 days a week; 21 (8.3%) for once a week; 32 (12.7%) for two to three times a month and 24 (9.5%) reported that they rarely or never took part in any moderate physical activity.

The reasons that were reported by the patients for rarely or never taking part in any moderate physical activity were knee joint pain in 9 patients (38%), back pain in 4 (17%), diabetic foot in 4 (17%), disc prolapse in 2 (8%) and a recent heart attack, recent chest infections, severe diabetic neuropathy, severe anemia and congestive heart failure were reported by one patient (4%) for each of them.

For the question related to blood sugar examination in a laboratory in the last month, 150 patients (59.5%) didn't measure their blood sugar, 67 (26.6%) measured more than once and 35 (13.9%) measured once.

Regarding the question related to having a device to monitor blood sugar at home, 219 patients (86.9%) reported that they had a device to monitor blood sugar at home and 33 (13.1%) reported that they didn't.

Of the patients who had a device at home, 80 (36.5%) checked their blood sugar at home more than 5 days a week, 85 (38.8%) checked 2–5 days a week, 17 (7.8%) checked once a week, 17 (7.8%) checked two to three times a month and 20 (9.1%) rarely or never checked their blood sugar at home.

For those who didn't have a device at home, the reasons that were reported were due to a weak financial condition in 14 patients (42%), diabetes does not affect them significantly and the duration of their diagnosis with the disease is short in 7 (21%), they don't want to become obsessed with measuring blood sugar in 5 (15%), they lack knowledge of using a glucose meter in 4 (12%) and they are not interested in measuring blood sugar in 3 (9%).

Regarding the question related to weight measurement in the last month, 147 patients (58.3%) didn't measure their weight, 74 (29.4%) measured it once and 31 (12.3%) measured it more than once.

Regarding the question related to diet modification as per the doctor's or dietician's advice following the diagnosis of diabetes, 179 (71.0%) of the patients had modified their diet according to the doctor's or dietician's advice and 73 (29.0%) of them didn't.

For those who modified their diet, 90 (50.3%) of them reported that they sometimes took their diet as advised by the doctor or dietician in the last month, 62 (34.6%) of them reported that they mostly took their diet as advised by the doctor or dietician in the last month and 27 (15.1%) reported that they

rarely or never took their diet as advised by the doctor or dietician in the last month.

Regarding the question related to the forgetfulness of the patients to take diabetes medications (orals and injectables) in the last month as prescribed by their doctor, 158 patients (65.4%) said that they didn't forget to take their medications in the last month and 84 (34.6%) said that they forgot to take their medications in the last month. 10 patients didn't take any kind of oral or injectable diabetes medications, so they were not included in the results of the previous question.

For the patients who said that they had forgotten to take their medications in the last month, 44 (52.4%) forgot it 1-3 days per month, 17 (20.2%) forgot it 1-2 days per week and 23 (27.4%) forgot it more than 2 days per week.

Regarding the question related to eye examination in the past year, 140 (55.6%) patients underwent eye examination last year and 112 (44.4%) didn't undergo eye examination last year.

Regarding the question related to foot examination in the past year, 67 (26.6%) patients underwent foot examination last year and 185 (73.4%) didn't undergo foot examination last year.

Regarding the question related to wearing covered or closed shoes when outdoors, 55 (21.8%) reported that they always wear covered or closed shoes when outdoors and 197 (78.2%) reported that they didn't.

The distribution of adequate practices among type 2 diabetic patients is shown in Figure 3.4.

Suggestions were reported by 47 (18.7%) patients and these suggestions were providing appropriate and good-quality medications and laboratory tests in 22 (47%) of them, developing and increasing the number of specialized centers for diabetes to reduce the patient load in 9 (19%) of them, increasing health awareness campaigns and nutritional guidance in 5 (11%) of them, changing the quality of diabetes medications in Medical Public Clinics to better quality in 4 (9%) of them, developing and increasing the number of primary health care centers in 2 (4%) of them, providing sufficient numbers of specialist doctors for diabetes patients in specialized diabetes centers in 2 (4%) of them and holding blood sugar testing campaigns in public places such as religious visits, malls and parks (screening), increasing attention to the psychological state of diabetics and opening and developing nutrition counseling centers in health institutions in one patient (2%) for each of them.

Table 3.10: The responses of the diabetic patients regarding their practices

Item	Variables	Categories	No. (252)	% (100)
1	For the past month, about how often have you taken part in any moderate physical activity lasting more than half an hour (such as light sports, physical exercise, gardening, taking long walks)?	More than 5 days a week	93	36.9
		2-5 days a week	82	32.5
		Once a week	21	8.3
		Two to three times a month	32	12.7
		Rarely / Never	24	9.5
2	How often have you got your blood sugar examined in a laboratory in the last 1 month?	More than once	67	26.6
		Once	35	13.9
		Not measured	150	59.5
3.1	Do you have a device to monitor your blood sugar at home?	Yes	219	86.9
		No	33	13.1
3.2	If yes, how often do you check your blood sugar at home?	More than 5 days a week	80	36.5
		2-5 days a week	85	38.8
		Once a week	17	7.8
		Two to three times a month	17	7.8
		Rarely / Never	20	9.1
4	How often have you measured your weight in the last 1 month?	More than once	31	12.3
		Once	74	29.4
		Not measured	147	58.3
5.1	Have you modified your diet as per doctor's/dietician's advice following diagnosis of your disease?	Yes	179	71.0
		No	73	29.0
5.2	If yes, how frequently in the last month did you take your diet as advised by the doctor/dietician?	Mostly	62	34.6
		Sometimes	90	50.3
		Rarely / Never	27	15.1
6.1	In the last 30 days, have you ever forgotten to take Diabetes medications prescribed by your doctor?	Yes	84	34.6
		No	158	65.4
6.2	If yes, mention how many times in the last 1 month?	1-3 days / month	44	52.4
		1-2 days / week	17	20.2
		More than 2 days / week	23	27.4
7	Did you undergo any eye examination in the past 1 year?	Yes	140	55.6
		No	112	44.4
8.1	Did you undergo any foot examination in the past 1 year?	Yes	67	26.6
		No	185	73.4
8.2	Do you always wear covered/closed shoes when outdoors?	Yes	55	21.8
		No	197	78.2

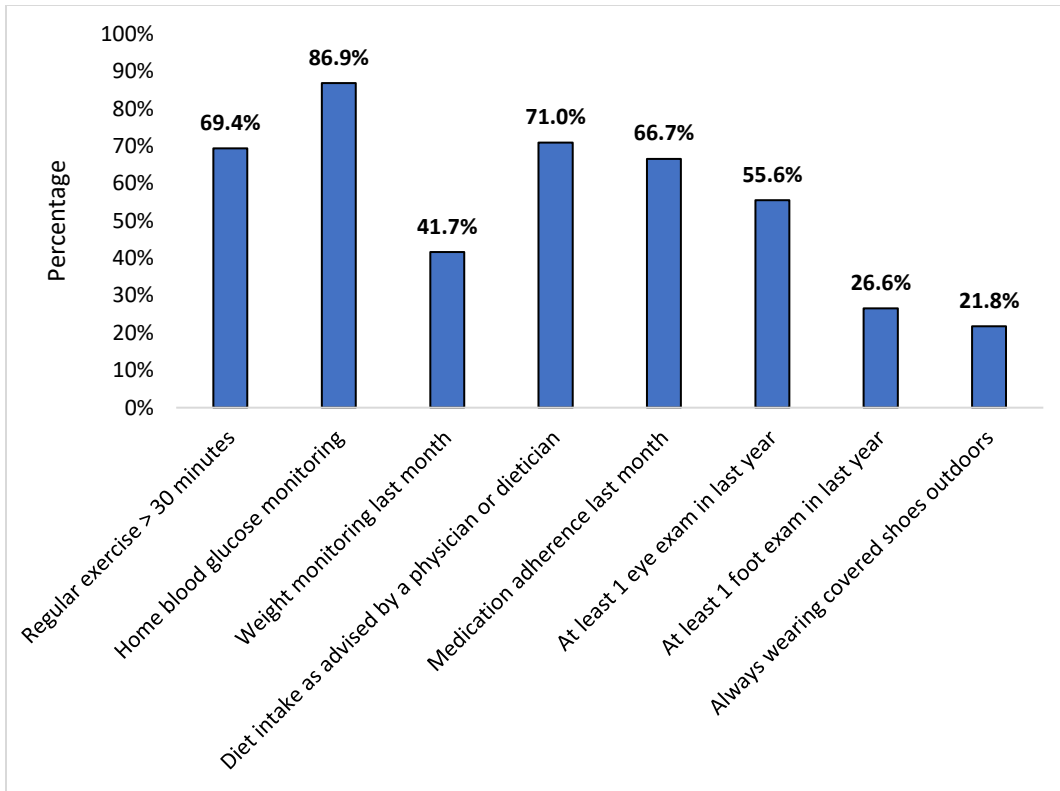


Figure 3.4: The distribution of adequate practices among type 2 diabetic patients (n = 252)

3.10. Practices and sociodemographic characteristics

The relationship between the practice scores and the sociodemographic characteristics of the patients is displayed in Table 3.11.

There was a significant relationship between the practice scores and the gender of the patients ($P = 0.011$), where the female patients had higher practice scores than the male patients (4.57 ± 1.405 vs. 4.08 ± 1.581).

There was a significant relationship between practice scores and the educational level of the patients ($P = 0.048$), where the practice scores increased as the educational level increased, where the mean practice score for neither reads nor writes versus primary, intermediate, preparatory, university \ institute and postgraduate educational levels was (3.9 ± 1.576 vs. 4.5 ± 1.396 , 4.38 ± 1.393 , 4.75 ± 1.517 , 4.84 ± 1.463 and 4.8 ± 1.924) respectively.

There was a significant relationship between practice scores and job type ($P = 0.023$), where government employees and retired patients had higher practice scores than patients who were not working (4.03 ± 1.65 and 4.8 ± 1.504 vs. 3.33 ± 1.506) respectively.

Table 3.11: Sociodemographic characteristics of the patients with differences in practice scores

Variables	Categories	No.	Practice score			
			Mean	±	St.D	P
Gender	Male	90	4.08	±	1.581	0.011*
	Female	162	4.57	±	1.405	
Age Groups / years	Under 45	30	3.93	±	1.484	0.368
	45 - <55	87	4.44	±	1.515	
	55 - <65	80	4.44	±	1.474	
	65 - <75	46	4.61	±	1.468	
	75 and older	9	4.11	±	1.364	
Marital Status	Single	3	4.33	±	0.577	0.777
	Married	199	4.38	±	1.509	
	Widower / Widow	46	4.52	±	1.487	
	divorced	4	3.75	±	0.5	
Educational level	Neither reads nor writes	62	3.9	±	1.576	0.048*
	Primary	106	4.5	±	1.396	
	Intermediate	34	4.38	±	1.393	
	Preparatory	20	4.75	±	1.517	
	University \ Institute	25	4.84	±	1.463	
	Postgraduate	5	4.8	±	1.924	
Job type	Government employee	30	4.03	±	1.65	0.023*
	Retired	41	4.8	±	1.504	
	Free Business	32	3.97	±	1.356	
	Not working	6	3.33	±	1.506	
	Housewife	143	4.5	±	1.433	
Residence	Urban	230	4.4	±	1.479	0.913
	Rural	22	4.36	±	1.59	
House type	Owned	139	4.57	±	1.314	0.092
	Rented	43	4.26	±	1.747	
	Slum	27	3.81	±	1.642	
	Agricultural	43	4.35	±	1.572	
Economic Status according to the patients' assessments	Weak	127	4.31	±	1.591	0.387
	Average	111	4.44	±	1.373	
	Good	14	4.86	±	1.351	
Economic Status according to Crowding Index Level	Weak	64	4.34	±	1.439	0.588
	Average	167	4.38	±	1.547	
	Good	21	4.71	±	1.102	
Smoking	Yes	31	4	±	1.592	0.084
	No	187	4.52	±	1.449	
	Ex-smoker	34	4.09	±	1.525	

3.11. Practices and clinical data about diabetes mellitus among patients

The relationship between the practice scores and the Clinical data about diabetes mellitus among patients is displayed in Table 3.12.

There was a significant relationship between the practice scores and the type of treatment ($P = 0.017$), where the patients who took oral pills and insulin had higher practice scores than those who took oral pills-only (5.05 ± 1.39 vs. 4.23 ± 1.49).

There was a significant relationship between practice scores and the presence of complications ($P = 0.017$), where the patients who had complications had higher practice scores than those who didn't have complications (4.44 ± 1.48 vs. 3.30 ± 1.34).

Table 3.12: Clinical data about diabetes mellitus among patients with differences in practice scores

Variables	Categories	No.	Practice score			
			Mean	±	St.D	P
Diabetes duration	5 years or less	79	4.18	±	1.43	0.151
	>5 - 10 years	74	4.24	±	1.441	
	>10 - 15 years	50	4.66	±	1.493	
	>15 - 20 years	32	4.81	±	1.533	
	More than 20 years	17	4.53	±	1.7	
Take treatment	Yes	250	4.41	±	1.484	0.183
	No	2	3	±	1.414	
Type of treatment	Oral pills only	179	4.23	±	1.491	0.017*
	Insulin only	25	4.56	±	1.446	
	Oral pills and insulin	38	5.05	±	1.394	
Disease under control	Yes	62	4.63	±	1.496	0.368
	Somewhat	87	4.32	±	1.426	
	No	103	4.32	±	1.529	
Complication	Yes	242	4.44	±	1.477	0.017*
	No	10	3.3	±	1.337	
Family history	Yes	194	4.36	±	1.518	0.483
	No	58	4.52	±	1.38	
Other chronic diseases	Yes	229	4.43	±	1.481	0.232
	No	23	4.04	±	1.522	

3.12. Correlations of knowledge, attitude, and practice scores

Knowledge and attitude scores, as well as knowledge and practice scores, had a weak but significant positive correlation at the 0.01 level with P values of (0.002) and (<0.001) respectively as shown in Table 3.13.

Table 3.13: Correlations of the knowledge, attitude, and practice scores of the patients

Indicators	Pearson Correlation	P value
Knowledge and attitude	0.190	0.002*
Knowledge and practice	0.248	<0.001 *
Attitude and practice	0.103	0.104

Chapter Four

Discussion

4.1. Clinical data about diabetes mellitus among patients

The mean duration of diabetes was 10.1 ± 6.82 years.

This finding is similar to Iran (**Karbalaeifar et al., 2016**) and Thailand (**Phosuwan et al., 2022**), lower than Saudi Arabia (**AlAboudi et al., 2016**) and higher than Tanzania (**Joho et al., 2023**).

Differences in findings among patients in these studies may be due to several factors, including age at diagnosis, access to health care, strength of diabetes screening programs at health care institutions, treatment and self-management practices, genetics, family history of diabetes, lifestyle factors such as diet, exercise, and weight management can affect progression and duration of diabetes.

The majority of patients take their information from the physicians. About three-quarters of them from family members and about two-thirds of them from social media.

These findings are higher than (**Taher et al., 2022**) conducted in Al-Kut City, Iraq, (**Thabit, 2013**) conducted in Baghdad, Iraq, (**Mohammadi et al., 2015**) conducted in Iran and (**Mukhopadhyay et al., 2010**) conducted in India.

The fact that physicians are skilled individuals with knowledge and experience in identifying and treating illnesses, including diabetes, may help to explain this finding. Patients look up to physicians as a truthful source of information due to their advanced specialization and education. Clinicians are in a position to provide tailored advice and support that explicitly responds to specific patients' needs and circumstances.

It is noteworthy that the data revealed that most patients mainly get their diabetes information from family members, which demonstrated that family members play an important role in supporting and providing patients with education concerning the disease, as they are often involved in the patient's care and well-being, which explains the findings.

In addition, these findings indicate the importance of social media as the information source responsible for reaching the widespread public with comprehensive information about diabetes. Different platforms, for example, Facebook, YouTube, WhatsApp, and many more are used by the patients. Social media are universal, convenient, and easily accessible so patients can use them to get information and this may explain the findings. The medical information from social media data has different levels of reliability and accuracy; therefore, if the patients look for precise and customized information, they need to consult with health professionals.

4.2. Knowledge

In this research, it is revealed that more than half of patients had a moderate knowledge level.

This finding is similar to other researches such as that conducted at the National Diabetes Center (NDC) of Al-Mustansiriyah University (**Abbas et al., 2015**) that revealed a low/ moderate knowledge score, Iran (**Mohammadi et al., 2015**), Indonesia (**Nabila et al., 2022**) and Mexico (**Velázquez López et al., 2023**). It is different from the data obtained by (**Taher et al., 2022**) in Al-Kut City, (**Almousa et al., 2023**) conducted in Saudi Arabia, (**Mekonnen and Hussien, 2021**) in Ethiopia and (**Karbalaeifar et al., 2016**) in Iran.

The disparities in the baseline characteristics of participants such as socio-demographics, level of education, and accessibility to diabetes knowledge may be the cause of these variations in knowledge among these studies.

The average Diabetic Knowledge Test (DKT) score was 6.5 out of 11.

This means that despite the patients having basic knowledge of their disease, they have many knowledge gaps in diverse domains.

Such results are in line with the data from Saudi Arabia (**AlAboudi et al., 2016**).

The glycosylated hemoglobin value (hemoglobin A1C) that should be met to control diabetes was the question that was answered incorrectly the most. This finding is similar to the studies done in India (**Hassan and Missiriya, 2020**) and Pakistan (**Ali et al., 2022**) and is different from (**Memon et al., 2021**) in the United States of America.

The knowledge question attributed to the care of diabetic patients' feet was also incorrectly answered by a considerable percentage of the patients, which is similar to the study conducted in Thailand (**Phoosuwan et al., 2022**) but different from the studies in Saudi Arabia (**AlAboudi et al., 2016; Almousa et al., 2023**), United Arab Emirates (**Abdulrahman et al., 2020**), and Jordan (**Alkhaldeh et al., 2023**).

The question about the best way to measure blood glucose was the one that was correctly answered by the majority of the patients, which is like (**Zowgar et al., 2018**) from Saudi Arabia and different from (**Owolabi et al., 2022**) from South Africa and (**Phoosuwan et al., 2022**).

For the question concerning the diabetes diet, a high percentage of patients answered it correctly which is similar to the results revealed by other studies such as those conducted in Ethiopia (**Letta et al., 2023**) and Saudi Arabia (**Alharbi et al., 2023**) and the percentage is higher than the one stated in other studies (**AlAboudi et al., 2016; Jasper et al., 2014; Owolabi et al., 2022; Taher et al., 2022; Zowgar et al., 2018**).

The patients' high knowledge of the best diabetes dietary choices may be one of the outcomes of the patients' repetitive visits to health care facilities and dietary information providers who, gradually, help them out with their diet by giving them the necessary insights and information to manage their diets. Also, the educational resources and activities that are developed especially for patients with diabetes enable them to know more about the diabetes diet. Consequently, diabetes patients' understanding of the diabetic diet is maximized by a combination of patient education, availability of information, and medical assistance from healthcare professionals.

4.3. Knowledge and sociodemographic characteristics

In this study, knowledge scores increased with decreasing age of the patients similar to studies conducted in Erbil, Iraq (**Khurshid and Othman, 2014**), Turkey (**Gular and Oguz, 2011**), Nepal (**Shrestha et al., 2015**), Malaysia (**Abbasi et al., 2018**) and Saudi Arabia (**Zowgar et al., 2018**) and different from Egypt (**ElKhawaga and AbdelWahab, 2015**), Qatar (**AlMutawaa et al., 2022**) and Saudi Arabia (**Almoussa et al., 2023**).

This finding may be explained by the fact that, compared to younger people with diabetes, older people with diabetes typically have lower levels of

education, weaker cognitive function, and greater obstacles to engaging in effective self-care.

As the level of education increased, the knowledge scores also increased.

This finding is similar to studies conducted in Baghdad, Iraq (**Abbas et al., 2015**), Erbil, Iraq (**Khurshid and Othman, 2014**), Iran (**Mohammadi et al., 2015**), Ethiopia (**Letta et al., 2023**), Thailand (**Phoosuwan et al., 2022**), Malaysia (**Sulaiman et al., 2022**), Indonesia (**Nabila et al., 2022**) and United Arab Emirates (**AlMaskari et al., 2013**). This result differs from (**Taher et al., 2022**) conducted in Al-Kut city, Iraq and (**Karbalaeifar et al., 2016**) that was done in Iran which showed that there was no significant association, and from (**Odili et al., 2011**) from Nigeria which showed that the patients who didn't have formal education had the highest average DKT score when compared to those who had completed primary through postgraduate studies.

This could be due to the reason that educated persons were more motivated to learn about their health condition and possible complications. They have the capability of locating appropriate information and can communicate with healthcare providers effortlessly. Educated individuals also have the chance to learn through social media about their illnesses and how to treat them. Patients who have low educational levels may find it challenging to interact with healthcare practitioners; to enhance communication and raise the efficacy of self-management education, these patients' barriers may need to be addressed.

The government employees and retired patients had higher knowledge scores than patients working in free business and those not working.

This finding is similar to studies conducted in Baghdad, Iraq (**Abbas et al., 2015**), Erbil, Iraq (**Khurshid and Othman, 2014**), Thailand (**Phoosuwan et al., 2022**), Malaysia (**Fadzil et al., 2022; Sulaiman et al., 2022**), Indonesia (**Nabila et al., 2022**) and Pakistan (**Bukhsh et al., 2019**). These findings differ from (**Taher et al., 2022**) conducted in Al-Kut City, Iraq and (**Karbalaeifar et al., 2016**) conducted in Iran which didn't show a significant association and (**Zibran and Mohammadnezhad, 2019**) conducted in Fiji.

This survey demonstrated the high degree of knowledge possessed by employed respondents. This could be because those who worked typically made more money, making it easier for them to obtain information on DM from sources including the internet, radio, television, private clinics, and others. Information regarding DM can also be obtained from one's workplace. Professions with more education and exposure to instructional materials, such as those employed by the government, have been linked to better knowledge of diabetes.

This study showed that the knowledge scores increased as the economic status (according to the patients' assessments) increased.

This finding is similar to studies conducted in Erbil, Iraq (**Khurshid and Othman, 2014**), Nigeria (**Jasper et al., 2014**), Malaysia (**Abbasi et al., 2018**), United Arab Emirates (**AlMaskari et al., 2013**), Saudi Arabia (**Almousa et al., 2023**) and West Bank of Palestine (**Shawahna et al., 2021**). It differs from (**Mekonnen and Hussien, 2021**) conducted in Ethiopia and (**Le et al., 2021**) conducted in Vietnam which didn't show a significant association.

Poor people have limited resources, which makes it difficult for them to get health information and take care of themselves. People with a higher socioeconomic level may have better access to medical treatment, learning resources, and chances for illness prevention and control. As a result, those in higher socioeconomic positions might have greater access to information regarding type 2 diabetes and its care. Furthermore, those at higher socioeconomic levels benefit from having access to electronic gadgets like mobile phones and mass media, which significantly enhance the dissemination of health-related information.

4.4. Knowledge and Clinical data about diabetes mellitus among patients

Results showed no significant association between knowledge score and various clinical information pertaining to diabetes mellitus.

4.5. Attitude assessment

In this study, the patients' level of attitude was found to be moderate in the majority.

This finding is alike to the study carried out in Iran (**Mohammadi et al., 2015**) which reported that most participants have a moderate attitude level and differs to the findings of (**Abbas et al., 2015**) in Baghdad, Iraq which stated that the large number of patients had a poor attitude level as well as to (**Niroomand et al., 2016**) in Iran in which majority had good attitude level.

The variations in the outcomes of these studies can be attributed to numerous factors that include level of education, socioeconomic level, duration of diabetes and glycemic control.

In this study, the majority of patients reported a negative attitude of finding it hard to believe that they have diabetes, which is similar to the findings from the studies conducted in the United Arab Emirates (**AlMaskari et al., 2013**) and differs from (**AlAboudi et al., 2016**) conducted in Saudi Arabia.

This study also showed that the majority of patients reported a positive attitude toward the importance of DM care through controlling their weight, monitoring their blood glucose at home, and keeping diabetes under control through regular exercise. This finding is similar to (**AlMaskari et al., 2013**) and differs from (**Mohammadi et al., 2015**) conducted in Iran.

About three-quarters of the patients reported that they feel unhappy and depressed because of their diabetes and a similar percentage of them reported that they feel they are not as good as others are because of their diabetes. The previous two statements are negative attitudes and their percentages are higher than those in (**AlAboudi et al., 2016**).

A small percentage of the patients agreed with the statement that once diabetes is controlled, eating restrictions are no longer required which is a negative attitude. This finding is similar to a study conducted in India (**Mukhopadhyay et al., 2010**) and differs from (**Mohammadi et al., 2015**) conducted in Iran.

More than one-third of the patients reported that they can do just about anything they set out to do; less than one-third reported that things are going very well for them right now and a small percentage reported that diabetes does not affect their lives at all. The previous statements are positive attitudes and their percentages are lower than those in (**AlAboudi et al., 2016**).

This study's mean attitude score is 31.55 out of 50, which is positive.

This finding is similar to the finding from Saudi Arabia (**AlAboudi et al., 2016**) and differs from (**AlMaskari et al., 2013**) conducted in the United Arab Emirates which showed a negative average attitude.

This indicates that the patients are willing to change their lifestyles to manage their disease.

4.6. Attitudes and sociodemographic characteristics

The male patients had higher attitude scores than the female patients which is similar to the findings of (**Abbas et al., 2015**) from Iraq, (**Joho et al., 2023**) from Tanzania and differs from (**Abbasi et al., 2018**) conducted in Malaysia.

It is noted that males with diabetes manage their condition better, experiencing less anxiety and depression. They feel less anxious about society and are pleased with how they are handling their health (**Siddiqui et al., 2013**). This may explain this finding.

The attitude scores increased as the educational level of the patients increased.

This finding is similar to the findings from Iraq (**Abbas et al., 2015**), Egypt (**Lotfy et al., 2022**), Saudi Arabia (**Mahzari et al., 2022**) and Malaysia (**Abbasi et al., 2018**) and differs from (**AlMaskari et al., 2013**) conducted in the United Arab Emirates which didn't show a significant association.

Higher-educated people might have a more positive attitude toward their disease because they have a greater understanding of it and how to treat it, which could account for this finding. Education is however seen to provide people with the information and the skills needed to manage their diabetes properly. This in turn provides the person with a more positive outlook about life. Furthermore, higher education can increase a person's ability to obtain

healthcare resources and knowledge, giving the person the capability to participate in the management of their diabetes and be the one making informed decisions about its treatment.

The government employees and the retired patients had higher attitude scores than the housewives.

This result is similar to the other studies conducted in Iraq (**Abbas et al., 2015**), Malaysia (**Abbasi et al., 2018**) but in contrast with the findings in Iran (**Karbalaeifar et al., 2016**) which didn't show a significant association.

This evidence may be explained by the fact that employment is known to be linked with better educational achievement, which has a positive effect on attitude. Hence, the patients who are employed or retired, who are more likely to be educated, have higher attitude scores than housewives, who may be less educated.

The attitude scores increased as the economic status, according to the patients' assessments, increased.

This was very much alike with Malaysia's result (**Abbasi et al., 2018**) but varied from the finding of the study in the United Arab Emirates (**Almaskari et al., 2013**) which reported no relationship between attitude scores and economic status.

This might be due to the fact that those with higher socioeconomic status have better access to healthcare resources, education, and information, which contribute to a more positive attitude adopted in diabetes management.

4.7. Attitudes and Clinical data about diabetes mellitus among patients

The attitude scores increased as the diabetes duration decreased.

This finding is in line with **(Thultheen et al., 2021)** from Palestine and **(ElKhawaga and Abdelwahab, 2015)** from Egypt while **(Abbasi et al., 2018)** from Malaysia reflected an upgrading in the attitude scores as the diabetes duration was increased, and **(AlMaskari et al., 2013)** from the United Arab Emirates didn't show a significant association.

Such findings result from the idea that individuals with a short duration of diabetes are less likely to have complications from their disease, thereby having a more positive attitude toward it, while those with a longer duration are more likely to have complications as a result of it, hence having a more negative attitude.

The patients who took solely oral pills had higher attitude scores than those who used only insulin.

This finding correlates well with what was observed in the United Arab Emirates as reported by **(AlMaskari et al., 2013)**. It is different from **(Niroomand et al., 2016)** carried out in Iran, where the patients who took oral pills-only had lower attitude scores than those who took insulin-only, and from **(AlAboudi et al., 2016)** carried out in Saudi Arabia which did not show a substantial relationship.

This result could be due to the fact that people who are on oral diabetes medication only believe their condition is not as serious as compared to patients taking insulin, which may result in a more positive attitude. Moreover, individuals taking oral medication only may be favorable in their attitude regarding the disease because of their better understanding of the disease and how to manage it. Besides, those taking only oral medicine may

have fewer complications and shorter term of diabetes than those relying on insulin treatment, which might enhance their optimistic outlook. Switching from oral antihyperglycemic medications to insulin therapy may elicit negative attitudes among these patients due to fears of hypoglycemia, uncomfortable injections, and storage, which could be associated with the lower attitude scores observed among these individuals. Therefore, patients taking tablets-only treatment for type 2 diabetes may have higher attitude scores due to the mixture of lower-risk beliefs and reluctance to take insulin.

The patients who didn't have complications had higher attitude scores than the ones who had complications.

The result is like the one from the study conducted in India (**Aswathi et al., 2019**) while it is different from the one in the study from Eritrea (**Teages et al., 2021**).

This result could be due to the fact that patients with no complications are more informed about their condition and experience a better quality of life. In addition to that, their view may be more supportive, and they might perceive their ability to manage diabetes or carry out self-care more positively. Moreover, due to the obstacles and limitations imposed by their disease, patients who have complications tend to get negative about life more easily.

4.8. Practice assessment

In this study, more than half of the patients have a moderate practice level.

This finding is similar to the findings from Erbil, Iraq (**Khurshid and Othman, 2014**) which showed that the majority of patients have a moderate practice level and differs from (**Abbas et al., 2015**) conducted in Baghdad,

Iraq which showed that the majority have a poor practice level and **(Niroomand et al., 2016)** conducted in Iran which showed that the majority have a good practice level.

Many factors, such as the patients' glycemic control, socioeconomic status, degree of education, and diabetes duration, could be causes for the variations in the results between these studies.

More than one-third of the patients reported that they took part in any moderate physical activity lasting more than half an hour (such as light sports, physical exercise, gardening, or taking long walks) for more than 5 days a week.

This finding is similar to the findings from India **(Mukhopadhyay et al., 2010)**, lower than **(Solanki et al., 2017)** conducted in India and higher than **(Ahmed et al., 2016)** conducted in Pakistan.

This finding suggests that the percentage of patients who follow the recommended physical activity for diabetic patients is low. This low percentage may be due to several factors including the patients' poor knowledge of self-care practices, the presence of complications and comorbidities that hinder them from adequate practices, and the lack of enough time to schedule exercise in their activities.

For the question attributed to last month's blood sugar test conducted at the laboratory, it was found that about two-thirds of the patients didn't measure their blood sugar at a laboratory.

The outcome is like India's findings **(Mukhopadhyay et al., 2010)**.

The high ownership of glucometers by diabetic patients at home may be one of the causes of this result as the glucometers are easy to use and accessible. Other reasons may be the lack of knowledge and adherence to self-care practices, ignorance of the importance of frequent blood sugar monitoring, and difficult access to healthcare facilities.

In terms of the question which entails home monitoring of blood sugar, most of the patients replied that they did have a device to monitor blood sugar at home.

Such a result is similar to (**Alhammadi et al., 2022**) from Saudi Arabia and more than (**Mukhopadhyay et al., 2010**) from India, and (**Mohammadi et al., 2015**) from Iran.

This result may be due to the possibility that the patients in this study have a higher economic status than other studies which enables them to afford buying glucometer devices. Another possible reason for this observation might be a higher level of awareness of the patients about the need to regularly test their blood glucose levels which encourages them to purchase such devices.

In this study, about three-quarters of the patients who had a glucometer at home checked their blood sugar at least twice a week.

This percentage is more than that obtained by (**Mukhopadhyay et al., 2010**) conducted in India and (**Mohammadi et al., 2015**) carried out in Iran.

Variations in many factors might be the reason that glucose self-monitoring adherence of the patients shows differences among these studies. These factors may include self-efficacy, understanding of self-monitoring of blood glucose frequency and control goals, presence of complications, availability

and usability of blood glucose meters, economic pressure, health care knowledge, needle-pricking pain, family support, and nurse support perception.

Regarding the question related to weight measurement in the last month, about two-thirds of the patients didn't measure their weight.

This finding is consistent with **(Mukhopadhyay et al., 2010)** from India and **(Mohammadi et al., 2015)** from Iran but is higher than **(Daba and Yazew, 2020)** in Ethiopia and lower than **(Okonta et al., 2014)** in South Africa.

This finding could be due to different factors, including limited knowledge of the disease or a lack of focus on weight monitoring and other priorities. Lack of understanding may contribute to a lack of awareness about the importance of monitoring weight as a part of diabetes management. It is possible that the health care providers may have given less emphasis on weight monitoring when compared to other aspects of diabetes management and this could have reduced the rates of regular weight monitoring among patients. Patients may as well have given more focus on other parts of diabetes control, for instance, blood glucose monitoring, than weight monitoring.

This study revealed that about three-quarters of the patients adapted to the doctor's or dietician's guidelines and started changing their diet after the diabetes diagnosis.

The result is similar to the study carried out by **(Mukhopadhyay et al., 2010)** in India and it is higher than the result of the study done by **(Mohammadi et al., 2015)** in Iran.

Guidance and motivation from healthcare workers, understanding the necessity of dietary modifications, trust in healthcare workers and the urge to control this disease are probably the factors behind the majority of this study's patients making the dietary changes prescribed by the doctors and dieticians. Also, these factors may include a lack of other treatment choices, as the patients probably considered the dietary changes as a fundamental or actual treatment, especially when they do not want to inject insulin or delay its use.

Approximately two-thirds of the patients claimed that they didn't miss taking their prescription drugs (oral and injectable) within the past 30 days.

This result is less than what **(Mukhopadhyay et al., 2010)** have reported in India but higher than that reported by **(Mohammadi et al., 2015)** in Iran.

Discrepancies in findings between these studies might be attributed to many factors, such as guidelines and instructions from healthcare professionals, understanding the significance and efficacy of medicines, trust in healthcare professionals, and the desire of self-regulation of the disease. Other factors can possibly include the difficulties that patients go through in compliance with their medication regimens like forgetfulness, side effects or lack of drug integration into their daily life.

The question related to the patients' eye examination done in the past year showed that more than half of them had done their eye check-ups last year.

This number is less than the Nepal findings **(Nepal et al., 2017)** but more than the findings from India **(Mukhopadhyay et al., 2010)** and Iran **(Mohammadi et al., 2015)**.

The causes behind the different results of these studies might be the differences in patients' awareness of the importance of periodic eye examinations, access barriers to healthcare services, such as transportation or financial constraints, the commitment of the patients to take preventive measures, and the efficacy of diabetes education programs.

In this study, only about a quarter of the patients had their feet examined by the healthcare workers last year.

This finding follows the studies from Iran (**Mohammadi et al., 2015**) and India (**Mukhopadhyay et al., 2010**), but is lower than those of Egypt (**Lotfy et al., 2022**) and India (**Solanki et al., 2017**).

The low number of patients who had foot examination in the past year may be due to a number of factors including low awareness, restricted access to healthcare, ignoring preventative measures, and the requirement for better diabetes education programs.

The results revealed that only about one-fifth of the patients constantly wear covered or closed shoes when outdoors.

This result is like the result from India (**Solanki et al., 2017**) and is lower than the results of (**Mukhopadhyay et al., 2010**) in India and (**Mohammadi et al., 2015**) in Iran.

This low percentage of patients who have always worn covered or closed shoes when outdoors may be due to several factors, including a lack of awareness about the importance of wearing covered shoes to prevent foot complications in diabetics, barriers that patients may face such as discomfort

when wearing covered or closed shoes, cultural preferences, and a lack of understanding about the potential risks of not wearing covered shoes.

4.9. Practices and sociodemographic characteristics

The female patients had higher practice scores than the male patients.

This finding is similar to the findings from Eritrea (**Teages et al., 2021**) and Saudi Arabia (**Almigbal et al., 2019**) and differs from (**Abbas et al., 2015**) conducted in Iraq which showed that female patients had lower practice scores than male patients and (**AlMaskari et al., 2013**) conducted in the United Arab Emirates which didn't show a significant association.

This finding may be due to the possibility that females have higher healthcare-seeking activities than males.

The practice scores increased as the educational level of the patients increased.

This finding is in accordance with the findings from Iraq (**Abbas et al., 2015**), Egypt (**ElKhawaga and AbdelWahab, 2015**), Malaysia (**Abbasi et al., 2018**) and West Bank of Palestine (**Shawahna et al., 2021**) and is discordant with (**Mahzari et al., 2022**) conducted in Saudi Arabia, (**AlMaskari et al., 2013**) conducted in the United Arab Emirates and (**Karbalaeifar et al., 2016**) conducted in Iran which all didn't show a significant association.

This finding may be explained by the fact that patients' knowledge, attitudes, and practices about diabetes treatment are much improved by education. Patients are more likely to understand diabetes management as their educational level rises, which can result in better practices and glycemic control.

The government employees and retired patients had higher practice scores than patients who were not working.

This finding is similar to the findings from Iraq (**Abbas et al., 2015**), Egypt (**ElKhawaga and AbdelWahab, 2015**) and Malaysia (**Abbasi et al., 2018**) and differs from (**Shawahna et al., 2021**) conducted in the West Bank of Palestine, (**Mahzari et al., 2022**) conducted in Saudi Arabia, (**AlMaskari et al., 2013**) conducted in the United Arab Emirates and (**Karbalaeifar et al., 2016**) conducted in Iran which all didn't show a significant association.

People with jobs tend to have more regular schedules and regulated routines, which can help them adopt healthier lifestyle habits. This could account for this finding. Their access to tools and networks of support that encourage healthy lifestyle choices and diabetes control may be improved. Employment may also provide people with a sense of direction and drive to put their health first and take care of themselves.

4.10. Practices and Clinical data about diabetes mellitus among patients

The patients who took oral pills and insulin recorded higher practice scores than those who took oral pills-only.

This result is similar to (**Karbalaeifar et al., 2016**) from Iran and (**Abbasi et al., 2018**) from Malaysia but differs from studies in Eritrea (**Teages et al., 2021**) which showed that the patients who took pills along with the insulin had lower scores than people who took oral pills only and (**Mekonnen and Hussien, 2021**) conducted in Ethiopia which didn't show a significant association.

This result shows that patients who take both oral pills and insulin as a treatment, who are likely to have a more progressive disease, are more self-driven and involved in their self-management compared to those who are receiving only oral pills, who are likely to have a less progressive disease. A possible explanation for the higher practice scores among those who take oral pills and insulin could be that awareness regarding the disease increases as the disease progresses. As patients realize the progressive nature of their condition, they may become more motivated to manage their diabetes and make necessary lifestyle changes actively.

The patients who had complications had higher practice scores than those who didn't have complications.

This finding is similar to the findings from Iran (**Niroomand et al., 2016**) and differs from (**Aswathi et al., 2019**) conducted in India which showed that the patients who had complications had lower practice scores than those who didn't have complications and (**Teages et al., 2021**) conducted in Eritrea which didn't show a significant association.

This result could be explained by the fact that patients with complications are more conscious of the value of managing their disease and taking care of themselves, which improves treatment compliance and lifestyle changes. Second, those who have complications might be more aware of the dangers connected to diabetes, which would encourage them to treat their illness more aggressively and take preventative measures. Furthermore, individuals with complications might have had their illness for a longer time and had more expertise managing it, which would translate into better practice scores.

4.11. Correlations of knowledge, attitude, and practice scores

Knowledge and attitude scores, as well as knowledge and practice scores, had a weak but significant positive correlation.

These findings are similar to the findings from Qatar (**AlMutawaa et al., 2022**) and Iran (**Karbalaeifar et al., 2016**).

These findings suggest that patients with greater knowledge of diabetes and its associated factors tend to demonstrate better attitudes and behaviors for the prevention and management of diabetes, and vice versa.

These findings may be explained by the fact that knowledge of diabetes plays a crucial role in shaping attitudes by providing individuals with the necessary information and understanding to develop positive beliefs and behaviors toward the disease. Knowledge also plays a vital role in influencing individuals' practices by providing them with the necessary information and understanding to make informed decisions and adopt healthy behaviors related to diabetes.

4.12. Limitations and strengths of the study

The strengths of this study are:

- The in-depth interview with the patients.
- Educational session after interviewing each patient.

The limitations of this study are:

- It was only conducted in one city; therefore, the findings cannot be generalized. As a result, it is suggested that future studies be conducted in more than one city.
- The questionnaire was long and took about half an hour to conduct with each patient.

- The sampling technique was convenience, not randomization.

Despite these limitations, this study makes an important contribution because it provides insights into the knowledge, attitude, and practice of diabetic patients. It evaluates the level of knowledge, attitude, and practice in type 2 diabetic patients and identifies variables that affect this level. It also highlights the role of diabetes educational programs. Overall, it provides information for improving diabetes care and enhancing patient outcomes.

Chapter Five

Conclusions and Recommendations

5.1. Conclusions

- Most patients were found to have a moderate level of knowledge, attitude, and practice.
- There is still room for improvement of the patients' understanding, compliance, and management, despite the relatively adequate knowledge and practices regarding type 2 diabetes.
- The patients had an overall positive attitude regarding their condition, which suggests that they may be open to diabetes self-management education programs and shows that they are willing to assume responsibility for their own care.
- The categories with lower knowledge were: older patients, those with low educational levels, those working in free business, those not working, and those with lower economic status.
- The categories with lower attitudes were: the females, those with low educational levels, housewives, those not working, those with lower economic status, those with longer diabetes duration, those who take insulin as treatment, and those who have complications.
- The categories with lower practices were: the males, those with low educational levels, those not working, those who take oral pills as treatment, and those who don't have complications.
- The physicians, family members, and social media are the most common sources of information for diabetics.
- There is an increasing role of social media platforms in providing information and guidance to diabetics.
- Knowledge and attitude, as well as knowledge and practice, are directly correlated.

5.2. Recommendations

- Enhancing patients' knowledge, attitudes, and practices regarding type 2 diabetes and its complications through continuous education programs and healthcare attention.
- Tailoring health education programs and interventions based on patients' knowledge, attitude, and practice to prevent and manage type 2 diabetes effectively.
- Focusing the diabetes education programs and healthcare attention on the patient categories with lower knowledge, attitude, and practice scores.
- Increasing the general knowledge of diabetic patients, especially in areas of information about glycated hemoglobin and how to take care of the feet, in which they showed a lack of knowledge.
- Paying special attention to practice areas regarding periodic eye and foot examinations, wearing covered shoes outdoors, and periodic weight monitoring due to a lack of regular monitoring for potential complications between the patients and the need for improvement in these areas.
- Developing and improving the capabilities and performances of the common sources of information that are necessary to provide accurate and reliable information to patients.
- Increasing the incorporation of social media into health education programs and interventions by the stakeholders, public health services, and physicians.

- Translating the improved knowledge, attitude, and practices into improved glycemic control as knowledge and attitude, as well as knowledge and practice, are directly correlated.
- Integrating diabetic clinics into primary health care centers to improve accessibility to specialized care, facilitate early detection and intervention, and provide comprehensive management of diabetes and related conditions.

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Appendix

Appendix

Questionnaire on Knowledge, Attitude and Practices on Diabetes among Patients with Diabetes type 2 in Karbala City, 2023

Dear Participant, We are conducting a research on type 2 diabetes in order to assess patients' Knowledge, Attitude and Practices regarding this disease. This research will help us understand the specific informational needs of patients with diabetes and will be useful for recommending appropriate interventions to improve the lives of patients with diabetes in the future. Your name will not be written in this form. We greatly appreciate your help in responding to this questionnaire.

1. Questionnaire Number :

2. Interview place :

Al-Imam Al-Hassan Center for Endocrinology and Diabetes	Primary health care center \	
Al-Imam Al-Hassan Al-Mujtaba Teaching Hospital	Medical Public Clinic \	

3. Gender : Male Female

4. Date of Birth : Age : Year

5. Marital Status :

Single		Married	
Widower / Widow		divorced	

6. Educational level :

Neither reads nor writes		Intermediate		University	
Primary		Preparatory			

7. Job type :

Government employee		Free business		Housewife	
Retired		Not working			

8. Residence : Urban Rural

9. Number of rooms in the house : Room

10. Number of family members in the house : Person

11. What is the type of the house you live in : Owned Rented Slum

12. Economical Status : Weak Average Good

13. Are you a smoker : Yes No Ex-smoker

14. Duration of Diabetes : Year Month

15. Type of treatment :

Diet only		Insulin only		Herbals	
Oral pills only		Oral pills and insulin			

16. Do you think your disease (Diabetes type 2) is under control : Yes Somewhat No

17. Do you have complications due to diabetes : Yes No

18. What complications do you have (You can choose more than one answer) :

Diabetic neuropathy		Diabetic nephropathy		Diabetic retinopathy		Diabetic foot	
Coronary heart disease		Stroke		Peripheral vascular disease		Hypoglycemia	
Others (specify)							

Appendix

19. Do you have a family member with type 2 diabetes (father, mother, brother, sister, son, daughter) :

Yes No

20. From where do you get advice about diabetes (You can choose more than one answer) :

Relative \ Friend		Family member		Doctor	
Nurse		TV \ Radio \ Newspaper		Social media	
Others (specify)					

21. Do you have other diseases (You can choose more than one answer) :

Hypertension		Heart diseases		Stroke	
Kidney diseases		Dyslipidemia		Thyroid diseases	
Others (specify)					

Knowledge on Diabetes among Patients with Diabetes type 2 in Karbala City, 2023

1. Which should not be used to treat low blood glucose :

a. 3 hard candies		b. 1/2 cup orange juice	
c. 1 cup diet soft drink		d. 1 cup skim milk	

2. Which of the following has the highest fat content :

a. Low fat milk		b. Orange juice	
c. Corn		d. Honey	

3. What does unsweetened fruit juice have on blood glucose :

a. Lowers it		b. Raises it	
c. Has no effect			

4. Glycosylated hemoglobin (hemoglobin A1C) is a test that is a measure of your average blood glucose level for the past :

a. Week		b. Month	
c. Three months		d. Six months	

5. Which of the following is highest in carbohydrate :

a. Baked chicken		b. Cheese	
c. Baked potato		d. Peanut butter	

6. Which is the best method for testing blood glucose :

a. Urine testing		b. Blood testing	
c. Both are equally good			

7. The diabetes diet is :

a. The way most Iraqi people eat		b. A healthy diet for most people	
c. Too high in carbohydrate for most people		d. Too high in protein for most people	

8. The value of Glycosylated hemoglobin (hemoglobin A1C) as a target that you must reach to control diabetes is :

a. Less than 5.7 %		b. Less than 7 %	
c. Less than 8 %		d. Less than 10 %	

9. Infection is likely to cause :

a. An increase in blood glucose		b. A decrease in blood glucose	
c. No change in blood glucose			

Appendix

10. The best way to take care of your feet is to :

a. Look at and wash them each day	b. Massage them with alcohol each day
c. Soak them for one hour each day	d. Buy shoes a size larger than usual

11. Numbness and tingling may be symptoms of :

a. Kidney disease	b. Nerve disease
c. Eye disease	d. Liver disease

Attitude on Diabetes among Patients with Diabetes type 2 in Karbala City, 2023

No.	Attitudes	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	I find it hard to believe that I really have diabetes					
2	I feel unhappy and depressed because of my diabetes					
3	I feel I am not as good as others are because of my diabetes					
4	I can do just about anything I set out to do					
5	People with diabetes should control their weight					
6	Things are going very well for me right now					
7	People with diabetes should monitor their own blood glucose at home					
8	Diabetes does not affect my life at all					
9	Once diabetes is controlled, eating restrictions are no longer required					
10	Regular exercise helps in keeping diabetes under control					

Practices on Diabetes among Patients with Diabetes type 2 in Karbala City, 2023

1.1. For the past month, about how often have you taken part in any moderate physical activity lasting more than half an hour (such as light sports, physical exercise, gardening, taking long walks)?

More than 5 days a week	Two to three times a month
2-5 days a week	Rarely/never
Once a week	

1.2. If never/rarely state the reason.

2. How often have you got your blood sugar examined in a laboratory in the last 1 month?

More than once	
Once	
Not measured	

3.1. Do you have a device to monitor your blood sugar at home?

Yes	No
-----	----

Appendix

3.2. If yes, how often do you check your blood sugar at home?

More than 5 days a week		Two to three times a month	
2-5 days a week		Rarely/never	
Once a week			

3.3. If no, state the reason.

4. How often have you measured your weight in the last 1 month?

More than once	
Once	
Not measured	

5.1. Have you modified your diet as per doctor's/dietician's advice following diagnosis of your disease?

Yes		No	
-----	--	----	--

5.2. If yes, how frequently in the last month did you take your diet as advised by the doctor/dietician?

Mostly	
Sometimes	
Rarely/never	

6.1. In the last 30 days, have you ever forgotten to take Diabetes medications prescribed by your doctor?

Yes		No	
-----	--	----	--

6.2. If yes, mention how many times in the last 1 month?

1-3 days / month	
1-2 days / week	
More than 2 days / week	

7. Did you undergo any eye examination in the past 1 year?

Yes		No	
-----	--	----	--

8.1. Did you undergo any foot examination in the past 1 year?

Yes		No	
-----	--	----	--

8.2. Do you always wear covered/closed shoes when outdoors?

Yes		No	
-----	--	----	--

9. Do you have any other question or suggestion?

Hemoglobin HbA1c = %

Blood sugar = mg/dL

We have concluded our interview. Thank you for your patience and cooperation.

Appendix

إستبيان عن المعارف و المواقف و الممارسات حول مرض السكري لدى مرضى السكري من النوع الثاني في كربلاء، ٢٠٢٣

عزيزي المشارك، نحن نجري بحثاً عن مرض السكري من النوع الثاني من أجل تقييم معارف المرضى و مواقفهم و ممارساتهم فيما يتعلق بهذا المرض. سيساعدنا البحث الحالي على فهم الاحتياجات المعلوماتية المحددة لمرضى السكري وسيكون مفيداً للتوصية بالتدخلات المناسبة لتحسين حياة مرضى السكري مستقبلاً. لن يتم كتابة اسمك في هذا النموذج. نقدر بشدة مساعدتك في الرد على هذا الاستبيان.

١. رقم الإستبيان :

٢. مكان إجراء المقابلة :

مركز الإمام الحسن (ع) للعدد الصم و السكري	مستشفى الإمام الحسن المجتبي (ع) التعليمي
مركز الرعاية الصحية الأولية /	العيادة الطبية الشعبية /

٣. الجنس : ذكر أنثى

٤. الموالي : العمر : سنة

٥. الحالة الزوجية :

عزب / عزباء	متزوج / متزوجة
أرمل / أرملة	مطلق / مطلقة
لا يقرأ ولا يكتب	متوسط
ابتدائي	إعدادي
جامعي	

٦. المستوى التعليمي :

موظف حكومي	كاسب	ربة بيت
متقاعد	لا يعمل	

٧. نوع العمل :

٨. الإقامة : الحضر الريف

٩. عدد الغرف في المنزل : غرفة

١٠. عدد أفراد العائلة في البيت : فرد

١١. ما نوع البيت الذي تسكن فيه : ملك إيجار تجاوز

١٢. الحالة المادية : ضعيف متوسط جيد

١٣. هل أنت مدخن : نعم لا مدخن سابق

١٤. مدة الإصابة بمرض السكري : سنة شهر

نوع العلاج :	الحمية الغذائية فقط	الإنسولين فقط	الأعشاب
	حبوب السكر فقط	حبوب السكر و الإنسولين	

١٦. هل تعتقد أن مرضك (السكري النوع الثاني) تحت السيطرة : نعم نوعاً ما لا

١٧. هل لديك مضاعفات بسبب مرض السكري : نعم لا

١٨. ما هي المضاعفات التي لديك (يمكنك إختيار أكثر من إجابة) :

إعتلال الأعصاب السكري	إعتلال الكلية السكري	إعتلال الشبكية السكري	القدم السكري
مرض القلب التاجي	سكتة (جلطة) دماغية	مرض الأوعية المحيطية	هبوط سكر الدم
أخرى (حددها)			

١٩. هل لديك أحد من أفراد عائلتك مصاب بمرض السكري من النوع الثاني (أب، أم، أخ، أخت، ابن، بنت) :

نعم لا

Appendix

٢٠. من أين تحصل على النصائح بخصوص مرض السكري (يمكنك إختيار أكثر من إجابة) :

قريب / صديق	أحد أفراد العائلة	طبيب
ممرض	التلفزيون / الراديو / الجريدة	وسائل التواصل الاجتماعي
أخرى (حددها)		

٢١. هل لديك أمراض أخرى (يمكنك إختيار أكثر من إجابة) :

ارتفاع ضغط الدم	أمراض القلب	سكتة (جلطة) دماغية
أمراض الكلى	اضطراب الدهون في الدم	أمراض الغدة الدرقية
أخرى (حددها)		

المعارف حول مرض السكري لدى مرضى السكري من النوع الثاني في كربلاء، ٢٠٢٣

١. أي مما يلي لا ينبغي استخدامه لعلاج انخفاض نسبة السكر في الدم :

أ. قطع جلوى	ب. نصف كوب عصير برتقال
ج. ١ كوب مشروب غازي دايت	د. ١ كوب حليب خالي الدسم

٢. أي مما يلي يحتوي على أعلى نسبة من الدهون :

أ. حليب قليل الدسم	ب. عصير البرتقال
ج. الذرة	د. العسل

٣. ما هو تأثير عصير الفاكهة غير المحلى على نسبة السكر في الدم :

أ. يخفضها	ب. يرفعها
ج. ليس له تأثير	

٤. الهيمو غلوبين A1C (التراكمي) هو اختبار يقيس متوسط مستوى السكر في الدم خلال المدة التالية :

أ. الأسبوع الماضي	ب. الشهر الماضي
ج. الأشهر الثلاثة الماضية	د. الأشهر الستة الماضية

٥. أي مما يلي يحتوي على أعلى نسبة من الكربوهيدرات (النشويات) :

أ. الدجاج المشوي	ب. الجبن
ج. البطاطا المشوية	د. زبدة الفول السوداني

٦. ما هي أفضل طريقة لقياس نسبة السكر في الدم :

أ. فحص الإدرار	ب. فحص الدم
ج. كلاهما جيد بنفس القدر	

٧. النظام الغذائي لمرض السكري هو :

أ. الطريقة التي يأكل بها معظم العراقيين	ب. نظام غذائي صحي لمعظم الناس
ج. يحتوي على نسبة عالية جداً من الكاربوهيدرات بالنسبة لمعظم الناس	د. يحتوي على نسبة عالية جداً من البروتين بالنسبة لمعظم الناس

٨. إن قيمة الهيمو غلوبين A1C (التراكمي) كهدف يجب عليك الوصول إليه للسيطرة على مرض السكري هي :

أ. أقل من ٥,٧ %	ب. أقل من ٧ %
ج. أقل من ٨ %	د. أقل من ١٠ %

٩. تسبب العدوى عادةً :

أ. زيادة نسبة السكر في الدم	ب. انخفاض نسبة السكر في الدم
ج. لا تغيير في نسبة السكر في الدم	

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١٠. أفضل طريقة للعناية بقدميك هي :

أ. تفحصها و غسلها كل يوم	ب. تدليكها بالكحول كل يوم
ج. نقعها لمدة ساعة واحدة كل يوم	د. شراء أحذية بحجم أكبر من المعتاد

١١. قد يكون الخدر والوخز من أعراض :

أ. مرض الكلى	ب. مرض الأعصاب
ج. مرض العين	د. مرض الكبد

المواقف حول مرض السكري لدى مرضى السكري من النوع الثاني في كربلاء، ٢٠٢٣

ت	المواقف	لا أوافق بشدة	لا أوافق	محايد	أوافق	أوافق بشدة
١	أجد صعوبة في تصديق أنني مصاب بمرض السكري حقًا					
٢	أشعر بالحزن والاكتئاب بسبب مرض السكري					
٣	أشعر أنني لست جيدًا مثل الآخرين بسبب مرض السكري					
٤	يمكنني أن أفعل أي شيء أعتزم القيام به					
٥	يجب على مرضى السكري السيطرة على أوزانهم					
٦	الأمور تسير على ما يرام بالنسبة لي الآن					
٧	يجب على مرضى السكري مراقبة نسبة السكر في الدم في المنزل					
٨	مرض السكري لا يؤثر على حياتي إطلاقاً					
٩	بمجرد السيطرة على مرض السكري، لا يوجد داع للقيود على الأكل					
١٠	ممارسة التمارين الرياضية بانتظام يساعد في الحفاظ على مرض السكري تحت السيطرة					

الممارسات حول مرض السكري لدى مرضى السكري من النوع الثاني في كربلاء، ٢٠٢٣

١,١. خلال الشهر الماضي ، كم مرة شاركت في أي نشاط بدني معتدل يستمر لأكثر من نصف ساعة (مثل الرياضات الخفيفة ، والتمارين البدنية ، والبستنة ، والمشي لمسافات طويلة)؟

أكثر من ٥ أيام في الأسبوع	مرتين إلى ثلاث مرات في الشهر
٢-٥ أيام في الأسبوع	نادرًا / أبدًا
مرة واحدة في الأسبوع	

١,٢. إذا كان الاختيار نادرًا / أبدًا، إذكر السبب.

٢. كم مرة قمت بفحص نسبة السكر في الدم في المختبر في الشهر الماضي؟

أكثر من مرة واحدة	
مرة واحدة	
لم أفحص	

٣,١. هل لديك جهاز لمراقبة نسبة السكر في الدم في المنزل؟

نعم	لا
-----	----

٣,٢. إذا كانت الإجابة بنعم ، فكم مرة تقوم بفحص نسبة السكر في الدم في المنزل؟

أكثر من ٥ أيام في الأسبوع	مرتين إلى ثلاث مرات في الشهر
---------------------------	------------------------------

Appendix

٥-٢ أيام في الأسبوع	نادرًا / أبدًا
مرة واحدة في الأسبوع	

٣,٣. إذا كانت الإجابة بلا، إنكر السبب.

--

٤. كم مرة قمت بقياس وزنك في آخر شهر؟

أكثر من مرة واحدة
مرة واحدة
ولا مرة

٥,١. هل قمت بتعديل نظامك الغذائي وفقاً لنصيحة الطبيب / أخصائي التغذية بعد تشخيص مرضك؟

نعم	لا
-----	----

٥,٢. إذا كانت الإجابة بنعم، فكم مرة في الشهر الماضي تناولت غذائك حسب نظامك الغذائي كما نصح الطبيب / أخصائي التغذية؟

غالباً
أحياناً
نادرًا / أبدًا

٦,١. في آخر ٣٠ يوم، هل سبق لك أن نسيت تناول أدوية السكري التي وصفها طبيبك؟

نعم	لا
-----	----

٦,٢. إذا كانت الإجابة بنعم، أنكر كم مرة في آخر شهر

٣-١ أيام / شهر
٢-١ يوم / أسبوع
أكثر من يومين / إسبوع

٧. هل خضعت لأي فحص للعين في العام الماضي؟

نعم	لا
-----	----

٨,١. هل خضعت لأي فحص للقدم في العام الماضي؟

نعم	لا
-----	----

٨,٢. هل ترتدي دائماً أحذية مغطاة / مغلقة عندما تكون خارج المنزل؟

نعم	لا
-----	----

٩. هل لديك أي سؤال آخر أو مقترح؟

--

الهيموغلوبين HbA1c = %

نسبة السكر في الدم = ملغم/دل

لقد اختتمنا مقابلتنا. شكراً لك على صبرك وتعاونك.



جامعة كربلاء
كلية الطب
فرع طب الأسرة
و المجتمع

إلى / الاستاذ الدكتور علي موسى مهدي الموسوي المحترم

م/ تقييم استبانة

تحية طبية

نظرا للمكانة العلمية والخبرة التي تتمتعون بها نرفق لكم استبانة مقترحة لرسالة طالب
الدبلوم العالي في طب الاسرة بشار خلدون غني المبين عنوانها في ادناه، راجين من جنابكم
الاطلاع عليها واعطاء ملاحظاتكم القيمة بشأنها ... مع فائق التقدير

**" Knowledge, Attitude and Practices on Diabetes among Patients
with Diabetes type 2 in Karbala City, 2023 "**

أ.م.د. علي عبد الرضا أبو طحين

استشاري طب الاسرة

2023 / 1 / 17

عنوان الرسالة :

" المعارف والمواقف والممارسات حول مرض السكري بين مرضى السكري من النوع الثاني في مدينة كربلاء ، 2023 "

Title of the study :

" Knowledge, Attitude and Practices on Diabetes among Patients with Diabetes type 2 in Karbala City, 2023 "

اهداف الرسالة :

لتقييم المعارف و المواقف و الممارسات حول مرض السكري بين مرضى السكري من النوع الثاني في مدينة كربلاء و العوامل المرتبطة بمعارفهم و مواقفهم و ممارساتهم.

Aim of the study :

To assess the knowledge, attitude and practices on diabetes among type 2 diabetic patients in Karbala city and factors associated with their knowledge, attitude, and practice.

الملاحظات:

1. تم اللقاء مع الطالب واعطيت ملاحظات تفصيلية حول الاستبيان وطريقة البحث والاستفادة من المصادر وتم تزويده بعدد من البحوث المشابهة المهمة عالمياً ومحلياً
2. الاستبيان جيد لكن يحتاج بعض التصليح:
 - أ. ذكر العمر والمواليد والمطلوب واحد منهما وتاتفضل المواليد لان العمر يعطى تقديراً ويكون خطأ في معظم الاحيان
 - ب. المستوى التعليمي يصلح ابتدائية , متوسطة.....
 - ت. نوع العمل الافضل اضافة سؤال نوع العمل السابق لان الاكثرية متقدمين بالعمر وقد لا يكون له عمل حالياً ويكونان مفتوحين لاعطاء المجال للاجابة الدقيقة ويوبان عند التحليل
 - ث. اضافة سؤال عن الوزن والطول وممكن اجراءها عند عدم المعرف التي تثبت
 - ج. المستوى الاقتصادي الافضل اضافة سؤال عدد الاسر الساكنة في نفس الدار والاقامة يصلح ريف أو حضر وكذلك اضافة مسقط الراس (ريف أو حضر)
 - ح. التدخين اضافة مدخن سابقاً وممكن عدد السكان يوميا وسؤال منفصل عن النرجيلة
 - خ. تم اعطاء عدد من الاضافات لاسئلة المواقف واقترنا اضافة سؤال حول التأثير على القدرة الجنسية
 - د. النشاط البدني توصية منظمة الصحة العالمية 20 دقيقة وليس نصف ساعة
 - ذ. فحص السكر يضاف اخر مرة تم القياس كانت قبل.... (تحسب المدة)
 - ر. سؤال اضافة للجهاز الاشرطة للقياس
 - ز. هل سبق لك وان نسيت تناول الدوية... يحدد السكري
 - س. من المهم اضافة اسئلة عن النتائج لاستخدامها في التحليل مثلا نتائج (HbA1c) و الدهون(Cholesterol) وحصول المضاعفات بالتفصيل

Appendix

اسم الخبير : الأستاذ علي موسى مهدي الموسوي

اللقب العلمي : أستاذ

مكان العمل : فرع طب الاسرة والمجتمع / كلية طب كربلاء

عدد سنوات الخبرة : 43 سنة

التوقيع :





جامعة كربلاء
كلية الطب
فرع طب الأسرة
و المجتمع

إلى / الاستاذ الدكتور حسن علي نصر الله المحترم

م/ تقييم استبانة

تحية طبية

نظرا للمكانة العلمية والخبرة التي تتمتعون بها نرفق لكم استبانة مقترحة لرسالة طالب
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Aim of the study :

To assess the knowledge, attitude and practices on diabetes among type 2 diabetic patients in Karbala city and factors associated with their knowledge, attitude, and practice.

الملاحظات:

1. بالنسبة إلى نوع العمل كون العينة المختارة هي رجال و نساء يجب إضافة حقل ربة بيت إلى الخيارات الأخرى
2. الفقرة العاشرة عن الحالة المادية يجب وضع مؤشرات على ذلك مثل هل يسكن في بيت ملكه أم إيجار أم في التجاوز و طبيعة الطعام مثل كم مرة في الأسبوع يتناولون اللحوم أو إذا كان لديه سيارة أو غيرها أو إذا كان أحد أبناءه يدرس في كليات أو مدارس أهلية
3. الفقرة الثالثة عشر بالنسبة للعلاج المستخدم لمرض السكري إضافة حقل الطب البديل مثل الأعشاب و غيرها

اسم الخبير : حسن علي عبود نصر الله

اللقب العلمي : أستاذ

مكان العمل : جامعة العميد / كلية الطب

عدد سنوات الخبرة : 30 سنة

التوقيع :

الدكتور حسن علي عبود نصر الله
طبيب استشاري
الأمراض العصبية والتغذية والنسوية



جامعة كربلاء
كلية الطب
فرع طب الأسرة
و المجتمع

إلى / الاستاذ الدكتور حسن مرتضى الكتبي المحترم

م/ تقييم استبانة

تحية طبية

نظرا للمكانة العلمية والخبرة التي تتمتعون بها نرفق لكم استبانة مقترحة لرسالة طالب
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Aim of the study :

To assess the knowledge, attitude and practices on diabetes among type 2 diabetic patients in Karbala city and factors associated with their knowledge, attitude, and practice.

الملاحظات:

1. إضافة سؤال عن المكان الذي أجري فيه اللقاء مع المرضى لغرض ملئ الإستبيان : هل كان المكان في مركز الإمام الحسن (ع) للغدد الصم و السكري أم في مستشفى الإمام الحسن المجتبي (ع) التعليمي أم في مراكز الرعاية الصحية الأولية أم في العيادات الطبية الشعبية

2. الفقرة الرابعة عشر "هل لديك أحد من أفراد عائلتك مصاب بمرض السكري من النوع الثاني (أب، أم، أخ، أخت) " : إضافة ابن و بنت للسؤال

3. الفقرة الخامسة عشر "هل لديك أمراض أخرى " : إضافة اضطراب الدهون في الدم و أمراض الغدة الدرقية إلى الاختيارات

4. إضافة سؤال في حقل المعارف حول مرض السكري :
أ. هل تعرف قيمة الهيموغلوبين A1C (التراكمي) كهدف يجب عليك الوصول إليه للسيطرة على مرض السكري؟ : نعم لا
ب. إذكرها

اسم الخبير : الدكتور حسن مرتضى الكتبي

اللقب العلمي : طبيب إستشاري باطنية و غدد صم و سكري

مكان العمل : مركز الإمام الحسن (ع) للغدد الصم و السكري / دائرة صحة كربلاء المقدسة

عدد سنوات الخبرة : 23 سنة

التوقيع :

وزارة الصحة
مبادرة الصحة العامة
معهد بحوث التغذية



وزارة الصحة العراقية
Iraqi Ministry of Health
تأسست 1920

تعريفه.. أسبابه.. أعراضه.. المضاعفات
الوقاية والعلاج

داء السكر من النوع الثاني
[غير المعتمد على الأنسولين]

متابع دائرة المبادرات الصحية لتوعية
بالتغذية والصحة

١٠- الابتعاد عن تناول السكريات مثل السكر، الدبس والصل والاعتماد على الاستعاضة عنها ببدائل السكر الصناعية مثل الأسبارتام.

١١- الابتعاد عن تناول الدهون المشبعة (الدهون الحيوانية) والاستعاضة عنها بالزيوت الغير مشبعة مثل زيت الزيتون.

١٢- الابتعاد عن تناول منتجات الحليب الكامل الدسم واستبدالها بالمنتجات منزوعة الدسم أو قليلة الدسم.

١٣- الابتعاد عن تناول الفواكه المجففة مثل الزبيب والمشمش وكذلك الامتناع عن تناول السكر، التمسالت والجبس.

١٤- اعتماد ثلاث وجبات رئيسية بينهما وجبتان خفيفتان.

١٥- الامتناع عن التدخين.

١٦- أخذ الدواء المناسب الذي يحدده الطبيب المختص بشكل منتظم وبوقت ثابت.

١٧- مراقبة نسبة السكر في الدم بشكل منتظم عن طريق جهاز الفحص الخاص بذلك في البيت أو المختبر.



١- تناول كل انواع اللحوم (ويفضل الخالية من الدهون أو الشحوم) والبقوليات بمعدل ٣-٢ حصص باليوم (مثل لحم البقر أو الغنم، الدجاج بدون جلد، السمك، الباقلاء، الفاصوليا والعدس، الحصة الواحدة تعادل واحدة من الاختيارات التالية :

٩٠غم من اللحم ، الدجاج أو السمك (قطعة بحجم شريط التسجيل الصوتي " الكاسيت ").

١/٤ كوب من البقوليات الجافة المطبوخة.

٤٥غم (او حجم استكان واحد) من المكسرات.



٢- الابتعاد عن تناول الرز الأبيض والمعجنات والخبز المصنوعة من السدقيق الأبيض والاستعاضة عنها بتناول المعجنات والخبز المصنوعة من دقيق الحبوب الكامل مثل دقيق الحنطة بالنخالة، الشعير، الشوفان والرز الأسمر.

١- الأكل من تناول الخضروات (بمعدل ٥ حصص باليوم) مثل الطماطة، القرنبيط، اللبنة، الخس، البروكلي، السبانخ، الفطر والبزاليا، والحصة الواحدة تعادل واحدة من الاختيارات التالية :

١/٢ كوب من الخضروات المطبوخة.

١- كوب (٢٥٠ مل) من الخضروات الطازجة.

٢- الأكل من تناول الفواكه (بمعدل ٣ حصص باليوم) مثل التفاح، العرموط، البرتقال، الكرز، كريب فروت، الخوخ، والحصة الواحدة تعادل واحدة من الاختيارات التالية :

١/٢ كوب من الفواكه الطازجة.

١- قطعة فاكهة متوسطة الحجم.

١/٢ كوب من عصير الفواكه الطازج.

التقليل من تناول الفواكه السكرية مثل التمر، العنب والتين (على ان لا تزيد كميتها عن ٢ ثمرة باليوم أو ١٠ عنبه باليوم أو ٢ تينة باليوم).



المضاعفات

أهمها نزف في شبكية العين، التهاب الاغصاب المحيطية، عجز الكلى، أمراض القلب والشرايين.

الوقاية والعلاج

١- إجراء فحوص دورية كل ستة أشهر، للأعمار فوق الثلاثين سنة، وخصوصاً الذين يعانون من السمنة.

٢- المحافظة على الوزن الطبيعي الحد الأدنى للوزن الطبيعي = ١٨.٥ × طولك بالمتر × طولك بالمتر.

الحد الأعلى للوزن الطبيعي = ٢٥ × طولك بالمتر × طولك بالمتر.

مع مراعاة عدم تجاوز محيط البطن عن ٨٨سم للنساء و ١٠٢سم للرجال (بلف الشريط المترى فوق السرة مباشرة).

٣- ممارسة الرياضة يوميا لمدة نصف ساعة على الأقل. مثل المشي السريع، الجري، السباحة، ركوب الدراجة والألعاب السويدية.



تعريفه

هو نوع من الأمراض الأيضية الناتج عن قصور إنتاج الأنسولين أو فعاليته أو الاثنين معا، والذي يصيب كافة الأعمار وكلا الجنسين.

أسبابه

السمنة، قلة ممارسة الرياضة، العامل الوراثي، أسباب نفسية.

أعراضه

أهمها زيادة واضحة في تكرار التدرر وزيادة كمية، عطش شديد، انخفاض سريع في الوزن، تأخر في شفاء الجروح.

مرض السكري
أعراض الأمراض



طبرة الصحة العامة / قسم تعزيز الصحة
بالتعاون مع
قسم الوقاية والسيطرة على الأمراض غير الانتقالية



العناية بالقدمين للمصابين بالسكري

الطريقة السليمة للعناية بالقدمين



١- أفحص قدميك يوميا للكشف عن أي إصابة وبأماكنك استخدام المرآة .



٢- اغسل قدميك بالماء الدافئ والصابون ومن ثم قم بتجفيفها جيدا وخاصة الأماكن بين الأصابع .



٣- قص الأظافر بخطر بشكل مستقيم وعدم تقصيرها من الجوانب .



٤- تليين القدم بزيت أو لotion مع تجنب وضعه بين الأصابع .



٥- البس جوارب قطنية أو صوفية للمحافظة على حرارة قدميك وتجنب الاحتكاك بالحقاء .



٦ - تلمس باطن الحذاء وتأكد من نعومته وعدم وجود جسم غريب فيه قبل أن ترتديه .



٧- اختر الأحذية المرحة المصنوعة من جلد طري وتجنب الأحذية الضيقة وغير المرحة

تعاد التمارين لكتلا الساقين والقدمين

لا تفعل



• لا تستخدم الماء الحار في غسل القدمين .



• لا تقرب قدميك من المدفلة ولا تستخدم كيس الماء الحار .



• لا تستعمل الأدوات الحادة الخطرة جدا في قص الأظافر وتلظيف القدمين .

• لا تملئي حافي القدمين .

• تجنب استخدام الأحذية التي تكسلف

عن الأصابع وكعب القدم والأحذية ذات الكعوب العالية لأنها تعرضك للإصابات

والعدوى .

تمارين بسيطة للقدمين

التمرين الأول

ضم أصابع قدميك ومن ثم نثتها على الأرض .

التمرين الثاني

أرفع مقدمة القدم ثم أنزلها ثم أرفع الكعب وأنزله .

التمرين الثالث

أرفع مقدمة القدم ثم أدر القدم مع الكاحل الى الجانبين ثم ارجعه .

التمرين الرابع

أرفع الساق منتحودة الى الأمام ثم أرفع رأس الأصابع الى الأعلى ثم ارجعها .



دليل التغذية لمرضى السكري




السكري: حالة لذوي الوزن المرتفع

مرضية مزمنة ناتجة عن عوامل وراثية وبيئية تسبب نقصا نسبيا او مطلقا في افراز هرمون الانسولين من غدة البنكرياس يؤدي الى ارتفاع في تركيز السكر في الدم وهو على عدة اصناف حسب ما اقرته منظمة الصحة العالمية اهمها

- ١- السكري المعتمد على الانسولين.
- ٢- السكري غير المعتمد على الانسولين.

الاعراض: العطش الشديد، التبول الكثير، انخفاض الوزن، الدبول، الشعور بالإنهاك، وقد لا يظهر منها في بداية الامر.



مثال (٤)

الفطور	الغداء	العشاء
- ماعقتان كبيرتان لبنية	- كوب شوربة لحم	- سمك مصفى من الزيت (ثلاث علبه سفرة) مع الفيون
- ثلاث حبات زيتون	- لحم اربع قطع متوسطة	- سلطه (٢ ملاعقة + ٢ ورقة خس)
- نصف رغيف خبز	- فعملتا شجر متوسطتان محشي ٦ - قطع ورق عنب محشي	- نصف رغيف خبز
- شاي او قهوة بدون سكر	- تفاحه متوسطة	
	- ربع رغيف خبز	

ملاحظة: الوجبتان الخفيفتان تشملان

لذوي الوزن المرتفع والعاادي تفاحه متوسطة او برتقاله متوسطة




امثلة على الوجبات الغذائية اليومية

يشمل قوت السكريين ثلاث وجبات اساسية: الفطور - الغداء - العشاء مع وجبتين خفيفتين بينهما. وعلى السكريين الذين يعالجون بالانسولين في المساء ان يتناولوا وجبة خفيفة ثالثة - وجبة مسائية قبل النوم (تحتوي على سبيل المثال الحليب والكمك (البقاصم)).

الفطور	الغداء	العشاء
- جبن قطعة صغيرة	- كوب شوربة بالشعرية بدون دهن	- فلاحل عدد (٢) بالزيت النباتي
- كوب حليب	- صدر او فخذ دجاجة بدون دهن	- سلطه (نصف طماطة + ٢ ورقة خس)
- ثلثي صمونة	- ٤ ملاعق كبيرة رز	- ٢ حبة زيتون
- شاي او قهوة بدون سكر	- سلطه (ملاعقة عدد ٥ او ١ ورقة خس)	- ربع رغيف خبز
	- ربع رغيف خبز	
	- ١٢ حبة عنب	

الفطور	الغداء	العشاء
- بيضة مسلوقة	- كوب شوربة خضار مسلوقة بدون دهن	- جبن قطعة صغيرة بدون دهن
- كوب حليب	- قطعة متوسطة من اللحم المسلووق او المشوي بدون دهن (بحجم الهمبرغر وضعف سمكه)	- خياره صغيرة
- ثلاث ارباع رغيف خبز	- شرائح صغيرة بطاطا مسلوقة	- ثلث صمونة
- شاي او قهوة بدون سكر	- ربع رغيف خبز	- شاي بدون سكر
	- برتقاله	- خمس حبات زيتون

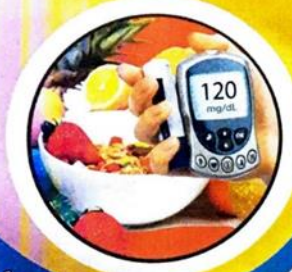


مثال (١)




الفطور	الغداء	العشاء
- فطائر بالجبين (قطعة سفرة)	- لوبياء او فاصوليا خضراء مسلوقة (٦ ملاعق كبيرة)	- بيضة مسلوقة
- شاي او قهوة بدون سكر	- لحم مطبوخ ثلاث قطع متوسطة	- بطاطا مسلوقة عدد ٢ صغيرة
	- ٤ ملاعق كبيرة رز او برغل	- سلطه (نصف طماطة + ٢ ورقة خس)
	- تفاحه او شريحة صغيرة رهي	- ٢ حبة زيتون
	- ربع رغيف خبز	- ربع رغيف خبز

دليل التغذية لمرضى السكري



لذوي الوزن الخفيف

السكري: حالة مرضية مزمنة ناتجة عن عوامل وراثية وبيئية

تسبب نقصا نسبيا او مطلقا في افراز هرمون الانسولين من غدة البنكرياس يؤدي الى ارتفاع في تركيز السكر في الدم وهو على عدة اصناف حسب ما اقرته منظمة الصحة العالمية اهمها
 ١- السكري المعتمد على الانسولين.
 ٢- السكري غير المعتمد على الانسولين.

الاعراض: العطش الشديد، التبول الكثير، انخفاض الوزن، الدبول، الشعور بالانهاك، وقد لا يظهر منها في بداية الامر.



مثال (٤)

الفطور	الغداء	العشاء
- اربع ملاعق كبيرة لبننة	- كوب شوربة لحم	- سمك محشي من الزيت (ثلاثي عالية صغيرة) مع الليمون
- ثمان حبات زيتون	- لحم اربع قطع متوسطة	- سلطة (طماطة + ٤-٥ ورقة خس)
- ثلاث ارباع رغيف خبز	- فطعتا شجر متوسطتان محشي ثمان قطع ورق عنب محشي	- ثلاث ارباع رغيف خبز
	- تفاحة متوسطة	- خمس حبات زيتون
	- نصف رغيف خبز	

ملاحظة: الوجبتان الخفيفتان تشملان

الوزن الخفيف
 ٢ ملاعق كبيرة لبن + تفاحتان متوسطتان + ٢ رغيف خبز
 حبات صغيرة او حبة خالية من النسيم قطعة صغيرة
 ٢ قطعة كمت - برتقالة خلة



مثال (٢)

الفطور	الغداء	العشاء
- جبن قطعة صغيرة	- كوب شوربة بالشعيرية بدون دهن	- فلافل عدد (٤) بالزيت النباتي
- كوب حليب	- صدر او فخذ دجاجة بدون دهن	- طماطة صغيرة
- صمونة	- ثمان ملاعق كبيرة رز	- ملعقة صغيرة رشي
- شاي او قهوة بدون سكر	- سلطة (طماطة عدد ١ + خمسة اوراق خس)	- لبننة مملعتين كبيرتين
	- نصف رغيف خبز	- نصف رغيف خبز
	- اثنا عشر حبة عنب	- اثنا عشر حبة عنب

مثال (٣)

الفطور	الغداء	العشاء
- فطائر بالجبن (فطعتان)	- لوبيا او فاصوليا خضراء مسلوقة (٦ ملاعق كبيرة)	- بيضة مسلوقة
- شاي او قهوة بدون سكر	- لحم مطبوخ اربع قطع متوسطة	- مملعتان كبيرتان لبننة
	- ثمان ملاعق كبيرة رز او برغل	- سلطة (طماطة + اربعة ورقة خس)
	- تفاحة او شريحة صغيرة رشي	- خمسة حبة زيتون
	- نصف رغيف خبز	- نصف رغيف خبز

امثلة على الوجبات الغذائية اليومية

يشمل قوت السكريين ثلاث وجبات اساسية: الفطور - الغداء - العشاء مع وجبتين خفيفتين بينهما، وعلى السكريين الذين يعالجون بالانسولين في المساء ان يتناولوا وجبة خفيفة ثالثة - وجبة مسائية قبل النوم (تحتوي على سبيل المثال الحليب والكعك (البقصم)).

الفطور	الغداء	العشاء
- بيضتان مسلوقة	- كوب شوربة خضار مسلوقة بدون دهن	- جبن قطعة كبيرة بدون دهن
- كوب حليب	- قطعة متوسطة من اللحم المسلوق او المشوي بدون دهن (بحجم المهرغرر وضعف سمكه)	- خيارة كبيرة
- ملعقة كبيرة لبن	- تسع شرائح صغيرة بطاطا مسلوقة	- صمونة
- ثلاث ارباع رغيف خبز	- نصف رغيف خبز	- شاي بدون سكر + كوب حليب
- شاي او قهوة بدون سكر	- برتقالة	- عشر حبات زيتون

مثال (١)



University of Kerbala
College of Medicine
Medical Research Bioethical Committee

No: 13

Date: 6/3/2023



FINAL APPROVAL LETTER

Bashar Khaldoun GHeni
Department of Family and Community Medicine \ College of Medicine \
University of Kerbala

Title of Project:

"Knowledge, Attitude and Practices on Diabetes among Patients with Diabetes Type 2 in Karbala City, 2023"

This is to certify that proposal provided have satisfactorily addressed the research bioethical guidelines.

Please consider the following requirements of approval:

1. Approval will be valid for one year. By the end of this period, if the project has been completed, abandoned, discontinued or not commenced for any reason, you are required to announce to the Committee. And you should inform the committee if the study extends over one year.
2. Please remember the Committee must be notified of any alteration to the project.
3. You must notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that might affect continued ethical acceptability of the project.
4. Always consider the confidentiality of participants/ patients' information and/or opinions. And they must never be obligated to participate in the study and can withdraw at any time.
5. At all times you are responsible for the ethical conduct of your research in accordance with the standard bioethical guidelines.
6. The Committee should be notified if you will be applying for or have applied for internal or external funding for the above project.
7. This document does not compensate administrative or ethical approval might be required from hospitals/ health authorities.

Assoc. Professor Ali A. Abutiheen
Chair, Medical Research Bioethical Committee
College of Medicine – University of Kerbala

جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جامعة كربلاء
معاون العميد للشؤون العلمية
شعبة الدراسات العليا

العدد: 3471617
التاريخ: 2023/ 1 / 29

الى/مركز الامام الحسن (ع) للغدد الصم والسكري
م/ تسهيل مهمة

تحية طيبة :
يرجى تقض لكم بتسهيل مهمة طالب الدراسات العليا/دبلوم
عالي /طب الاسرة (سنتان تقويميتان) في فرع طب الاسرة
والمجتمع (بشار خلدون غني) في مشروع البحث الموسومة :
(Knowledge, Attitude and Practices on Diabetes among Type 2
Diabetic Patients in Karbala City, 2023))
لغرض جمع عينات البحث , شاكرين تعاونكم معنا خدمة للحركة
العلمية في بلدنا العزيز.
... مع التقدير ...

أ.م.د. علي عبدالرضا أبو طحين
معاون العميد للشؤون العلمية
2023/ 1 / 29

**نسخة منه:
- مكتب السيد العميد المحترم للتفضل بالاطلاع مع التقدير.
- مكتب معاون العميد للشؤون العلمية المحترم للتفضل بالاطلاع مع التقدير.
- فرع طب الاسرة والمجتمع للتفضل بالاطلاع مع التقدير.
- شعبة الدراسات العليا/الحفظ.
- الصادرة.

جمهورية العراق

وزارة التعليم العالي والبحث العلمي
جامعة كربلاء
كلية الطب
معاون العميد لشؤون العلمية
شعبة الدراسات العليا

العدد: 348/617
التاريخ: 2023/ 1 / 29

جامعة كربلاء
كلية الطب
الصياد
تحية طيبة:

الى/مستشفى الامام الحسن المجتبي(ع)التعليمي
م/ تسهيل مهمة

يرجى تفصيلكم بتسهيل مهمة طالب الدراسات العليا/دبلوم
عالي /طب الاسرة (سنتان تقويميتان) في فرع طب الاسرة
والمجتمع (بشار خلدون غني) في مشروع البحث الموسومة :
(Knowledge, Attitude and Practices on Diabetes among Type 2
Diabetic Patients in Karbala City, 2023))
لغرض جمع عينات البحث , شاكرين تعاونكم معنا خدمة للحركة
العلمية في بلدنا العزيز.
... مع التقدير ...

أ.م.د. علي عبدالرضا أبو طحين
معاون العميد للشؤون العلمية
2023/ 1 / 29

**نسخة منه:
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- فرع طب الاسرة والمجتمع للتفضل بالاطلاع مع التقدير.
- شعبة الدراسات العليا/الحفظ.
- الصادرة.

جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جامعة كربلاء
كلية الطب
معاون العميد للشؤون العلمية
شعبة الدراسات العليا

العدد: 838 / 61
التاريخ: 2023/ 3 / 2

جامعة كربلاء
كلية الطب
المستأجر

الى/دائرة صحة كربلاء المقدسة/مدينة الامام الحسين (ع)الطبية
م/ تسهيل مهمة

تحية طيبة :

يرجى تفضلكم بتسهيل مهمة طالب الدراسات العليا/دبلوم
عالي /طب الاسرة (سنتان تقويميتان) في فرع طب الاسرة
والمجتمع (بشار خلدون غني) في مشروع البحث الموسومة :

((Knowledge, Attitude and Practices on Diabetes among Type 2
Diabetic Patients in Karbala City, 2023))

لغرض جمع عينات البحث , شاكرين تعاونكم معنا خدمة للحركة
العلمية في بلدنا العزيز.

... مع التقدير ...

أ.م.د. علي عبدالرضا ابو طحين
معاون العميد للشؤون العلمية
2023/ 3 / 2

****نسخة منه:**
- مكتب السيد العميد المحترم للتفضل بالاطلاع مع التقدير.
- مكتب معاون العميد للشؤون العلمية المحترم للتفضل بالاطلاع مع التقدير.
- فرع طب الاسرة والمجتمع للتفضل بالاطلاع مع التقدير.
- شعبة الدراسات العليا/الحفظ.
- الصادرة.

جمهورية العراق



وزارة التعليم العالي والبحث العلمي
جامعة كربلاء
كلية الطب
معاون العميد للشؤون العلمية
شعبة الدراسات العليا

العدد: 3501619

التاريخ: 29 / 1 / 2023

الى/مراكز الرعاية الصحية الأولية في الإسكان, الملحق, الغدير, العباسية

جامعة كربلاء - كلية الطب
تحية طيبة
م/تسهيل مهمة
الغربية

يرجى تفضيلكم بتسهيل مهمة طالب الدراسات العليا/دبلوم
عالي/طب الاسرة (سنتان تقويميتان) في فرع طب الاسرة
والمجتمع (بشار خلدون غني) في مشروع البحث الموسومة :

((Knowledge, Attitude and Practices on Diabetes among Type 2
Diabetic Patients in Karbala City, 2023))

لغرض جمع عينات البحث , شاكرين تعاونكم معنا خدمة للحركة
العلمية في بلدنا العزيز.

... مع التقدير ...

أ.م.د. علي عبدالرضا أبو طحين
معاون العميد للشؤون العلمية
2023/1/29

**نسخة منه:

- مكتب السيد العميد المحترم للتفضل بالاطلاع مع التقدير.
- مكتب معاون العميد للشؤون العلمية المحترم للتفضل بالاطلاع مع التقدير.
- فرع طب الاسرة والمجتمع للتفضل بالاطلاع مع التقدير.
- شعبة الدراسات العليا/الحفظ.
- الصادرة.

جمهورية العراق

وزارة التعليم العالي والبحث العلمي
جامعة كربلاء
كلية الطب
معاون العميد للشؤون العلمية
شعبة الدراسات العليا

العدد: 3491617
التاريخ: 2023/1/29

جامعة كربلاء
كلية الطب
العيادات الطبية الشعبية في الإسكان, الملحق, الغدير, العباسية الغربية
م/ تسهيل مهمة

تحية طيبة :

يرجى تفضلكم بتسهيل مهمة طالب الدراسات العليا/دبلوم
عالي /طب الاسرة (سنتان تقويميتان) في فرع طب الاسرة
والمجتمع (بشار خلدون غني) في مشروع البحث الموسومة :

((Knowledge, Attitude and Practices on Diabetes among Type 2
Diabetic Patients in Karbala City, 2023))

لغرض جمع عينات البحث , شاكرين تعاونكم معنا خدمة للحركة
العلمية في بلدنا العزيز.

... مع التقدير ...

أ.م.د. علي عبدالرضا أبو طحين
معاون العميد للشؤون العلمية
2023/1/29

****نسخة منه:**
- مكتب السيد العميد المحترم للتفضل بالاطلاع مع التقدير.
- مكتب معاون العميد للشؤون العلمية المحترم للتفضل بالاطلاع مع التقدير.
- فرع طب الاسرة والمجتمع للتفضل بالاطلاع مع التقدير.
- شعبة الدراسات العليا/الحفظ.
- الصادرة.



وزارة الصحة
دائرة صحة كربلاء
مركز التدريب والتنمية البشرية
لجنة البحوث



استمارة رقم ٢٠٢٣/٣

رقم القرار ٠٠٩٥

تاريخ القرار ٢٠٢٣/٣/٢٠

قرار لجنة البحوث

درست لجنة البحوث في دائرة صحة كربلاء مشروع البحث ذي الرقم ٠٠٩٥ /٢٠٢٣ /كربلاء) المعنون

لانجاز بحثه الموسوم

(Knowledge, Attitude and Practices on Diabetes among Type 2 Diabetic Patients in Karbala City, 2023)

والمقدم من الباحث :- (بشار خلدون غني)

الى شعبة ادارة المعرفة / وحدة ادارة البحوث في مركز التدريب والتنمية البشرية في دائرة صحة كربلاء بتاريخ ٢٠٢٣/٣/٢٠ وقررت:

قبول مشروع البحث اعلاه كونه مستوفيا للمعايير المعتمدة في وزارة الصحة والخاصة بتنفيذ البحوث ولا مانع من تنفيذه في مؤسسات الدائرة.

المستشار
د. هبة عبيد المشويخي
مقرر لجنة البحوث

20/03/2023



المرفقات:

-Choose an item.

ملاحظات:

- تم تحويل عضولجنة البحوث (د تقوى خضر عبد الكريم) او مقرر اللجنة (د نعيم عبيد طلال) للتوقيع على هذا القرار استنادا الى النظام الداخلي للجنة البحوث.
- الموافقة تعني ان مشروع البحث قد استوفى المعايير الاخلاقية والعلمية لإجراء البحث والمعتمدة في وزارة الصحة. اما التصيد فيعتمد على التزام الباحث بتعليمات المؤسسة الصحية التي سينفذ فيها البحث.

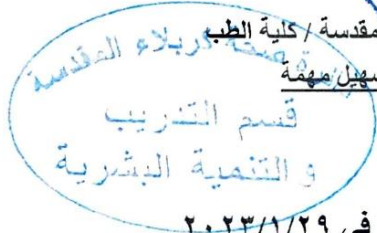
Holy Karbala governorate
Karbala Health Department
General manager's office
Training and Human Development
Center

جمهورية العراق

محافظة كربلاء المقدسة
دائرة صحة كربلاء المقدسة
مركز التدريب والتنمية البشرية
شعبة ادارة المعرفة / وحدة ادارة البحوث

العدد: ٤٥٢

التاريخ: ٢٠٢٣ / ٢ / ٢٠



الى / جامعة كربلاء المقدسة / كلية الطب
الموضوع / تسهيل مهمة

تحية طيبة....

كتابكم المرقم ٣٥٠ و ٣٤٨ و ٨٣٨ و ٣٤٧ في ٢٩/١/٢٠٢٣
نود إعلامكم بأنه لا مانع لدينا من تسهيل مهمة طالب الدراسات العليا / دبلوم عالي
(بشار خلدون غني) لإنجاز بحثه الموسوم:

**(Knowledge, Attitude and Practices on Diabetes among Type 2
Diabetic Patients in Karbala City, 2023)**

في مؤسستنا الصحية وبإشراف الدكتورة (مها صاحب ارحيم) على ان لا تتحمل
دائرتنا اي نفقات مادية مع الاحترام .

الدكتور
نعيم عبيد المشهداني
عبيب الدكتورة
/ / تقوى خضر عبد الكريم
مدير مركز التدريب والتنمية البشرية
٢٠٢٣/٢/٢٠

المراد
هاني عبيد جبر العبدوي
مدير شعبة البحوث
٢٠٢٣

نسخة منه الى

- مدينة الامام الحسين (عليه السلام) الطبية اجراء اللازم مع الاحترام .
- مستشفى الامام الحسن المجتبي (عليه السلام) التعليمي اجراء اللازم مع الاحترام.
- مركز الامام الحسن (عليه السلام) للغدد الصم والسكري اجراء اللازم مع الاحترام.
- مركز الرعاية الصحية الاولى في قطاع المركز اجراء اللازم مع الاحترام.

وزارة الصحة
دائرة العيادات الطبية الشعبية
مديرية العيادات الطبية الشعبية في كربلاء المقدسة
العدد ١٣٧
التاريخ ٢٠٢٣ / ١٢ / ١٩



الى / العيادات الطبيه الشعبيه كافه

الموضوع / تسهيل مهمه

تحية طيبه ...

استنادا " لكتاب دائرة العيادات الطبيه الشعبيه المرقم ٣٠٤٤ في ٢٠٢٣/٣/٩
راجين تسهيل مهمه الدكتور / بشار خلدون غني طالب الدراسات العليا حول بحثه الخاص بأمراض
السكري وجمع عينات البحث من بعض عياداتكم ، مع الاحترام .

الدكتور

علاء عبد الواحد عباس
مدير مديرية العيادات الطبية الشعبية في كربلاء المقدسة

٢٠٢٣ / ٣ / ١٩
الدكتور
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مدير العيادات الطبية الشعبية
في كربلاء المقدسة



الذاتيه

ملخص البحث:

خلفية البحث:

يعتبر مرض السكري مشكلة صحية خطيرة وصلت إلى نطاق مثير للقلق، حيث تأثر به أكثر من 500 مليون شخص على مستوى العالم. يعد مرض السكري من النوع 2 أكثر أنواع مرض السكري شيوعاً، حيث يمثل أكثر من 90٪ من جميع حالات مرض السكري في جميع أنحاء العالم. تشهد منطقة الشرق الأوسط وشمال أفريقيا أكبر انتشار إقليمي لمرض السكري (16.2٪) مع ما يقدر بنحو 136 مليون شخص بحلول عام 2045. يعد مرض السكري أحد الأسباب العشرة الأولى للوفاة في العراق.

الهدف:

تتمثل أهداف هذه الدراسة في تقييم المعارف والمواقف والممارسات المتعلقة بمرض السكري بين مرضى السكري من النوع 2 في مدينة كربلاء وتقييم العوامل المرتبطة بمعارفهم ومواقفهم وممارساتهم.

المرضى وطرق العمل:

أجريت دراسة مقطعية على 252 مريضاً مصاباً بمرض السكري من النوع 2 في العديد من المؤسسات الصحية في مدينة كربلاء. تم جمع البيانات باستخدام أخذ العينات الملائمة على مدى ثمانية أشهر من خلال المقابلات وجهاً لوجه. يتكون الاستبيان المستخدم من أربعة أجزاء وقد تم تطويره من قبل مركز أبحاث وتدريب مرضى السكري بجامعة ميشيغان (MDRTC). تمت مقارنة متوسطات المجموعات باستخدام اختبار t للعينات المستقلة وتحليل التباين بواسطة برنامج SPSS الإصدار 22.00.

النتائج:

كان متوسط عمر المرضى 56 ± 9.83 سنة. 64.3٪ من المرضى كانوا من الإناث. أكمل 42.1٪ من المرضى المرحلة الابتدائية وتم تصنيف 24.6٪ منهم على أنهم أميون. كان متوسط مدة الإصابة بمرض السكري 10.1 ± 6.82 سنة. كان متوسط الدرجات في اختبار المعرفة لمرض السكري (DKT) 2.09 ± 6.5 من 11. كان متوسط درجات الموقف 31.55 من 50 وكان متوسط درجات الممارسة 4.4 من 8.

الاستنتاجات:

كان لدى معظم المرضى مستويات متوسطة من المعرفة والموقف والممارسة، وعلى الرغم من وجود معرفة كافية نسبياً حول مرض السكري، لا يزال هناك مجال للتحسين في الفهم والامتثال والإدارة. هناك حاجة إلى برامج التعليم المستمر والاهتمام بالرعاية الصحية لتعزيز معرفة المرضى وموقفهم تجاه المرض ومضاعفاته، فضلاً عن تعزيز الالتزام بالممارسات.

جمهورية العراق

وزارة التعليم العالي

والبحث العلمي

جامعة كربلاء

كلية الطب



**المعارف والمواقف والممارسات حول مرض السكري بين مرضى السكري
من النوع 2 في مدينة كربلاء، 2023**

رسالة مقدمة الى مجلس كلية الطب/ فرع طب الاسرة والمجتمع/ جامعة كربلاء كجزء من متطلبات
نيل شهادة الدبلوم العالي في طب الاسرة

قدمت من قبل

بشار خلدون غني جاسم

بكالوريوس طب وجراحة عامة

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