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TREATMENT AND DIET RELATED MISCONCEPTION AMONG DIABETES MELLITUS PATIENTS ATTENDING THI-QAR SPECIALIZED DIABETES, ENDOCRINE AND METABOLISM CENTER IN 2024

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ABSTRACT

Background of study: diabetes mellitus is a highly prevalent disease in Iraq. Achieving glycemic control is the main goal of treatment. Narratives about diabetes mellitus are deeply embedded and widely spread among communities, most of them are not true and interfere with proper management, these narratives mainly affect the self-management practice and lead to negative outcomes.[1] Myths and misconception need to be investigated thoroughly and examined properly to unveil them and change the mindset of the mostly affected group to the correct thinking about the disease and its management. **Aim of the study**: this study aims to: 1-explore the most frequent misconceptions related to the treatment and diet of diabetes mellitus among the patients. 2-Assess the level of misconception prevalence. 3- examine the relationship between misconception level and socio-demographic characteristics and disease related information .**Method**: a cross-sectional study that employed convenient sampling and using structured questionnaire. The study was conducted among 400 participants who were attending to the tertiary endocrine center in Al-Nasiriyah city, Iraq. The study extended for about two months period from 28th April till 10th July .Frequencies, Chi-square, and ANOVA tests were used to analyze the results.**Results**: the study showed that, the highest percentage of treatment related misconception was 62.5%,it was about the side effect of diabetes mellitus medications, while the most frequent diet related misconception was 74% it was about the number of meals required by the diabetes mellitus patient. The level of misconceptions was high among 41.25% of the study population. The only significant association found was between level of misconception and type of diabetes mellitus as patients with type 1 diabetes are more likely to have high level of misconception than patients with type 2, with a difference in the mean score of misconception of 1.34 and p-value of 0.03. A higher percentage of the type 2 patients 62.8% were in the low misconception group. **Conclusion**: there are many myths and misconceptions related to diabetes mellitus that are common among the patients and these may interfere with the proper management of the disease. Cooperation between healthcare practitioners and authorities is highly required to educate the patients and change these misconceptions into the correct ideas.

KEYWORDS: Diabetes mellitus, misconception, management, diet.

INTRODUCTION

One of the biggest health issues in the world today is diabetes mellitus, whose prevalence poses a serious threat to practically every healthcare system in existence as it affects about 10.5% of the adult population of the world.[3] In 2021, 537 million adults aged between 20 and 79 years were diabetes mellitus , and in 2030, this number is expected to reach 643 million.[3] The World Health Organization (WHO) defines diabetes mellitus as a "chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage

to the heart, blood vessels, eyes, kidneys, and nerves.[4] Iraqi population is not apart from these numbers, and the reports showed that one in every 10 adult Iraqis has diabetes mellitus, and this major disease ranked as the fifth among the most common causes of death among Iraqi people.[5, 6] To control diabetes mellitus and limit its complications, achieving good glycemic control is the ultimate goal. However, despite the advancement achieved in understanding the pathophysiology of the disease, the development in pharmaceutical treatment, and the continuous publication of management guidelines there are still

many barriers to diabetes mellitus control like non-compliance to treatment, poor access to healthcare facilities, high cost of treatment, and poor patients educations.[7] In addition, among the most common barriers to achieving glycemic control are misconceptions and misinformation about diabetes mellitus and its treatment among patients.[8] Misconceptions and myths, in general, have different social and cultural roots and they differ from one society to another, they usually increase more in communities where the level of education is low and poverty is high, and when these misconceptions are related to health problems they will have a negative impact on the overall health of the community.[9] Misconceptions about diabetes mellitus and its treatment are common among all communities, and they not only represent a barrier to achieve good control, but actually, these misconceptions are causing adverse effects and worsening the situation in many of the patients who are susceptible to believe such information.[10] Therefore, proper management nowadays is not only about making the right diagnosis and selecting the most appropriate treatment, but it is also about giving the best education to the patients and their families, increasing their awareness about their health conditions, and eradicating the myths, misconceptions and the false information from their minds [9]. To do this, we need to identify the misconceptions that are prevalent in a specific community, identify its roots, and identify the most affected groups, only after that we can put proper solutions, plan, and implement an effective strategy to limit the negative impact of those misconceptions.[10] In Iraq, and to the best knowledge of the researcher, there is still a significant gap in this subject and till today it is barely studied. Accordingly, this study will try to identify the most common misconceptions among Iraqi patients that need to be corrected to advance the level of diabetes mellitus control and also determine the most susceptible group of patients to such problem to put the efforts of healthcare professionals in the right direction. So, the aims of this study are:

1-Identify the percentage of misconceptions related to treatment of diabetes mellitus and those related to the diet of the affected patients. 2- Determine the level of misconception among the patients. 3- Determine the associations between the level of misconceptions and multiple socio-demographic factors like gender, education level, occupation and disease related information.

PATIENTS AND METHOD
3.1 Study design
Cross-sectional descriptive study
3.2 Study Setting and duration
The study took place in Thi-Qar Specialized Diabetes, Endocrine & Metabolism Center (TDEMC), which is a tertiary center at Al-Nasiriyah, Thi-Qar province southern of Iraq ,in the period from 28th April till 10th July , 2024 which is almost two months.

Thi-Qar Specialized Diabetes, Endocrine and Metabolism Centre
Thi-Qar Specialized Diabetes, Endocrine and Metabolism Centre is a tertiary referral center specialized in endocrinology and diabetes in Thi-Qar provenance southern of iraq that was initiated in the 1st of April 2008 , it receive referred patients from primary and secondary medical centers , and registers patients with one of the specialist using computerised data system .It provides them continuous care for their chronic diseases including doing for them all required advanced investigations and provide them the required treatment ,follow up visits every 2-3 months, or as required; by that same specialist .The patient is examined and investigated , the usual investigations is fasting blood sugar , HBA1c every 3 months ,renal functions test every one year or more frequently if needed, CBP and ESR, liver functions test, thyroid functions test for women older than 40 years, urine for protein and albumin /creatinine ratio every one year , any other investigations like x-ray and ultrasound may be done as required. The registered patients are educated about their disease, treatment and special diet at education unit.

3.3 Population of study: study sample and sampling technique:
The study targeted 400 diabetes mellitus patients. By using convenient sampling and according to the following inclusion criteria:
1- Adult non-pregnant patient above 18 years of age
2- Has been diagnosed with diabetes for at least 1 year

Exclusion criteria was:
Patients refused to participate.
Patients with Mental problems .
-patients with advanced diabetes complications, like:.
End-stage renal disease, Vision loss due to retinopathy and Lower limb amputation.

3.4 Study Instrument
Depending on researcher-administered interviews and by using a pre- determined questionnaire that was adapted from previous literature[9, 15, 23] the data collection process was done. The questionnaire consists of three parts:
The first part includes 6 questions about socio-demographic factors which are
1- **Gender :** male or female
2- **Age interval** which are five intervals 18-24,25-34,45-54,55 or older ,
3- **Marital status**: single, married, divorced, and widow
4- **Education level:** illiterate, elementary school, high school, university degree or more
5- **Occupation**: student, employee, self employed,retired, housewife
6- **Family monthly income:** 500 thousand Iraqi dinar (ID)or less, 500-1500 thousand ID, more than 1500 thousand ID

And two questions about the type of diabetes mellitus (type one diabetes mellitus and type two diabetes mellitus) and duration of diagnosis.

The second part includes 10 questions on misconceptions about diabetes mellitus treatment.

The third part consists of nine questions on diet-related misconceptions.

The first version of the questionnaire was validated by two experts (Dr. Lamyaa Ali Hassan family medicine consultant and Dr. Sahar Abdul Hassan family medicine consultant), some changes were made according to their comments, and the final version was translated into Arabic by a professional translator.

3.4   Pilot study
Pilot study; which was excluded, was done to examine the acceptability and ease of understanding of the questionnaire, 15 responses were collected. The result of the pilot study showed high acceptance of the questionnaire, and the time needed to complete each interview was 15 minutes on average and about 15-20 interviews per day, after that the formal data collection process was done.

3.5   Statistical Analysis
Microsoft Excel software was used for data entry, cleaning and coding. Statistical Package for the Social Science (SPSS) version 29 software package from International Business Machines (IBM) was used for analysis. Frequencies were used to report categorical variables and descriptive statistics for continuous variables.

3.6   Scoring System:
The questionnaire included 19 questions, 10 questions about diabetes mellitus treatment related misconceptions and 9 questions about diabetes mellitus diet related misconceptions. Each question represents a misconception that can be answered by either "yes", "no", or "I don't know". The "yes" means belief of the participant in the statement mentioned, "no" means rejection of the statement, and the "I don't know" reflects the participant's doubt about the statement or the misconception mentioned, which means neither belief nor disbelief, the correct answer for all questions is "no", scoring was done by giving 2 points for "yes", 1 point for "I don't know", and 0 for "no". With 19 questions about misconceptions, the range of score was from 0-38, The average misconception score was 14.85 and the median was 15. So, according to the median of the sample, the participants were divided into those who had "Low level of misconceptions" who scored between 0-15, and those who had "High level of Misconception" who scored between 16-38 and greater score means higher level of misconception. Chi-square test was used to examine the relationship between misconception level and socio- demographic factors and type of diabetes

mellitus. ANOVA test was used to examine the relationship between misconception level and the continuous variable for disease duration.

3.6 Ethical considerations
After obtaining official permission from
1- The Council of Arab Board of Family Medicine
2- The administration of Thi-Qar Specialized Diabetes, Endocrine & Metabolism Center.
3- The patient who participated in this study.

The researcher explained the purpose of the study and the types of information that would be collected for each participant, ensuring the privacy and anonymity of all participants and the right to withdraw at any time during the process, each participant confirms fully understanding of the information explained and informed consent obtained before starting the interview.

RESULTS
4.1 Demographic Analysis
Out of the 400 participants 259 were females with a percentage of 64.7%. Most of them were 55 years or older with a percentage of 39.8% , and 70.5% of them have T2DM. Of these 400 participants 72% were married, 44.3% had only elementary school education, and 302 ofparticipants were at the low-income level, as 75.5% have a family income of 500 Thousand Iraqi Dinar or less per month. Disease duration ranged from 1 year to 30 years, with an average duration of 8- 9 years in the sample of the study. All details are explained in table (4-1).

Table (4-1): Distribution of participants by demographic analysis.

Gender	Frequency (n=400)	Percentage %
Male	141	35.3
Female	259	64.7
Age Group		
18-24	56	14
25-34	23	5.7
35-44	50	12.5
45-55	112	28
Older than 55	159	39.8
Marital Status		
Single	60	15
Married	288	72
Divorced	12	3
Widow	40	10
Educational Level		
Illiterate	110	27.5
Elementary School	177	44.3
High School	82	20.5
University Degree or more	31	7.7
Occupation		
Student	38	9.5
Employee	50	12.5
Self-Employed	47	11.7
Retired	44	11
Housewife	221	55.3
Family Monthly Income		
500 thousand or less ID	302	75.5
500-1500 thousand ID	92	23
Morethan1500 thousand ID	6	1.5
Type of diabetes		
Type 1	95	23.8
Type 2	282	70.5
I don't know	23	5.7
Duration of the disease	1-30 years	Mean=8.49 years

4.2 Misconceptions about the Treatment of Diabetes mellitus

The most frequent misconception among diabetes mellitus patients was about the safety of DM treatment, and about 62.5% of the sampled population believed that diabetes mellitus treatment can cause serious complications over the long run. Followed by a misconception about the efficacy of the treatment and almost half of the sample, 46.5% of them believe that oral treatments are better than insulin. Also, 46.3% of the participants believed that insulin and oral medications can cause habituation (or dependence), and 40.8% of them believed that the efficacy of the drug depends on its cost. 33.3 of them have the belief that they can reduce the treatment by themselves if they feel well or their blood glucose tests are normal. Other examined misconceptions are less common among the study of population with a frequency of less than 20% (Table 4-2).

Table (4-2): Distribution of participants responses regarding DM treatment related misconceptions.

Misconception	Number of "yes" n=400	%
Insulin and oral anti-DM medications can cause serious complications and side effects if taken for too long	250	62.5
Oral anti-DM medications are better than insulin	186	46.5
Insulin and oral anti-DMmedications can cause habituation	185	46.3
Efficacy of anti-DM medications depend on cost	163	40.8
I can reduce the treatment if I feel well, or my blood glucose tests are normal	133	33.3
Anti-DM medications are only needed after sweet (high sugar) meals	76	19
Anti-DM medications can be stopped if there are no symptoms	69	17.3
Cure is expected after taking short courses of anti-DM medications	39	9.8

Herbal treatments are better than insulin and oral anti-DM and can cure diabetes	32	8
Anti-DM Medications should be stopped one-day before testing fasting blood Glucose	16	4

4.3 Misconceptions about diet of Diabetes mellitus

Diet-related misconceptions were relatively more frequent than treatment-related ones. The most frequent misconception among diabetes mellitus patients was that they must reduce the number of meals they eat, with a percentage of 74%, followed by the belief that they must eat bitter food to buffer the glucose in the blood with a percentage of 42.5%. other misconceptions that were fairly frequent were the beliefs about dates, fruits, and vegetables, as 38.5% of the patients think that dates is good for them, and 25.5% of them think that they can eat fruits and vegetables freely because they don't affect blood glucose level. Of the sampled population, 22.5% believe that they should eliminate Carbohydrates totally from their diet. The results are shown in table (4-3).

Table (4-3): Responses of participants regarding DM diet related misconceptions.

Misconception	Number of "yes" n=400	%
Diabetic patients must have less number of meals than normal people	296	74
diabetic patients must eat bitter food to buffer hyperglycemia	170	42.5
Dates is good for diabetic patents	154	38.5
diabetic patients can eat all types of fruit and vegetables freely because those don't affect blood glucose level	102	25.5
Diabetic patients must eliminate carbohydrates totally from their diet	90	22.5
Diabetic patients can buy and eat sugar-free products as much as they want	77	19.3
diabetic patients can eat anything and without any restriction if they are taking their medications regularly	68	17
losing weight for diabetic patients will definitely cure the disease	47	11.8
Diabetic patients can eat honey freely because it's natural sugar and will not affect blood glucose level	45	11.3

4.4 Level of Misconception

The level of misconceptions was high among 41.25% of the sampled population, while 58.75% have low level of misconception. The results are shown in figure (4-1).
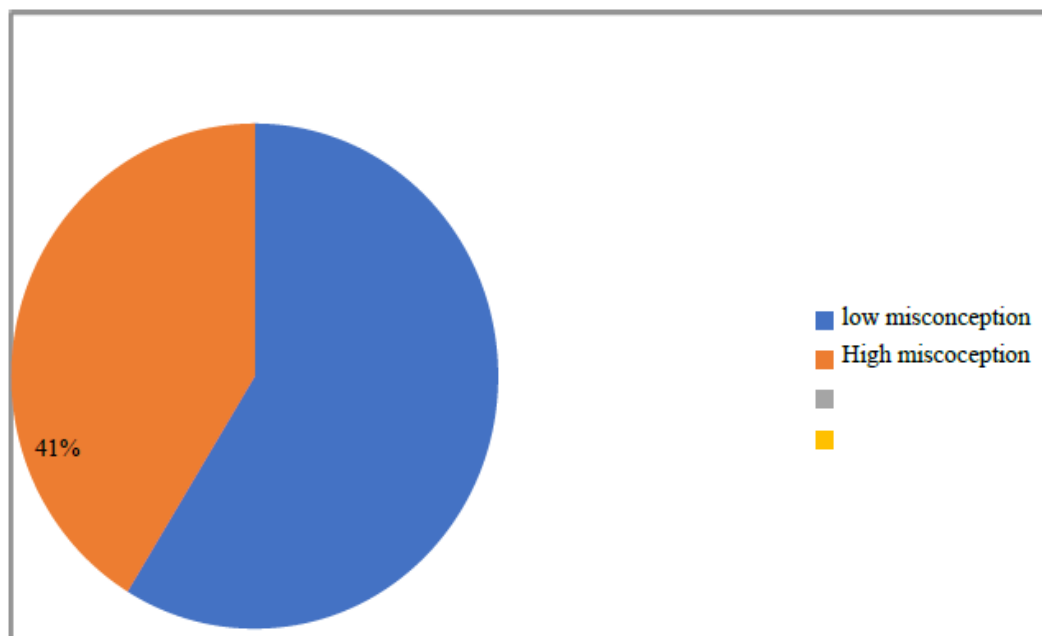

Figure (4-1): Distribution of participants according to the level of misconception.

4.5 Relation between level of misconception and socio-demographic variables

The only finding was the relation between misconception level and type of diabetes mellitus, as patients with type 1 diabetes mellitus are more likely to have high level of misconception than patients with type 2, with a difference in the mean score of misconception of 1.34 and p-value of 0.03. A higher percentage of the type 2 patients (62.8%) were in the low misconception group. Details are explained in Table (4-5)

Table (4-5): Association between misconception level and the participants socio- demographic factors.

		Low Misconception no. (%)	High misconception no. (%)	Total no. (%) n=400	Pearson Chi-Square sig.
Gender	Male	81 (57.4)	60 (42.6)	141 (35.3)	0.750
	Female	154 (59.5)	105 (40.5)	259 (64.7)	
Age Group	18-24	31 (55.4)	25 (44.6)	56 (14.0)	0.229
	25-34	14 (60.9)	9 (39.1)	23 (5.7)	
	35-44	25 (50.0)	25 (50.0)	50 (12.5)	
	45-55	61 (54.5)	51 (45.5)	112 (28.0)	
	> 55	104 (65.4)	55 (34.6)	159 (39.8)	
Marital Status	Single	34 (56.7)	26 (43.3)	60 (15.0)	0.357
	Married	169 (58.7)	119 (41.3)	288 (72.0)	
	Divorced	10 (83.3)	2 (16.7)	12 (3.0)	
	Widow	22 (55.0)	18 (45)	40 (10.0)	
Education level	Illiterate	70 (63.6)	40 (36.4)	110 (27.5)	0.297
	Elementary school	95 (53.7)	82 (46.3)	177 (44.3)	
	High school	52 (63.4)	30 (36.6)	82 (20.5)	
	University degree or higher	18 (58.1)	13 (41.9)	31 (7.7)	
Occupation	Student	23 (60.5)	15 (39.5)	38 (9.5)	0.576
	Employee	24 (48.0)	26 (52.0)	50 (12.5)	
	Self-Employed	27 (57.4)	20 (42.6)	47 (11.7)	
	Housewife	134 (60.6)	87 (39.4)	221 (55.3)	
	Retired	27 (61.4)	17 (38.6)	44 (11.0)	
Income Level	Low	176 (58.3)	126 (41.7)	302 (75.5)	0.914
	Middle	55 (59.8)	37 (40.2)	92 (23.0)	
	High	4 (66.7)	2 (33.3)	6 (1.5)	
DM type	Type 1	48 (50.5)	47 (49.5)	95 (23.8)	0.034
	Type 2	177 (62.8)	105 (37.2)	282 (70.5)	
	Type 2	10 (43.5)	13 (56.5)	23 (5.7)	

Table (4-6): Association between misconception level andparticipants duration of diagnosis.

Misconception Level	Mean- duration of diagnosis (years)	Minimum duration (years)	Maximum duration (years)	Sig. Level
Low Misconception	8.80	1	30	0.234
High Misconception	8.06	1	30	

DISCUSSION

In the current study, the most common misconception about treatment of diabetes mellitus was that "Insulin and oral anti-DM medications can cause serious complications and side effects if taken for too long" with two- third of the participants believe in this statement, this misconception was reported by other studies from Saudi Arabia, India and Nigeria[13, 18, 21], while every medication have side effects and long term use of them increase the probability of some side effect, the benefits of compliance to treatment in chronic disease like diabetes definitely outweigh the risk of its side effects. The second most common misconception found in this study with a percentage nearly half of participants was that "oral medications are better than insulin", this was also reported by Sabra *et al.*[18] in Saudi population but was less common, about 29%.

On the opposite side, about 53% of diabetic in India think that insulin is better than oral hypoglycemic drugs.[19] With the multiple options available now days for the treatment of diabetes, each one has its role and preference according to different characteristics of the

patient in addition to other factors related to the disease, so there is no absolute information that say any one is better than the other, but for each patient and at any specific time, there are some treatment option more preferable than others.The other misconception that were reported with almost the same percentage , "oral medications and insulin can cause habituation" or addiction is a popular misconception in many communities, and it was reported by many studies, Srinivasan *et al.*[19], reported that 89% of the Indian patients think that anti-diabetic treatment are addictive, about 11% of patients in Nigeria belief that insulin is addictive[13], and 16% of the minorities patients in New York city reported worries about being addictive on diabetic medications.[22] Of this study population, more than one third think that cost is the main determinant of drug's efficacy, almost the same percentage of this misconception, 38% was reported in Srinivasan *et al.*[19] study and less frequently with about 23% in the Saudi study.[18] As mentioned earlier, for each patient there is a preferable option over the other and cost by itself is not a determinant of this decision. About one-third of the participants think that they can reduce their treatment by themselves when they feel well or their blood glucose test are normal, and about one-fifth think they even can stop their treatment. Although achieving glycemic control is the ultimate goal of diabetes management, this achievement cannot be maintained without continuing on the same or sometimes reduced dose of the treatment, under medical supervision. this is along with other measures like dietary control and/or exercise that help the patient to reach this goal. So, stopping the treatment or changing the dose of medication by the patient without returning to the treating doctor is a high-risk behavior that have a lot of negative consequences on the treatment journey and on this disease outcomes. Unfortunately, this misconception is wide common among diabetic patients, a study from Iran reported that 14% of the patients think that medication should be reduced if blood glucose is normal[8], another study in India reported that more than half of the patients believe that "regular medication is not required when blood sugar levels are normal"[15] , and in Nigeria about 15% of the patients think that there is no need for medication if the blood glucose is normal.[13] participants in this study have little belief in herbs, only one tenth of the patients participated in this study reported that herbal treatment can be a better treatment than insulin and Oral AntiDiabetic (OAD) medications, in contrary to the high percentages of patient in other Arab countries and neighboring countries, as the literature showed that 16% in Jordan, 21% in Iran, 30% in SaudiArbia, and 63% in Bahrain believe that alternative medicines are better than diabetic medication in achieving glycemic control.[8, 20] Diet is an important component of diabetes mellitus pathology and treatment, and dietary control become one of the main pillar in the management of this disease and the effect of some dietary meal patterns on achieving blood glucose

control is well documented in the literature, therefore dietary knowledge is essential for all diabetic patients.[11, 27] To obtain proper dietary knowledge, obstacles represented by the wrong ideas about diet the patient has must be addressed and changed, and unfortunately these wrong beliefs are quietly common. With about three-quarters of the participants, the most frequent misconception about diet found in this study was "diabetics should have less number of meals than normal people" , this misconception was opposite to the one reported among 65.5% of patients in Pakistan, and 15% of patients in India that three meals and two snacks per day are the best pattern for diabetics.[19, 23] However, the content of the meals is more important than the number and the regular and balanced diet tailored to individual patient's need is the best approach to determine the number of meals and snacks the patient need.[28] Bitter food can buffer hyperglycemia" is the second popular misconception reported by this study with a 42.5% prevalence rate. This finding agrees with the findings of Nalavadey *et al.*[15] who reported this misconception as the second most common diet-related misconception among Indian patients, also Sabra *et al.*[18] showed 38% of population in Eastern Saudi Arabia agreed on this statement, and Michael *et al.*[13] reported that 45% of Nigerian diabetic patients believe that bitter vegetables can reduce blood glucose.As Iraq is famous in palms and dates, nearly one third of the patients think that date is good for diabetic patients. Due to cultural reasons, patients may be considering dates as a natural source of sugar, so they think that it is good and it's better than sugars available in processed foods. This misconception is common in other countries where dates is a popular product, as 34% of Saudi population, 26% of Saudi diabetic patients, and 24% of patients in Iran thought that dates are good for diabetics.[8, 18, 24] In comparison to honey, only 11.3% think that diabetic patients can eat it freely because it doesn't affect blood glucose level, which is much lower than the 85% among Indians reported by Srinivasan *et al.*[19], the 40% among Nigerian reported by Michael *et al.*[13] and the 26% among Saudi reported by Alsunni *et al.*[24] Consistent with the findings ofAkbar *et al.*[23], Nalavadey *et al.*[15], Srinivasan *et al.*[19], and Babak *et al.*[8], and opposite to the findings of Alsunni *et al.*[24] and Michael *et al.*[13], we found that about one- fourth of the patients think that they can consume fruits and vegetables freely because this won't affect blood glucose level. Some fruits and vegetables have high glycemic index and although these are considered a healthy source of food, consuming it in a balanced way and calculated portion in respect to the whole diet is the best approach. About one-fifth of the patients think that they must totally remove the carbohydrates from the diet of the diabetic patients, and as this misconception is similar to what is reported by other studies[9, 15, 18, 20], again consuming carbohydrates in a limited and balanced way is much better than removing it totally from the diet.The average misconception score was 39.07% , which means that

although the average level of misconception among the communities of diabetic patients in Thi- qar province in Iraq is not highly elevated, myths and misconceptions still common and widely popular among patients and need to be addressed and changed by appropriate medical education. The prevalence rate of high misconception among diabetic patients was 41.25%, which is almost similar to the prevalence rate reported by Alsunni *et al.*[24] in Saudi diabetic patients which was 42.5%, and lower than the rate reported by the Indian studies which were 46.5% in one study and 59% in another[14, 19], and almost double the rate reported from Nigeria, which was 20.8%.[13] Though, different misconceptions examined by these different studies and were not exactly the same, the high prevalence score means that there are wide range of common misconceptions, and the reported are just a part of many unstudied misconceptions. The high rate of misinformation in this study means that patients are still believing in the wrong stories and inaccurate information about diabetes mellitus, and even they are not believing in all the misconception, but the total wrong beliefs they had is enough to interfere with the proper self-management behavior required from the patient and still can impose negative impact on the disease outcome. Surprisingly, in this study, all the socio-demographic factors including gender, age, marital status, occupation, education level, and income level as well as the duration of the disease couldn't show statistically significant relationship with the level of misconception. Although some studies showed significant relationship between one or more of the socio-demographic factors and the level of misconception, still there are others that showed insignificant impact of age[15, 19, 23] gender[10, 13, 19], education level[22] , and income level.[15] Duration of the disease was also not significantly impact the level of misconception in some studies.[8, 13] This means that misconceptions are widely spread across all groups of the study population without differences, most of the participants are prone to such wrong ideas and susceptible to believe it. In the meantime, this high rate and wide spread of misconception also reflect the insufficient communication delivered to the participants by the healthcare provider regarding their disease and condition, and inadequate time and effort are being dedicated to patient education. However, this issue needs more in-depth investigation by further studies, with a greater number of misconceptions to be incorporated in the questionnaire and larger number of patients across different centers and provinces should be included in the study so that more powerful statistical results can be obtained. One unusual finding of this study was that patients with type 1 diabetes mellitus are more prone to misconception, with a significantly higher misconception score and higher prevalence of high misconception than patients with type 2 diabetes mellitus. The two types have some differences in their main underlying pathology and etiology, and usually type 2 are more related to and affected by

lifestyle factors such as diet and exercises, and also it is more prevalent, as a result most of the public communication are focusing on this type and most of the awareness campaign and preventive programs are targeting type 2 diabetes mellitus, so maybe this is the reason why misconceptions are little less frequent , and this result need further investigation. Some researchers like Alsunni *et al.*[24] , Akbar *et al.*[23] , and Michael *et al.*[13] also tried to investigate this relationship but didn't find any statistically significant difference between the two types of the disease.

CONCLUSION
1. The most frequent misconception about diabetes treatment detected in this study was "Insulin and oral anti-DM medications can cause serious complications and side effects if taken for too long"
2. The most common one about diabetic's diet was "Diabetes mellitus patients must have less number of meals than normal people".
3. This study also revealed that more than one third of the sample studied have high misconception level.
4. Type 1 diabetes was more associated with high misconception level than type 2 diabetes. while
5. None of the socio-demographic factors were significantly associated with the patient's level of misconception, neither the duration of the disease

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