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HEMŞİRELİK ANABİLİM DALI**

**AN EVALUATION OF KNOWLEDGE AND ATTITUDES TO NUTRITION IN
TYPE 1 AND TYPE 2 DIABETES PATIENTS RECEIVING HEMODIALYSIS**

Yüksek Lisans Tezi

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Çankırı 2021

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1 AND TYPE 2 DIABETES PATIENTS RECEIVING HEMODIALYSIS**

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Master Thesis

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KABUL VE ONAY

ÇAKÜ, Sağlık Bilimleri Enstitüsü'nün 198205305 numaralı Yüksek Lisans öğrencisi Ahmet Mohsin Abbas ALTABTABAEI, ilgili yönetmeliklerin belirlediği gerekli tüm şartları yerine getirdikten sonra hazırladığı “**Hemodiyaliz Tedavisi Alan Tip 1 Ve Tip 2 Diyabet Hastalarında Beslenmeye Yönelik Bilgi Ve Tutumlarının Değerlendirilmesi**” başlıklı tezini aşağıda imzaları olan jüri önünde başarı ile savunmuştur.

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Yüksek Lisans tezi olarak hazırlayıp sunduğum “**Hemodiyaliz Tedavisi Alan Tip 1 Ve Tip 2 Diyabet Hastalarında Beslenmeye Yönelik Bilgi Ve Tutumlarının Değerlendirilmesi**” başlıklı tez; bilimsel ahlak ve değerlere uygun olarak tarafımdan yazılmıştır. Tezimin fikir/hipotezi tümüyle tez danışmanım ve bana aittir. Tezde yer alan araştırma tarafımdan yapılmış olup, tüm cümleler, yorumlar bana aittir.

Yukarıda belirtilen hususların doğruluğunu beyan ederim.

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Öğrencinin Adı Soyadı
Ahmet Mohsin Abbas
ALTABTABAEI

ETHICAL DECLARATION

The thesis entitled “**An Evaluation of Knowledge and Attitudes to Nutrition in Type 1 and Type 2 Diabetes Patients Receiving Hemodialysis Treatment**”, written by myself in accordance with scientific principles and values, is prepared and presented as a Masters thesis. All of the ideas and hypotheses therein are those of myself and my thesis advisor. The research in the study was carried out by myself, and all of the statements and interpretations are my own.

Signature

Date : / / 2021

Student

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ACKNOLWEDGMENT

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ABBRAVIATIONS AND SYMBOLS

NCD	: non-communicable diseases
HD	: hemodialysis
CRF	: chronic renal failure
MNT	: medical nutrition therapy
BMI	: body mass index
HT	: hypertension
DM	: diabetes mellitus
LDL	: low density lipoprotein
HDL	: high density lipoprotein
GFR	:glomerular filtration rate
CKD	: chronic kidney disease
ADA	: American Diabetes Association
UF	: ultrafiltration
CGMS	: continuous glucose monitoring system

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ÖZET

ALTABAEI, Ahmet Mohsin Abbas, Hemodiyaliz Tedavisi Alan Tip 1 Ve Tip 2 Diyabet Hastalarında Beslenmeye Yönelik Bilgi Ve Tutumlarının Değerlendirmesi (Yüksek Lisans Tezi), Çankırı, 2021.

Giriş: Kronik hastalıklarda, insan vücudundaki fonksiyonlarda ilerleyici ve geri dönüşümsüz değişiklikler mevcuttur. Bu nedenle de yaşam kalitesini olumsuz etkilerler. Bu hastalıklardan biride diyabete bağlı gelişen böbrek hastalığıdır (diyabetik nefropati).

Amaç: Bu çalışmada hemodiyaliz tedavisi alan Tip 1 ve Tip 2 diyabetli hastalarda beslenme bilgi ve davranış durumunun değerlendirilmesi amaçlandı.

Materyal ve Metod: Tanımlayıcı ve kesitsel tipte bir araştırma olup Irak – Diwaniyah Hastanesi Diyaliz yürütüldü.. Çalışmanın tasarımı nicel araştırma kullanılmıştır. Örneklem seçimine gidilmeyip çalışmaya katılmayı kabul eden 30 Tip1 DM ve 30 Tip2 DM hastası çalışmaya alındı. Hastalara sosyo-demografik verilerden oluşan ve beslenmeye yönelik bilgi ve tutumlarını değerlendirmek amaçlı sorular soruldu. Veriler yüz yüze soru sorma tekniği ile toplandı. Yüzdelik, ki-kare, bağımsız T-testi kullanılarak değerlendirme yapıldı.

Bulgular: Tip 1 ve Tip 2 diyabetli hastalarda yaş, medeni durum, gelir durumu ve primer böbrek hastalığı, beslenmesinde ara öğün yapanlarda ve susuzluk hissini bastırmak için bir takım yöntem uygulayanlarda istatistiksel olarak anlamlılık bulundu ($p<0,05$). Tip1 ve Tip 2 DM hastaları arasında diyaliz öncesi ve sonrası kilo, diyaliz öncesi ve sonrası sistolik ve diyastolik kan basınçları arasında anlamlılık bulundu. ($p<0,05$). Yine bu hastalarda HbA1c ve kan şekeri düzeyleri arasında istatistiksel olarak anlamlılık bulundu. ($p<0,05$).

Sonuçlar: Tip 1ve Tip 2 DM’li diyaliz hastalarının HbA1c ve glikoz seviyeleri yüksek olup diyabet yönetim durumları yetersizdir; yaş, medeni durum, ekonomik düzey, ailede böbrek hastalığı bulunması, BMI, ara öğün yapıp-yapmama gibi sosyo-demografik özelliklerin diyabet yönetiminde etkileri vardır.

Öneriler: Hastalara bireyselleştirilmiş eğitim, izlem ve danışmanlık yapılarak diyabet öz yönetimlerinin güçlendirilmesi sorunların çözümüne odaklı yeni deneysel hemşirelik planlama ve girişimlerinin uygulanması önerilir.

Anahtar Kelimeler: : diyabet, böbrek hastalığı , beslenme, hemşirelik yönetimi.

An Evaluation of Knowledge and Attitudes to Nutrition in Type 1 and Type 2 Diabetes Patients Receiving Hemodialysis Treatment

SUMMARY

ALTABAEI, Ahmet Mohsin Abbas, (Masters thesis) An Evaluation of Knowledge and Attitudes to Nutrition in Type 1 and Type 2 Diabetes Patients Receiving Hemodialysis Treatment, Çankırı, 2021.

Background/aim: In chronically ill patients, there are progressive and irreversible changes in bodily function. This has a negative effect on the quality of life. One of these diseases is kidney disease related to diabetes, diabetic nephropathy. The aim of the study was to evaluate the knowledge and attitudes to nutrition of type 1 and type 2 diabetes patients receiving hemodialysis treatment.

Methods: The research was conducted as a descriptive and cross-sectional study in the Dialysis Unit of the Diwaniyah Hospital in Iraq. Quantitative research was used in the design of the study. 30 type 1 and 30 type 2 DM patients who agreed to participate were taken into the study without any sample selection process. The patients were asked questions on their sociodemographic characteristics to evaluate their knowledge and attitudes on nutrition. Data collection was by the face to face questioning technique. Evaluation was performed with the use of percentages, chi-square, and independent t-test.

Results: In type 1 and type 2 diabetes patients, statistical significance was found in age, marital status, income status and primary kidney disease in those who took snacks and in those who used a number of methods to quench their thirst ($p < 0.05$). Significance was found between type 1 and type 2 DM patients, between weight before and after dialysis, and between systolic and diastolic blood pressure before and after dialysis ($p < 0.05$). Also, statistical significance was found between HbA1c and blood sugar levels in these patients ($p < 0.05$).

Conclusion: In dialysis patients with type 1 or type 2 DM, Hb1Ac and glucose levels are high, and diabetes management was inadequate, and sociodemographic characteristics such as age, marital status, economic level, the presence of kidney disease in the family, BMI and snacking had an effect on diabetes management. It is recommended that new experimental nursing planning and the implementation of interventions be carried out focused on solving problems in strengthening diabetes self-management through individualized training, monitoring and counselling for patients.

Keywords: Diabetes, kidney disease, nutrition, nursing method.



1. INTRODUCTION

The word ‘chronic’ comes from the Greek word ‘*chronos*’, meaning ‘time’. Health problems relating to medical causes or symptoms or conditions requiring long-term care of three months or more are described as ‘chronic illnesses’. In chronic illnesses, there are progressive and irreversible changes in the functions of the human body, and for this reason, medical care, monitoring and treatment are necessary.

Chronic illnesses can also be described as non-communicable diseases (NCDs), that is, diseases which have a genetic basis and do not arise from an infectious agent or which derive from lifestyle or environmental exposure (Durna, 2012).

With advances in technology, developments in diagnosis and treatment methods and increases in protective health services have extended lifespans and have enabled infectious diseases to be brought under control in many countries. However, changes such as the ageing of the world population, stressors arising from rapid urbanization, a reduction in physical activity, and changes in nutritional habits have caused an increase in the incidence and prevalence of chronic illnesses.

NCDs such as cardiovascular diseases, diabetes, obesity, some cancers, and chronic respiratory system diseases have a significant effect on human health. These diseases cause an estimated 36 million deaths every year. It is predicted that in the next ten years, the total number of deaths in the world caused by NCDs will increase by 17% (Durna, 2012; Kumsar and Yılmaz; 2014).

Chronic illnesses threaten not only the quality of life, but also the ability of a country to meet health demands from an economic and sociological standpoint. A high death rate has the negative effect on health systems of increasing health expenditure. At the same time, this constitutes a global threat. A person with a chronic illness cannot work or retires early, spends more time unemployed, pays out more for health systems but brings in less money, and has a negative effect on the

family's lifestyle. In addition, war is a reason for poor health conditions in many countries such as Iraq. Rates of death from disease rise significantly following a war, and for this reason society's standard health behaviors are seriously affected, and the disorder arising in these societies accelerates the emergence of chronic diseases which are difficult to control, caused by deficiencies in those countries' health resources (Baker, 2014).

Diabetes is one of these chronic diseases, and its micro and macrovascular complications have negative effects on human life. One of the complications seen is diabetic nephropathy, which progresses to late stage kidney failure. Rates of morbidity and mortality increase in patients with this condition. In these patients in particular, the most important rule is for individuals to manage their own illness and for them to form the skills to monitor themselves. Nurses must take each individual holistically, setting up individual diabetes management and monitoring.

1.1 Objectives of the study

The aim of this study was to evaluate the knowledge and attitudes to nutrition in diabetic patients receiving hemodialysis treatment.

1.2 Statement of The problem

The problem statement can be summarized in the following question: Is the state of nutrition knowledge and behavior different in type 1 and type 2 diabetic patients receiving hemodialysis?

1.3 Hypothesis of the study

The main hypotheses of the study are as follows.

H0: There is no correlation between the state of knowledge and behavior concerning nutrition in hemodialysis and certain variables.

H1: There is a correlation between the state of knowledge and behavior concerning nutrition in hemodialysis and certain variables.

1.4 Limitation of the study

The basic limitation of the study is the deficiency in the sample (random) and the weakness of the sample.

1.5 Assumptions of the study

Nutrition is one of the most important concepts in the management of diabetes, and the management of diabetes of patients with poor adherence to nutrition is bad.



2. LITERATURE OF REVIEW

1. 2.1 General View

In Turkey and in the rest of the world, diabetes is one of the most frequently seen chronic illnesses which affect people biologically, psychologically and socially. In 2019, 8.3% of people in the world were estimated to be diabetic; if measures are not taken, this figure is expected to be 9.2% in 2030 and to rise to 9.6% by 2045 (IDF, 2019, <https://www.diabetesatlas.org/en/sections/demographic-and-geographic-outline.html>, accessed 5 January 2021).

Diabetes is a metabolic disease in which a shortage of the hormone insulin secreted by the pancreas or a problem with the effect of insulin makes the organism unable to benefit from fats, proteins and carbohydrates in the way it should, resulting in the need for lifelong monitoring, treatment and care (Olgun et al., 2020).

Type 1 diabetes is a type of diabetes arising from a shortage of insulin relating to damage to the beta cells of the pancreas or their total loss, and insulin dependence (ADA, 2018).

Type 2 diabetes is a chronic metabolic disorder in which the hormone insulin which regulates glucose levels in the blood is secreted inadequately, or adequately but it cannot be used, resulting in hyperglycemia. Type 2 diabetes pathogenesis is related to a reduction in targeted insulin activity through frequent insulin resistance in the liver, muscle and fat tissues, and beta cell dysfunction (ADA, 2018).

Diabetic Nephropathy

Diabetic nephropathy from microvascular complications of diabetes and urinary system infections arise when there is no other renal disease or heart disease. Generally, hypertension and proteinuria appear together, and in adult patients, nephropathy is generally a cause of mortality and morbidity. The disease progresses silently in five stages, and scanning for microalbuminuria is recommended from the time of diagnosis of final stage disease, and from an average five-year period of type 1 diabetics. In order to research nephropathy, it is necessary to both measure microalbuminuria and to calculate glomerular filtration rate (e GFR). In order to do this, the albumin/creatinine ratio must be examined in the first urination in the morning.

The time when diabetic nephropathy appears is affected by the diabetic's age, race, gender, and, as it advances, frequently by hyperglycemia and hypertension factors. In addition, hyperlipidemia and cigarette smoking have an effect. Hyperglycemia starts the pathological process in the early stages of diabetic nephropathy, while at advanced stages, the process is greatly accelerated by hypertension (HT) (Duran et al., 2014; Bingöl and Topbaş 2018).

Stages of Diabetic Nephropathy

1- The hyperfiltration stage (Stage 1)

At this stage, the observed change is an increase in the glomerular filtration rate (GFR). If at diagnosis $GFR > 150 \text{ ml/min}$, the risk of developing nephropathy is high. Also, reversible kidney enlargement may occur at this stage.

2- The silent stage (Normoalbuminuria stage) (Stage 2)

At this stage, the level of GFR continues, but albumin in the urine exceeds its normal level. During exercise, microalbuminuria can be seen. This stage lasts for between approximately five and 15 years, and for this reason is difficult to distinguish from the first stage. At this stage, medical treatment consists of ensuring ideal control of glycemia, a protein-restricted diet, and treatment to keep hypertension under control.

3- The stage of the start of nephropathy (Microalbuminuria) (Stage 3)

After diabetes begins, microalbuminuria is seen in 30-50% of patients, and in 80% of these patients, nephropathy develops within 10-15 years. In those with microalbuminuria, there is a 20 times greater risk of kidney disease than in those whose albuminuria is normal. GFR remains high, or returns to a normal range, and blood pressure begins to increase in 60% of patients. Structural changes increase in kidney glomeruli, and, different from other stages, GFR begins to fall. For these reasons, microalbuminuria measurement must be performed in diabetics at the time of diagnosis and regularly once a year if there are no problems.

4- The clinical nephropathy stage (Macroalbuminuria) (Stage 4)

The characteristic features of stage 4 are the formation of focal glomerular sclerosis and macroproteinuria. Because of nephrotic breakdown, GFR may be reduced by 80% in 30% of patients.

5- End stage kidney failure (ESKF) (Stage 5)

As GFR continues to fall, ESKF can develop. In stage 5 final stage kidney disease (ESKD) or chronic kidney disease (CKD), GFR falls to below 15mL/min. At this stage, hemodialysis, peritoneal dialysis or kidney transplant must be performed (Nazar, 2014; Gökdoğan, 2011; Erol, 2013; Waden et al., 2008).

In the ADA targets for the prevention of microvascular complications of 2018:

- 1- First, blood glucose levels must be kept within optimal limits in order to slow diabetic nephropathy.
- 2- Blood pressure control must be kept within optimal limits.
- 3- For those with diabetic kidney disease but not having dialysis, protein dietary intake must be approximately 0.8g/day. For dialysis patients, protein intake must be taken into account at higher levels.
- 4- For patients with HT, the regular use of medication,
- 5- assessment of GFR, microalbuminuria and potential kidney disease complications
- 6- and the importance of medical monitoring and care must be explained to patients (Microvascular Complications and Foot Care: Standards of Medical Care in Diabetes—2018 American Diabetes Association Diabetes Care 2018 Jan; 41(Supplement 1): S105-S118. <https://doi.org/10.2337/dc18-S010>. Access date: 5 January 2021).

Nursing Approach

- 1- At stages 1 and 2, the most important rule in preventing chronic complications in DM is to be able to manage an individual's illness and to form the skill of self-monitoring. The principles of DM management are to be able to effectively implement oral antidiabetics or insulin treatment, medical nutrition therapy (MNT) and exercise.
- 2- Monitoring patients' fasting and postprandial blood sugar, glucosuria and ketonuria is important. It is recommended that a patient's blood pressure should be lower than 130/80 mmHg, proteinuria less than 0.5g/24h, and HbA1c less than ca. 7% (53mmol/mol).

- 3- Being able to correctly manage hypo- and hyperglycemia and to achieve adherence to recommended MNT will reduce the risk of chronic complications with correct and effective exercise.
- 4- Achieving good glycemic control reduces the amount of microalbuminuria and the speed of advance of nephropathy.
- 5- An explanation must be given to patients about the use, effects and side effects of statins, which are used to reduce lipid levels, because they cause the development of dyslipidemia, glomerulosclerosis and advancing kidney disease in diabetic patients.
- 6- Diet and exercise planning must be carried out. In this way, both cardiovascular risks are reduced, and a positive contribution is made to preventing the development of nephropathy in the kidneys.
- 7- Quitting smoking will contribute to reducing the cardiovascular risks and renal function loss which may develop with smoking at this time.
- 8- At stage 3, in addition to the measures performed at stages 1 and 2, blood pressure control and keeping blood pressure under 130/85mmHg to prevent HT, restricting salt, taking exercise, keeping blood sugar under control, and reducing protein intake are necessary. A large proportion of fruit, vegetables, grain, low-fat milk products, poultry, fish and nuts in the diet and a Mediterranean diet are recommended.
- 9- At stage 4, adherence to diet is the most important topic. In this regard, restricting salt to 2-3g/day – not adding salt to food, eating unsalted bread, not eating ready foods because of their excessive salt content, not eating pickles – reducing the amount of protein in food (it should not exceed 0.8g/kg), eating main meals and snacks regularly, frequent monitoring of blood glucose levels, and monitoring input-output and daily weight are important. It has been reported that a low-protein diet reduces hyperfiltration in the early stages of diabetic nephropathy. This topic is still under discussion, but excessive protein intake is not recommended. Also, one of the basic aims of nutrition therapy in diabetic patients is to prevent an increase of triglyceride and total and LDL cholesterol levels, which increase the risk of cardiovascular disease, and a decrease in HDL cholesterol levels. For this, it is necessary to pay attention to the amounts and types of fat consumed. In the nutrition plan, less than 30% of total calories must be from fats, and it is

recommended that less than 10% of these should be saturated fats. Patients should be given information about nutrition, and adherence should be achieved.

10- Stage 5 is end stage kidney failure, and in addition to the above, nursing interventions are applied which are applied to kidney failure patients (Nazar, 2014; Gökdoğan, 2011; Erol, 2013; Waden et al., 2008).

2.1.2 Studies performed on the topic

The main aim of the treatment and care of diabetic patients is to reduce complications to a minimum and to prolong and increase the quality of life of patients by achieving good metabolic control. However, it is reported that most patients with diabetic kidney disease are not aware of their current condition, and that even hemodialysis patients to whom instruction is given on the topic do not have enough information. There are insufficient studies on this topic in the literature.

In a study by Özer et al. (2020) conducted with 68 diabetic kidney disease patients in Diyarbakır province in Turkey, it was found that HbA1c levels were >7% in 55.6% of patients, 29.4% were overweight, and that they did not adhere to recommended treatment and diet, they did not take regular exercise, and they did not regularly check their fasting blood sugar, postprandial blood sugar, HbA1c levels or cholesterol levels.

In a study by Mirani et al. (2010), in which glycemic monitoring was conducted on a total of 76 HD patients, 36 of whom were diabetic and 10 non-diabetic, it was found that diabetic dialysis patients had worse blood sugar control, that their glycemic fluctuation was greater than non-diabetic patients, especially on HD days, so that HD caused a breakdown of blood sugar control and a great increase in glycemic fluctuation.

It is reported in the literature that diabetic nephropathy is an important and progressively increasing public health problem worldwide, and despite significant developments in its prevention, the number of diabetic nephropathy patients is increasing and current treatment is wholly inadequate. Keeping hypertension to approximately 130/80mmHg and at most 140/80mmHg, regular use of antihypertensive drugs, regulation of lipid profile, a diet with a maximum of 0.8k/kg of protein, and patients losing weight and regulating their lifestyle are reported to

have a positive effect in managing hyperglycemia and hypertension (Stanton RC, 2014; Yakush Williams JK, 2017; Mirani et al., 2010).

3. MATERIALS AND METHODS

This section is concerned with design, administrative arrangements, sample and location, instrument, pilot, and data collection and analysis.

3.1 Design

This descriptive and cross-sectional type of study was conducted at the Diwaniyah Hospital Dialysis Center in Iraq. Quantitative research was used in the planning of the study.

3.2 Sample and Setting

The simple randomized sampling method was used. Patients were taken into the study who were over the age of 18, who had had type 1 or type 2 diabetes for at least six months and who had been receiving treatment for six months, who had no hearing impediments, and who joined the study voluntarily.

3.3 Data Collection Instruments

A questionnaire prepared by the researcher and his advisor were used to collect data on the individuals' sociodemographic characteristics and nutrition in dialysis.

3.3.1. Socio-demographic form; The first part collected information on the participants' age, gender, education level, marital status, profession, income status, primary kidney disease and dialysis age. Also, questions created after a scan of the literature were asked by the researcher and advisor on diet and fluid restriction (EK...)

3.4 Data collection method

A questionnaire and the face to face questioning method were used to collect data. The data collection process took 15-25 minutes on average.

3.5 Research variables

The dependent variable was knowledge and attitude concerning diet and nutrition, and the dependent variables were age, gender, education level, marital status, profession, primary kidney disease, dialysis age and biochemical parameters of the blood.

3.6 Pilot study

A pilot study was conducted for the assurance of questionnaire for a sample of ten. The study was conducted for the period of 11 May and 1 November 2020.

3.7 Data Analysis

Analysis of data in the study was undertaken using SPSS, and two statistical approaches were used in the study data analysis to determine whether the study had reached its targets. It is thought that the results carried great importance. The significance level was taken as $p \leq 0.05$.

3.8 The ethical aspect

Approval to conduct the study was obtained from the Ethics Committee of Çankırı Karatekin University, and additional approval was obtained from the Diwaniyah Health Directorate and Diwaniyah Hospital (EK...).

4. RESULTS

This section presents the findings of the data analysis within a systematically conducted approach. This type of presentation is reported as follows, according to the targets of the study.

Table 4.1: Sociodemographic characteristics of type 1 and type 2 DM patients (n=60)

Demographic data		Type I DM (n= 30)	Type II DM (n=30)	X ² value	P value
Gender	Male	19 (63.33)	20 (66.66)	0.073	0.787
	Female	11 (36.66)	10 (33.33)		
Age	Less than 30	10 (33.33)	0 (0)	13.38	0.001*
	30-50	18 (60)	23 (76.66)		
	More than 50	2 (6.66)	7 (23.33)		
Marital status	Married	20 (66.66)	30 (100)	12	0.001*
	Single	10 (33.33)	0 (0)		
Education level	Illiterate	6 (20)	6 (20)	12.307	0.679
	Literate	10 (33.33)	6 (20)		
	Primary school	7 (23.33)	10 (33.33)		
	Middle school	5 (16.66)	4 (13.33)		
	High school	2 (6.66)	4 (13.33)		
	Diploma	0 (0)	0 (0)		

Profession	University	2 (6.66)	4 (13.33)	2.382	0.497
	Housewife	14 (46.66)	9 (30)		
	Manual worker	6 (20)	5 (16.66)		
	Office worker	5 (16.66)	7 (23.33)		
	Self employed	5 (16.66)	9 (30)		
Income status	Income > expenditure	1 (3.33)	0 (0)	7.12	0.028*
	Income = Expenditure	11 (36.66)	21 (70)		
	Income < Expenditure	18 (60)	9 (30)		
Years of dialysis	Less than 1 year	1 (3.33)	0 (0)	1.15	0.561
	1-3 years	16 (53.33)	18 (60)		
	More than 3 years	13 (43.33)	12 (40)		
Primary kidney disease	Hypertension	8 (26.66)	7 (23.33)	15.73	0.015*
	Hypertension + other (glomerulonephritis, peripheral neuropathy)	22 (73.4)	23 (76.7)		

Significance was found between the variables of age, marital status, income status and primary kidney disease of type 1 and type 2 diabetic patients ($p < 0.05$), but no significant difference was found between the other sociodemographic variables.

Table 4.2: Distribution of knowledge and attitudes of patients concerning nutrition

		type I DM (n=30)		type II DM (n=30)		X2 value	P value
		N (%)		N (%)			
Does anyone else in your family have chronic kidney failure?	Yes	8 (26.66)	1.266	1 (3.33)	1	6.40	0.011*
	No	22 (73.3)		29 (96.)			
What is your daily fluid consumption in cc?	cc	2800	670	2600	640	0.837	0.410
Can you urinate?	Yes	12 (40)	1.40	6 (20)	1.2	2.85	0.091*
	No	18 (60)		24 (80)			
Do you keep to your diet?	Yes	10 (33.3)	1.40	4 (15.3)	1.13	3.35	0.067
	No	20 (66.6)		26 (86.)			
Have you not kept to your diet in the past 15 days?	Yes	15 (50)	1.5	16 (53.)	1.53	0.067	0.796
	No	15 (50)		14 (46.)			
Do you have snacks?	Yes	25 (83.3)	1.83	30 (10)	2	5.45	0.020 *
	No	5 (16.66)		0 (0)			
Do you	Yes	14 (46.6)	1.46	13 (43.)	1.43	0.067	0.795

conform to fluid restrictions ?	No	16 (53.3)		17 (56.)				
Have you not conformed to fluid restrictions in the past 15 days?	Yes	12 (40)	1.4	18 (60)	1.6	2.4	0.121	
	No	18 (60)		12 (40)				
Have you had instruction on diet and fluid restriction?	Yes	2 (6.66)	1.06	3 (10)	1.1	0.218	0.640	
	No	28 (93.3)		27 (90)				
Do you check your blood sugar throughout the day?	Yes	29 (96.6)	1.96	30 (10)	2	1.017	0.313(NS)	
	No	1 (3.33)		0 (0)				
			type I DM(n=30)		type II DM (n=30)		X2 value	P value
			N	%	N	%		
What methods do you use to quench your thirst?	snow	14	46.66	13	43.33	8.34	0.08*	
	Water	8	26.66	5	16.66			
	Fruit	2	6.66	10	33.33			
	Sleep	1	3.33	0	0			
	Regularl	5	16.66	2	6.66			

		y drink water					
Do you know which foods contain potassium?	Yes	16 (53.33)	1.53	17 (56.66)	1.56	0.067	0.795
	No	14 (46.66)		13 (43.33)			
Do you know which foods contain phosphorus ?	Yes	16 (53.33)	1.53	17 (56.66)	1.56	0.067	0.795
	No	14 (46.66)		13 (43.33)			
Do you know which foods have a high sugar content?	Yes	30 (100)	2	30 (100)	2	0	1

Table 4.2 shows the patients' knowledge and attitude concerning nutrition. Statistical significance was found in those with family members with kidney disease, those who could urinate, those who took snacks, and those who used various methods to quench their thirst compared with other patients ($p < 0.05$).

Table 4.3: Distribution of various sociodemographic variables and parameter levels before and after dialysis in type 1 and type 2 DM patients

	Type 1 DM (n=30)		Type 2DM (n=30)		T value	P value
	Mean	SD	Mean	SD		
BMI	21.33	1.44	25.6	3.48	6.98	0.00*
Weight before dialysis	57.73	3.47	69.46	6.03	6.527	0.00*
Weight after dialysis	55.13	3.77	66.93	5.75	6.643	0.00*
BP before dialysis (mmHg)						
Sistolic blood pressure	137	9.31	139	7.94	4.37	0.00*
Diastolic blood pressure	87	4.92	95.66	4.95	4.81	0.00*
BP after dialysis (mmHg)						
Sistolic blood pressure	117.33	9.19	118.33	6.93	7.04	0.00*
Diastolic blood pressure	75.66	4.95	87.33	4.16	4.38	0.00*

Type 1 and type 2 DM patients' BMI, age, weight before and after dialysis, and reduction in systolic and diastolic blood pressure before and after dialysis were found to have statistical significance ($p = 0.00$).

Table 4.4: Distribution of Hg (A1C) and glucose levels in type 1 and type 2 DM patients

	Type 1 DM		Type 2 DM		T value	P value
	Mean	SD	Mean	SD		
Hb (A1C) (%)	11.54	1.12	10.73	0.96	2.132	0.04*
Glucose (mg / dL)	364.4	70.8	241.06	42.3	5.787	0.00*

It was seen that the Hb (A1c) and glucose levels of type 1 and type 2 DM patients were high, and that there was statistical significance between the two groups of patients.

5.DISCUSSION

This section contains detailed interpretations of the study findings, and systematically discusses these findings with supporting evidence from writing on the subject.

5.1 Discussion socio-demographic characteristics among persons Type 1 and Type 2 DM.

This study was conducted with a total of 60 type 1 and type 2 diabetic patients at Diwaniyah Teaching Hospital Specialized Dialysis Center.

In Table 4.1, statistically significant differences were found between the type 1 and type 2 DM groups with regard to age, marital status and monthly income level ($p < 0.05$).

In Iraq, age and gender were matched when determining type 1 and type 2 diabetes cases, and the age of the patient group was 33-56 years. According to the diabetes atlas of the International Diabetes Federation, approximately half of diabetic adults (232 million) are between 40 and 59 years of age. It is thought that there will be a greater increase inside this age range in the coming years (International Diabetes Federation (IDF), 2019: Diabetes Atlas, seventh edition, IDF Atlas 2015 UK pdf. Access date: 05.01.2021).

Such sociodemographic characteristics as income status and marital status do not play a role as direct factors in the etiology of type 2 diabetes. One of the most important points in the management of diabetes is adequate and balanced nutrition, and the topic of nutrition is related to socio-economic status. In a study by Evans et al. (2000) with 792 type 1 and 5474 type 2 diabetic individuals, the effect of income level on the prevalence of type 1 and type 2 diabetes was investigated, and it was found that the prevalence of type 1 diabetes showed no significant difference according to income level, but that the prevalence of type 2 diabetes showed an increase in parallel with an increase in income level (Evans et al., 2000). Also, it is reported in the literature that the strength to cope with CRF is greater in individuals whose economic income is high. It is emphasized in this regard that income level is an important factor in access to and awareness of health services (Sarı, 2015; Göker 2008). In our study in contrast, income levels were lower than expenditure levels in type 1 DM patients, and we believe that this had a negative effect on diabetes control. It was found in our study that the income level of 60% of individuals with type 1 DM was less than expenditures. Having income less than expenditure is a factor which makes nutrition and appropriate use of health services more difficult. We feel that this finding reveals a disadvantage for those participating in the study in achieving effective diabetes management.

The adaptation of those with CRF to their illness is affected directly or indirectly by many factors such as age, gender, culture, education level, place of residence, help from family and friends, economic level and access to social assistance. This suggests that CRF is not only physiological but also social in nature. In the literature, it is reported that individuals who are married or who have close relations with family and friends adapt better to their illness, they answer better to treatment, and tend to live longer (Sarı, 2015; Göker, 2008). In our study, most of the patients were married, and it is thought that this was a positive factor in the management of CRF. In a study by Buğdaycı and Olgun (2017) with 210 type 2 DM patients on nutrition behavior and affecting factors, it was emphasized that most diabetic individuals were married and that this contributed positively to the management of their diabetes. Our findings support the literature.

As shown in Table 4.2, patients were asked about their knowledge and attitudes concerning nutrition. Statistical significance was found in those who had

kidney disease in their families, those who ate snacks, and those who quenched their thirst in a number of different ways compared to the other patients ($p<0.05$). It was found in our study that 27% of patients with type 1 diabetes had kidney disease in their families. In a study by Özer et al. (2018) with 68 patients evaluating the state of diabetes management of hemodialysis patients, it was reported that 25% of the patients had one case of kidney disease in the family. Our study had similar findings. What is important in diabetes management is dietary habit. In the nutrition of diabetic patients, first the person's individual characteristics must be considered, then an adequate and balanced diet must be arranged which will provide energy and nutritional needs and ensure that meals are not missed. Only in this way can blood sugar control be achieved. When meals are taken at widely spaced intervals without snacks in between, hypoglycemia and hyperglycemia can result. It was found that all type 2 diabetic patients took snacks, as did 83% of type 1 patients. In a study by Buğdaycı and Olgun (2017) to determine the nutrition behavior of 210 type 2 diabetics, it was found that 80.5% of the patients conformed to their main meals and snacks. We are of the view that patients' adherence to their diets will make a positive contribution to reducing symptoms and complications of their illness. In adherence to patients' restriction of fluids, there are two type of self-care strategy. The first is for the amount of fluid consumed daily to be the amount recommended in the treatment. The basis of this strategy is to measure all of the fluids consumed by the patient over the whole day, that is fruit juices, the liquid in fruits and vegetables, all other liquids consumed, and foods containing liquid. The second strategy is directed at reducing symptoms of thirst, and for this, such methods are applied as hard sweets, chewing gum or artificial salivation inducers, reducing salt intake to below 2g/day, sucking on ice, and drinking mouthful by mouthful. These two strategies are recommended by the health team in order to assure adherence to patients' fluid restriction (Welch and Davis, 2000). Consistent with the literature, it was found that our patients applied these methods in relation to thirst.

It was found, as seen in Table 4.3, that a reduction was seen in the BMI of the type 1 and type 2 DM patients, their pre- and post-dialysis weight, and their pre-and post-dialysis systolic and diastolic blood pressure, and that this was statistically significant ($p=0.00$).

In our study, it was seen that the BMI of type 2 DM patients was higher than that of type 1 DM patients, and that this was statistically significant. In a systematic review performed by Mansour and Basrah (2015) on the prevalence of diabetes in Iraq, it was found that BMI and HT were more related to type 2 diabetes, and that BMI of more than 25.4 in men and BMI of more than 26.1 in women and HT increased risks. It is stated in the literature that obesity is the main factor in type 2 DM, and that generally BMI is high in these patients (Torgenson, 2004).

Before dialysis, parameters such as patients' blood pressure, weight, pulse rate, temperature and edema were assessed routinely in order to assess patients' hemodynamic state, before, during and after treatment. The blood pressure value measured before and after hemodialysis is accepted as an indicator of cardiovascular mortality: both high and low blood pressure values are associated with increased mortality (Khan et al., 2016; Duman et al., 2020). Blood pressure measured during dialysis treatment also gives information on the patient's cardiovascular hemodynamic state. In hemodialysis, patients' blood volume is reduced by ultrafiltration, and as a result blood pressure values after dialysis are lower than before dialysis. Blood pressure rises again as blood volume is replenished from the interstitial compartment (Kooman et al., 2007). In a study by Duman et al. (2020) comparing blood pressure values measured routinely and according to standards in 76 HD patients, it was reported that after HD, there was a reduction in systolic and diastolic blood pressure. The findings of our study support the literature.

The fluid which patients consume between two dialysis sessions (interdialytically) or water resulting from the metabolism of food is removed from the body by ultrafiltration (UF). In patients with excessive interdialytic fluid intake, it is necessary to increase the amount of UF during dialysis. It is recommended in the literature that weight between two dialyses should vary by 2-3kg. Excessive UF brings on hypotension and muscular cramp, and results in longer dialysis treatment. Early termination of dialysis treatment leads to both insufficient dialysis and insufficient UF. For this reason, it is very important to assess fluid volume in hemodialysis patients, and to ensure that they conform to fluid restriction. In order to assess fluid volume in hemodialysis patients, it is necessary to first correctly determine their dry weight. Dry weight is the weight of the patient without any complication in dialysis. When patients do not approach their dry weight at the end

of dialysis, the load on the circulation is aggressively increased, leading to a significant increase in morbidity and mortality. It was seen in our study that pre-dialysis weight was greater in type 2 DM patients than in type 1 patients. We think that this may be because patients' fluid restriction adherence control is less than that of type 1 DM patients. It is reported in the literature that when hemodialysis patients' fluid control adherence and behaviors are positive, there is a reduction in the uptake of inter dialytic fluid and the amount of UF. This has clinical importance (Hoenich et al., 2003; Wilson et al., 2004; Balım et al., 2016).

It is seen in Table 4.4 that the Hb A1c and glucose levels of type 1 and type 2 DM patients were high, and the difference between the two groups was found to be statistically significant. HbA1c gives us an idea of the 2-3 month average glucose level in the blood and at the same time of diabetes complications. It is reported in the literature that there is a strong correlation between glycemic control and complications. The American Diabetes Association (ADA) recommends that the HbA1c level should be below 7%. In our study, it was found that these values were at a much higher level, and that in connection with this, patients' blood sugar levels were found to be very high. It is stated in the literature that diabetic patients with kidney failure going into dialysis have worse blood sugar control than non-diabetics, that glycemic fluctuations in these patients are greater, especially on the day of hemodialysis, and that hemodialysis causes an upset in blood sugar control and a great increase in glycemic fluctuations in diabetic patients. It is recommended that in particular, glycemic fluctuations should be monitored in hemodialysis patients by CGMS (continuous glucose monitoring system) because HbA1c values vary, directly affected by the erythrocyte level along with the blood that is taken in a hemodialysis session, and glycemic fluctuation is highly and directly related to hypoglycemia and cardiovascular mortality (Subramanian et al, 2018; Baştürk et al. 2016; Mirami et al. 2010). In a study conducted by Özer et al. (2020) in Diyarbakır province, Turkey, with 68 diabetic kidney patients, patients' HbA1c levels were found to be above 7%, and our findings support the literature.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

According to our results, the study had the following implications:

1. The Hb1Ac and glucose levels of type 1 and type 2 DM dialysis patients are high, and their diabetes management is inadequate.
2. Sociodemographic characteristics such as age, marital status, economic level, the presence of kidney disease in the family, BMI and snacking have an effect on the management of diabetes.

6.2 Recommendations

Based on the early of the list of conclusions, it is recommended that

1. Patients' diabetes self-management should be strengthened by providing regular individualized instruction, monitoring and counselling, and
2. New experimental nursing planning and interventions should be implemented, focused on the solution of these problems by determining the factors hindering adherence to treatment.

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EKLER

EK 1:Etik kurul onay

EK 2: görevini kolaylaştırmak

EK3: QUESTIONNAIRE

An Evaluation of Knowledge and Attitudes to Nutrition in Type 1 and Type 2 Diabetes Patients Receiving Hemodialysis Treatment

We invite you to the research study entitled “An Evaluation of Knowledge and Attitudes to Nutrition in Type 1 and Type 2 Diabetes Patients Receiving Hemodialysis Treatment” by Ahmet Mohsin Abbas ALTABAEI. Before deciding whether to participate in this research, you need to know why and how it will be conducted. For this reason, it is very important to read and understand this form. If there is anything which you do not understand or which is not clear to you, or if you wish to have more information, ask us. Participation in this study is entirely voluntary. You have the right not to participate, or, after joining, to leave the study at any moment. Your responding to the study will be interpreted as your approval to participate in the research. When responding to the questions on the form given to you, do not answer under pressure or at the prompting of any other person. The personal information obtained on this form will be kept entirely confidential, and will only be used for research purposes.

Sociodemographic characteristics

1.Age:..... **2.marital status:** married (...) single (...)

3. Profession housewife (...) manuel worker (...) Office worker (...) Self employed (...)

4. Education level

1- Illiterate 2- Literate 3- primary school 4- middle school 5- high s 6- university 7-master

5. Income status 1- Income > expenditure 2- Income = expenditure 3- Income < expenditure

6. years of hemodialysis :

7. Primary kidney disease

1) DM 2) HT 3) GN 4) PN 5) Polikistik 6) Amiloidoz 7)another.....

8. Does anyone else in your family have chronic kidney failure? 1)yes 2)no

9. What is your daily fluid consumption in cc?.....cc.

10. Can you urinate? 1)yes 2)no

If your answer is yescc

11. Do you keep to your diet? 1)yes 2)no

12. Have you not kept to your diet in the past 15 days? 1)yes 2)no

13. Do you have snacks? 1) yes 2) no

14. Do you conform to fluid restrictions? 1)yes 2) no

15. Have you not conformed to fluid restrictions in the past 15 days? 1)yes 2)no

16. Have you had instruction on diet and fluid restriction? 1)yes 2)no

17. Do you check your blood sugar throughout the day? 1)yes 2) no

18. What methods do you use to quench your thirst?.....

19. Do you know which foods contain potassium? 1) yes 2) no.....

20. Do you know which foods contain phosphorus? 1)yes 2)no.....

21. Do you know which foods have a high sugar content? 1) yes 2)no.....

BİYOKİMYASAL PARAMETRELER

Albumin	Kreatin
Serum Total Protein	Urik asit
Serum CRP	Glikoz
Eritrosit Sayısı	BUN
TDBK	PTH
Ferritin	TG
Fe	Total kolesterol
Serum NA	LDL
Serum K	HDL
Serum P	MCH
Serum Ca	MCV
AST	Ure
ALT	WBC
Hb	Htc
Kt/V	
Hemoglobin A1C	

نموذج المعلومات الاجتماعية الديموغرافية

1- عمر أعزب من

3- الحالة الزوج

4- المهنة حساباته الخاص

عامل ف يعمل

5-المستوى التعليمي :

1- غير قادر على القراءة علم لغة -4

7- جامعة

6-الدخل الشهري :

1- أكثر من مصر من الدخل
2- ما يعادل مصر دخل
3- ا

7- كم سنة وانت تقوم بفعل سنة

8- هل مرض الكلى الأساسي لديك .

ي -2 -1 ض

3- اعتلال العصب الطرفي
كيسات
4- التهاب كيس الساعد
5- كيبات
6- اخرى

9- هل يوجد مريض آخر يعاني من فشل كلوي مزمن ☐ مرة؟ ☐ لا (2)

10- ما هو معدل استهلاكك اليومي للسوائل بوحدة ☐؟ ☐ سي سي

11- هل يمكنك التبول؟ ☐ ☐
إذا كانت الإجابة نعم ، فكم عدد المرات التي يمكنك القيام ☐

12- هل تتبع نظامك الغذائي؟ ☐ ☐

13- هل سبق لك أن اتبعت نظامك الغذائي في الـ 15 يومًا الماضية؟

☐ لا ☐

إذا كان الجواب نعم ، كم مرة ☐

14- هل لديك وجبة خفيفة؟ ☐ لا ☐

15- هل تمتثل لتقييد السائل ☐ ☐

16- هل امتثلت لقيود السوائل خلال الـ 15 يومًا الماضية؟ ☐ لا ☐

إذا كان الجواب نعم ، كم مرة ☐

17- هل تلقيت التدريب على النظام الغذائي وتقييد السوائل ☐ لا ☐

18- هل تقوم بفحص نسبة السكر في الدم خلال النهار؟ ☐ لا ☐

Hemoglobin A1C

PATIENT MEASUREMENTS

وزن المريض بعد الغسل:

وزن المريض قبل الغسل :

- كمية سحب السوائل الزائدة بالكيلوا:

UF:

Bp before dialysis:

Bp after dialysis:

Length:

BMI:

EK 4. ÖZGEÇMİŞ

CURRICULUM VITAE (C.V)

Surname : Ahmed AL-tabtabaie

Education status : University

License Nursing : 2003, University of Baghdad , College of Nursing

Professional Experience : Nursing in the fields of (cardiac resuscitation unit, cardiac stress unit, Holter unit, clinical ward, Operation Nursing , nursing administration)

Scientific Institutions of which it is a member : Higher Institutes of Nursing Health

Scientific Study Areas : Public Health Nursing

Scientific Activities : Courses and conferences in the field of Nursing Administration, Assistant Director of Nursing Affairs at Diwaniyah General Hospital. Director of Nursing Affairs at the Department Center. In charge of the Continuing Education Unit at Diwaniyah General Hospital

Other informations : Participate in oncology nursing in India