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NURSES' KNOWLEDGE TOWARD NUTRITIONAL MANAGEMENT FOR PATIENTS WITH CHRONIC RENAL FAILURE IN AL- SAMAWAH CITY,

Ali Kareem Neamah NEAMAH

Advisor

Asst. Prof. Dr. Nedret TEKİN KAYA

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NURSES' KNOWLEDGE TOWARD NUTRITIONAL MANAGEMENT FOR PATIENTS WITH CHRONİC RENAL FAILURE IN AL- SAMAWAH CITY, IRAQ

BY

Ali Kareem Neamah NEAMAH

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The Department of Nursing

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SUPERVISOR

Asst. Prof. Dr. Nedret TEKİN KAYA

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ACCEPTANCE AND APPROVAL

Ali Kareem Neamah NEAMAH, graduate student of Çankırı Karatekin University Institute of Health Sciences with the number of 208210252, has successfully presented her thesis entitled " Nurses' knowledge toward nutritional management for patients with chronic renal failure in AL- Samawah City, Iraq" before the jury whose signatures are below, after fulfilling all of the requirements determined by the relevant regulations for the degree of Master of Science:

		Date :
Members of discussion committee		**19/06/2023**
Chairman:	**Asst. Prof. Dr. Nedret TEKIN KAYA** **Çankırı Karatekin University**	**……** **…** **Signature**
Committee Member:	**Assoc. Prof. Dr. Esra YILDIZ** **Atatürk University**	**……** **…** **Signature**
Committee Member:	**Asst. Prof. Dr. Özlem BULANTEKİN DÜZALAN** **Çankırı Karatekin University**	**……** **…** **Signature**

Approved for the Graduate School of Health Sciences

Assoc. Prof. Dr. Nazan KAYTEZ

Director of Graduate School

ETHICS STATEMENT

The thesis entitled “Nurses' knowledge toward nutritional management for patients with chronic renal failure in AL- Samawah City, Iraq” which was prepared and presented as a thesis, was written by myself and in accordance with the scientific, academic rules and ethical conduct. The idea/hypothesis of my thesis solely belongs to my supervisor and to me. The research pertaining to the thesis was conducted by myself and therefore, all of the used sentences and interpretations within the work belongs to me.

I declare the aforementioned issues to be correct.

2023

Ali Kareem Neamah NEAMAH

ABSTRACT

NURSES' KNOWLEDGE TOWARD NUTRITIONAL MANAGEMENT FOR PATIENTS WITH CHRONIC RENAL FAILURE IN AL- SAMAWAH CITY, IRAQ

Ali Kareem Neamah NEAMAH

Master of Science in Nursing

Advisor: Asst. Prof. Dr. Nedret TEKİN KAYA

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Aim: Objectives of the study were to assess nurses' knowledge towards nutritional management of chronic renal failure patients and to find the relationship between nurses' knowledge and sociodemographic status.

Methodology: In this research, a descriptive design was used. In the study, 200 nurses working in dialysis units and dialysis services at Al-Hussein Teaching Hospital in AL Samawah City, Iraq were included in the sample. In the study, data were collected between April and July 2022. The questionnaire used in the study consists of two parts: the first part includes sociodemographic information, and the second part includes questions to determine the nutritional knowledge of nurses in patients with chronic renal failure. Frequency distribution tables were created and evaluated for each question of the scale. Data were analyzed using SPSS version 25. Independent Sample t-Test, number, percentage, mean, median, standard deviation and one-way ANOVA were used in the evaluation of the data. Face-to-face interviews were conducted to compile the data.

Results: In the study, 54.5% of the nurse were between the ages of 20 – 24; female 66.5 % ; unmarried nurse 54% ; education level high school nursing 46.5%; working experience of 3-5 year 51.5%; number of courses 1-2 times 81.4%; time of courses 1 weekwas found to be 76.7%. It was determined that most of the nurses (60.5%) had good knowledge. There was a statistically significant correlation between the nurses' knowledge and their degree of nursing education ($p<0.01$). Nurses with bachelor's degrees were more knowledgeable than their other colleagues.

Result: It is recommended to carry out a training program for all nurses working with patients with chronic renal failure, to continue researches on the evaluation of the knowledge of nurses working in dialysis units, and to improve their knowledge by ensuring that nurses complete their undergraduate and graduate education.

2023, 64 pages

Key Words: Nurse, Knowledge, Nutritional management, Chronic renal failure.

ÖZET

HEMŞİRELERİN, IRAK, AL-SAMAWAH ŞEHRİNDEKİ KRONİK BÖBREK YETMEZLİĞİ OLAN HASTALARDA BESLENME YÖNETİMİNE YÖNELİK BİLGİSİ

Ali Kareem Neamah NEAMAH
Hemşirelik, Yüksek Lisans
Tez Danışmanı Dr. Öğr. Üyesi Nedret TEKİN KAYA
Haziran 2023

Amaç: Çalışmanın amacı, hemşirelerin kronik böbrek yetmezliği olan hastalara beslenme konusundaki bilgilerini değerlendirmek ve hemşirelerin beslenme bilgileri ile sosyodemografik özellikleri arasındaki ilişkiyi belirlemektir.

Metodoloji: Bu araştırmada tanımlayıcı bir desen kullanılmıştır. Bu çalışma, tanımlayıcı bir desendedir. Irak'ın Samawah Şehrindeki Al-Hussein Eğitim Hastanesi'nin diyaliz servislerinde çalışan 200 hemşire örneklemi oluşturdu. Çalışmada veriler Nisan- Temmuz 2022 tarih aralığında toplanmıştır Çalışmada kullanılan anket iki bölümden oluşmaktadır: birinci bölüm sosyodemografik bilgileri içerirken, ikinci bölüm kronik böbrek yetmezliği olan hastalarda hemşirelerin beslenme bilgilerini belirlemeye yönelik soruları içermektedir. Ölçeğin her sorusu için frekans dağılım tabloları oluşturulmuş ve değerlendirilmiştir. Veriler SPSS 25 sürümü kullanılarak analiz edilmiştir. Verilerin değerlendirilme aşamasında bağımsız örneklem t testi, sayı, yüzde, ortalama, medyan, standart sapma ve tek yönlü ANOVA kullanılmıştır . Verileri derlemek için yüz yüze görüşmeler yapıldı.

Bulgular: Araştırmada hemşirelerin %54,5'i 20-24 yaş aralığında; %66,5'i kadın; hemşire %54'ü kadın; %46,5'inin eğitim düzeyi lise mezunu; %51,5'i 3-5 yıllık iş deneyimine sahip;%78,5'i eğitim kursuna katılmadı. Hemşirelerin çoğunluğunun (%60,5) bilgisinin iyi olduğu belirlendi. Sonuç, hemşirelerin proteine yönelik bilgileri dışında, hemşire cinsiyeti ve alt boyutlar arasında fark olmadığını gösterdi ($p>0.05$).

Araştırmada, hemşirelerin kronik böbrek yetmezliği olan hastaların beslenme yönetiminde önemli bir etkiye sahip olduğu bulundu. Hemşirelerin bilgi düzeyi ile hemşirelik eğitim derecesi arasında istatistiksel olarak anlamlı bir ilişki vardı ($p<0.01$). Lisans derecesine sahip hemşireler, diğer meslektaşlarına göre daha bilgiliydi.

Sonuç: Kronik böbrek yetmezliği olan hastalarla çalışan tüm hemşirelere yönelik bir eğitim programının yürütülmesi; diyaliz ünitelerinde çalışan hemşirelerin bilgilerinin değerlendirilmesine yönelik araştırmaların sürdürülmesi, hemşirelerin lisans ve lisansüstü eğitimlerini tamamlamalarını sağlayarak bilgilerinin geliştirilmesi önerilmektedir

2023, 64 sayfalar

Anahtar Sözcükler: Hemşire, Bilgi, Beslenme yönetimi, Kronik böbrek yetmezliği.

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Ali Kareem Neamah NEAMAH

Çankırı-2023

CONTENTS

INDEX OF ABBREVIATIONS AND SYMBOLS

ACR	Albumin-creatinine ratio
AKI	Acute kidney ınjury
BCE	Before common era
BMI	Body Mass Index
BMP	Baseline metabolic panel
BUN	Blood urea nitrogen
CBC	Complete blood count
CE	Common era
CKD	Chronic kidney disease
CI	Chloride
CU	Copper
DBP	Diastolic blood pressure
DIAAS	Digestible ındispensable amino acid score
ed.	Edition
EGFR	Estimated glomerular filtration rate
ESRD	End stage renal disease
EPT	Emergency procedures training
Freq.	Frequency
GFR	Glomerular filtration rate
HD	Hemodialysis
IOM	Institute of medicine
KDIGO	Kidney disease ımproving global outcomes
ML	Milligram
MNT	Medical nutrition therapy
NHANES III	National health and nutrition examination survey
NHS	national health system
NS	Non-significant
NSAIDs	Non-steroidal anti-ınflammatory drugs
NCD	Non-Communicable diseases
RDN	Registered dietitian nutritionist
S	Significant
SD	Standard deviations
SPSS 25	Statistical package of social sciences-version 25
TPP	Thiamin pyrophosphate
WHO	World Health Organization

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1. INTRODUCTION

A reduction in glomerular filtration rate (GFR) that has persisted for three months or longer is considered chronic kidney disease (CKD).

Kidney failure is becoming a global public health problem due to its increasing incidence and prevalence, high diagnostic costs, and the high prevalence of early-stage chronic kidney disease CKD, causing kidney dysfunction and cardiovascular disease. Global efforts are being made to detect and treat CKD in its early stages. For this, technological knowledge and evidence-based approaches are used for prevention, diagnosis, evaluation, and treatment. Although chronic kidney disease is on the rise worldwide, its outcomes and access to treatment can vary widely between countries. Increased public awareness, professional education, changes in health care legislation, changes to primary health care transport systems, and scientific research discoveries are all important in identifying and diagnosing renal failure worldwide (Gluba-Brzozka et al., 2019). The five primary risk factors for CKD are: diabetes mellitus, high blood pressure, excessive salt intake, lack of physical exercise, and smoking. Other variables include being over the age of 60, having cardiovascular disease, being overweight or obese, being of a certain race or ethnicity, and having an autoimmune disorder such as polycystic kidney disease (Alkhaqani, 2021). Proper dietary advice is essential for the prevention and management of chronic kidney disease. Depending on the severity of the patient's CKD , a dietician, nephrologist, or primary health care practitioner may be consulted (Hoang et al., 2018).

In the early stages of CKD, dietary management is effective in improving health (Akchurin, 2019). It is thought that eating foods that are healthy for the kidneys can help slow the progression of kidney disease. When CKD is at an early stage, a balanced diet can lead to a decrease in the incidence of kidney failure. Sick individuals who suffer from renal illness are need to reduce their consumption of certain nutrients in order to prevent the buildup of excessive metabolic waste, which may lead to hypertension, proteinuria, and problems with the heart and bones (Gluba-Brzózka et al., 2017). The Global Action Plan for Non-Communicable diseases (NCD) was

endorsed by the Globe Health Assembly in 2008. This was done because non-communicable diseases are responsible for more fatalities throughout the world than communicable diseases are. The primary aim of this action is to reduce non-communicable diseases and try to prevent them as the most effective method (Luyckx et al., 2018).

CKD is a major concern for health all over the world. In patients with severe CKD who need dialysis, especially cardiovascular quality of life is low, and the risk of death is extremely high (Ikizler et al., 2020).

Over the last few years, nephrology nursing has come to be considered as a distinct field. Under this category are a number of different nursing sub-specialties, such as kidney transplantation, anemia, vascular entry, peritoneal and hemodialysis, demulcent control, and also regular renal illness nurses working in a variety of medical institutions (Gomez et al., 2017). Because of the large number of individuals who are diagnosed with chronic kidney disease as well as the large number of people who are treated with hemodialysis, the nursing caution that is delivered to patients who have reached the end stage of renal failure is of particular relevance (Areti et al., 2017).

While the end-stage renal disease patient is receiving dialysis, the patient's response to treatment can be monitored. If patient compliance is not achieved, the effectiveness and success of dialysis treatment decreases. Blood urea nitrogen, blood phosphate, and potassium levels, and intradialytic other components may all be influenced by the patient's adherence to prescribed medication and a healthy dietary regimen (Poveda et al., 2016).

Everyone should be considered when it comes to health. A focus on recovery and prevention and a patient-centered approach is an important component of primary health care. Activities involving participants from various fields are essential for a physically and mentally healthy population. These actions are not restricted to health organizations alone; rather, they often make use of the administration, corroboration, and regulatory obligations that lie within the jurisdiction of health ministries. A good

diet for individual health and development is important for improving overall health. (World Health Organization, 2019).

18.4% of Europeans have chronic renal failure. Patients with advanced renal failure have an important share in health services. This requires a significant financial investment and time (Hill et al., 2016).

The Renal Disease Outcomes Quality Initiative has among its many goals the delineation and classification of the various phases of chronic kidney disease (CKD). Stage 3 is more important than stages 1 and 2. because the GFR in stage 3 is lower. This means that stage 3 has a risk of serious cardiovascular and kidney disease compared to stage 1 and stage 2 (Kovesdy, 2022). End-stage renal disease (ESRD) has increased in prevalence globally, making it a significant public health concern (Poveda et al., 2016).

1.1 Importance of the study

When dealing with CKD, nutritional therapy plays a crucial role. Given the prevalence of CKD and the mortality associated with it, the search for innovative ways to prevent the disease and slow its course has assumed a level of critical urgency. Modern research has shown how this may be achieved by the use of a variety of Diet and vitamins that have been shown to be effective in lowering metabolic acidosis in people with chronic renal disease (Noce et al., 2021). Dietary guidance for people with CKD or End-Stage Renal Disease (ESRD) can be viewed as an advanced and effective method of controlling one's nutritional intake. This method involves careful planning, periodic appraisal of one's dietary situation, and monitoring of one's compliance with nutritional recommendations. People who have chronic kidney disease frequently have significant comorbidity conditions, such as high blood pressure, diabetes, cardiovascular disease (CVD), hyperlipidemia, and obesity, for which nutritional changes are also recommended (Kahan & Manson, 2017). Kidney disease can lead to reduced life expectancy, the development of cardiovascular disease, and the need for dialysis or other treatments in the case of severe kidney failure. Lifestyle changes, such as adopting a healthier diet and exercise routine, are necessary to improve the health of the patient with kidney failure and to take control of their own management and

treatment (Sc et al., 2017). Numerous unhealthy behaviors, including poor nutrition (diets low in vegetables, fruits, saturated fats, and sodium), excessive alcohol consumption, and insufficient physical activity, contribute to the etiology and progression of many chronic diseases, the prevalence of which is on the rise and is a major public health issue linked to low quality of life and inadequate self-management. CKD might cause significant lifestyle adjustments. CKD can result in significant lifestyle adjustments. Nausea, vomiting, loss of appetite, constipation are just a few of the physical symptoms that can affect general health, threaten rest and disrupt daily routines (Alkhaqani, 2021). Dietary management is one of the most effective methods to delay the onset of end-stage kidney disease, prevent it completely, and slow the course of CKD. Adopting healthy lifestyle habits and maintaining a healthy weight, preventing diabetes type 2 and hypertension are two of the most important factors for preventing CKD. If he has kidney disease, the amount of salt, phosphorus and animal protein added to his diet should be reduced. Adding fresh fruits and vegetables to the diet may slow the progression of the condition (Kalantar-Zadeh & Fouque, 2017). As the number of people who are diagnosed with renal dysfunction continues to rise at a large rate each year, the condition has evolved into a huge public health concern. Diet and nutrition are important for preventing the progression of illness (Rasheed et al., 2018).

1.2 Statement of the problem

Investigation of nurses' knowledge of nutrition management of chronic kidney failure patients in AL- Samawah City.

1.3 Objectives of the study

A. To assess nurses' knowledge towards nutritional management of chronic renal failure patients who work in dialysis units and dialysis wards.

1.4 Research questions

A. What is the level of knowledge nurses towards nutritional management of chronic renal failure?

B. Do sociodemographic factors have an impact on nurses' knowledge of nutritional management of chronic renal failure?

1.5 Definition of Terms

1.5.1 Nurse

A nurse is someone who works with individuals, families, and communities to promote, maintain, and restore health and wellness (England et al., 2016). To care for the ill, wounded, and old requires someone who is kind, encouraging, protective, and well-prepared.

1.5.2 Knowledge

Possessing the theoretical and practical knowledge necessary to complete the task at hand, as well as the potential to put that knowledge to use in a different setting, is what this level of competence represents (Tran, 2014).

1.5.3 Nutritional management

Adjusting a patient's nutrient intake such that it satisfies the fundamentally changed requirements and capabilities brought on by renal failure is what is meant by "nutritional management" in the context of renal failure. If this goal is achieved, many problems associated with kidney failure may be alleviated (Kalantar-Zadeh & Fouque, 2017).

1.5.4 Chronic renal failure

CKD is characterized by abnormalities in renal structure or function for more than 3 months, as shown by indicators of kidney disease or a sustained decline in GFR below 60 ml/min/1.73 m2. Either the kidneys abruptly stop functioning, which is referred to as acute renal failure or damage, or the kidneys' function steadily declines over time, both of which may lead to chronic kidney failure (Delanaye et al., 2019).

2. LITERATURE REVIEW

The Global Outcomes for Kidney disease Improvement (KDIGO) was established in 2003 to raise awareness that chronic kidney disease is a problem that affects everyone in the world. KDIGO's purpose is to coordinate activities, encourage collaboration and integration to create and implement clinical practice recommendations, and improve the treatment and outcomes of kidney disease patients globally (Supplements, 2017).

Chronic renal failure, which is a worsening of deadly illness, is the primary cause of both poor health and early death. Chronic kidney failure is considered a progressive disorder that poses a continuous risk to the patient's life and need regular monitoring by medical professionals as well as prompt transfer to dialysis or, maybe, kidney transplantation (Scott et al., 2019). That Based on renal loss measurements such as Proteinuria and GFR, chronic renal failure is described by the Kidney Disease Improving Global Outcomes (KDIGO) foundation approaches. To be diagnosed with CKD, a person must have a GFR of less than 60 mL/min, an albumin level of more than 30 mg per gram of creatinine for at least three months, and renal structural abnormalities in addition to functional impairments. GFR of less than 15 mL/min is indicative of end-stage renal failure (Sgambat et al., 2019).

Table 2.1 İndicator of kidney failure (Sgambat et al., 2019).

Grade no	GFR ml/min	Per/m^2
Grade 1	GFR 90 ml / min	per 1.73 m^2 and over
Grade 2	GFR 60 to 89 ml / min	per 1.73 m^2
Grade 3a	GFR 45 to 59 ml / min	per 1.73 m^2
Grade 3b	GFR 30 to 44 ml / min	per 1.73 m^2
Grade 4	GFR 15 to 29 ml / min	per 1.73 m^2
Grade 5	GFR fewer than 15 ml / min	per 1.73 m^2
Grade 4 and Grade 5 are managed by the renal machine.		

Albuminuria has 3 categories comprise of an albumin – creatinine :

Albuminuria 1: Albumin- creatinine ratio fewer from 30 mg/ gm (<3.4 mg/ mmol)

Albuminuria 2: Albumin - creatinine ratio 30 to 299 mg/ gm (3.4 to 34 mg/ mmol)

Albuminuria 3: Albumin - creatinine ratio > 300 mg/ gm (≥ 34 mg/ mmol) (Sgambat et al., 2019).

2.1 Etiology of chronic renal failure

Chronic kidney failure can be caused by the following conditions over time:

1. Diabetes mellitus
2. Blood pressure is one of the main causes.
3. Glomerulonephritis,
4. Polycystic kidney disease.
5. Chronic obstruction of the urinary tract.
6. Vesicoureteral reflux.
7. Recurrent pyelonephritis.
8. Some drugs, including non-steroidal anti-inflammatory drugs "NSAIDs".
9. Inhibitors of calcineurin.
10. Antiretroviral (Okorie et al., 2018).

2.2 Epidemiology of chronic renal failure

Chronic kidney disease is a progressive condition affecting >10% of the general population worldwide, reaching >800 million people. Chronic kidney disease is more common in older individuals, women, racial minorities, and people with diabetes mellitus and hypertension (Kovesdy, 2022). The rate of chronic kidney disease in Iraq in 2015 was 5.71%. Statistics for 2018, kidney failure is among the 5th cause of death in Iraq with 6.06% (Alkhaqani, 2021).

2.3 Physical signs and symptoms

The symptoms of CKD develop progressively as kidney disease progresses. The kidneys may be affected by a wide range of conditions, and kidney disease can manifest itself in a wide range of ways. The kidneys have an amazing capacity for compensating for impaired function, thus symptoms may not appear until irreparable damage has occurred. The early symptoms of CKD are shared by a wide variety of different diseases (Okorie et al., 2018).

2.3.1 Early stages of renal failure

- Lack of appetite
- Fatigue and sluggishness
- Itching and stiffness of the skin
- Vomiting
- Weight loss
- Dispersion of mental acuity
- Spasm and twitching (Alkhaqani, 2021)

2.3.2 Late stages of renal failure

- Abnormally light or dark skin
- Sleepiness
- Numbness
- Bad smell
- Recurring hiccups
- Blood in the stool
- Sleep disturbance (Okorie et al., 2018).

2.3.3 End stage renal failure

- Early anemia
- Shortness of breath
- Urination is involuntary.

- Swelling in the feet
- High blood pressure
- Menstrual disturbance
- Indigestion (Okorie et al., 2018).

2.4 Evaluation

When a patient's GFR (an indicator of kidney function) falls below 60 ml/min for at least three months, it is defined as chronic renal failure. There are three ways to calculate GFR (Kyte et al., 2018). A more precise estimate of GFR may be obtained using the CKD Epidemiology Collaboration formula, which factors in gender, age, race/ethnicity, and creatinine (Jonsson et al., 2020). The urine protein to creatinine ratio may be used to detect albuminuria and determine its severity. If the ratio of albumin to creatinine is beyond 30 mg/g, renal function is considered severely impaired. A 24-hour urine protein test is acceptable. Protein losses more than 3.5 g per 24 hours have been connected to nephrotic syndrome. Other methods of determining renal damage include kidney ultrasound, kidney histology, complete blood count, baseline metabolic panel, and general urine examinations. Volume, obstructions, calculi, cystic renal disease, mass lesions, and cortical weakness can all be evaluated with ultrasound (Wu et al., 2020). Hemoglobin-stimulating medicines should be started when anemia from chronic renal illness drops below 10 g/dl (Jonsson et al., 2020).

2.5 Management

The measures may be implemented in an effort to slow the progression of renal disease

1. Controlling proteinuria and blood pressure is important, but so is addressing the underlying cause. Blood pressure must be lower than 130/80 mmHg if they lose more than 30 mg of albumin in 24 hours via their urine. The progression of the disease can be slowed by initiating drug therapy before GFR falls below 60 mL/min or before plasma creatinine levels rise above 1.2 and 1.5 for men and women, respectively (Son et al., 2020).

2. The advancement of end-stage kidney failure may be halted by taking dietary supplements that include renal bicarbonate. This helps to manage metabolic acidosis (Tanemoto, 2020).
3. In addition to food restrictions, other preventive and monitoring aims should include strict control of blood sugar, a reduction in the risk of cardiovascular disease, and the implementation of general lifestyle advice such as stopping smoking. The regulation of sugar levels in the blood is a very important issue. Generally, individuals in this category should have their hemoglobin A1C level not exceeding approximately 7% to avoid microvascular problems (Weir et al., 2020).
4. Recommendations for dietary restrictions are provided daily. A diet program that includes a low-salt regimen (only approximately 2 g/day), (avoidance of foods rich in phosphorous), and a daily protein restriction of 0.8 g per kg is essential for the management of disease burdens. This limitation applies to the daily protein intake. Monitoring should be done for hypocalcemia (Zand and Kumar, 2017).
5. People who have chronic renal failure often have problems with the lipid levels in their blood, most notably an elevation in their triglyceride levels. Use of cholesterol-lowering medications must be begun (Kim & Jung, 2020).

2.5.1 Specific treatment plans hemodialysis

The blood is filtered and cleansed via the peritoneum as well as the circulatory system, and harmful chemicals are ejected from the body through a tube located in the peritoneum (Crabtree et al., 2019)

Peritoneal dialysis: Patients who have reached the terminal stage of renal disease are able to get treatment at the comfort of their own homes thanks to a successful dialysis. This has a significant positive impact on the patients' quality of life. After inserting a tube into the abdominal cavity, the peritoneal cavity, which accumulates waste and excess fluid, is treated with a dialysis solution that is administered via the tube. The dialysis solution removes potentially harmful compounds from the patient's blood (Brown et al., 2017).

Kidney transplantation: During a kidney transplant, a healthy kidney from a donor is surgically implanted into a recipient who has chronic renal failure. At the same time,

the failing kidney of the recipient is medically removed. Kidneys for transplantation might come from either living or deceased donors. Patients may need to take medication for an extended period to keep their bodies from rejecting the transplanted kidney. The five-year survival rate for transplant recipients is 85.5%, which is much higher than the average (O'Connell et al., 2020).

2.5.2 Nutrition management

Patient education and regular monitoring are necessary to prevent renal failure from becoming severe. It has been demonstrated that medical nutrition therapy (MNT) is an effective strategy to slow down or even halt the progression of end-stage renal disease (ESRD). MNT consists of individualized nutrition assessments, treatment plans, and dietary counseling that is provided by registered dietitian nutritionists (RDN) (Kalantar-Zadeh & Fouque, 2017). CKD is a condition that causes the kidneys' ability to operate less and less over time. Chronic renal failure may be treated in a variety of ways, some of which include dialysis, kidney transplantation, and nutritional support. Nutritional evaluation is as important as diet therapy for the optimal treatment of individuals with chronic renal failure. There may be a lack of information about the nutritional requirements of patients with CKD and how these requirements are adjusted (Munuo et al., 2016).

2.6 Complications

The issues that are associated with progressive chronic kidney disease become common and severe as kidney function levels continue to decline. This leads to an increase in morbidity and mortality as well as a decline in both health and quality of life. Acute CKD is often associated with symptoms, such as a lack of appetite, fatigue, coma, itching, nausea. Some of the problems that can result from kidney failure are:

- Hyperuricemia
- Metabolic conditions
- Hyperphosphatemia
- Low albumin levels
- Anemia

- Bone and mineral imbalances (in connection with elevated parathyroid hormones and vitamin D deficiency)
- High blood pressure
- Heart conditions (Bello et al., 2017).

2.7 Nursing interventions

A nurse should first examine the patient with kidney failure. The purpose of the examination is to listen to heart and lungs, look for signs of high blood pressure, monitor blood pressure, and notice a change in posture. The nurse should evaluate the blood urea nitrogen, potassium, sodium, calcium, magnesium, creatinine, and other electrolytes. Antihypertensive medicine should be given as prescribed. Dialysis must be prepared, and the patient's activity response and responsibility attainment must be evaluated. A regular sleep schedule should be established; Loss of strength, rapid heartbeat and fatigue complaints should be taken into account; Minor bleeding and bruises should be evaluated after an accident (Ayirathammal, 2020). Nurses spend far more time with dialysis patients than any other kind of health professional. Nurses should explain the treatment approach (Al-Khatib et al., 2018). İt is crucial for the nurse to understand how to manage the nutrition of patients with renal failure, as this plays a significant role in the recovery of the patient (Rasheed et al., 2018).

2.8 Nutrition

The term "nutrition" comes from the Latin word "nutrire" (meaning "to feed"). This term goes back to the 1600s. While our innate need to eat is essentially survival-based, our diets are shaped by a variety of factors, including culture, upbringing, and genetics. Chinese physician Sun Simiao authored what may be the earliest diet guidelines in his book during the Tang Dynasty (618-907 CE). Prescription for Emergencies discussed the effects of consuming cereals, meat, and produce (Kelley & Kelley, 2019). It wasn't until the middle of the twentieth century that scientists found and synthesized all the major vitamins (Mozaffarian et al., 2018).

2.9 Protein

Amino acids, crucial to life, make up proteins. Protein in the diet is essential because the body uses amino acids to build and repair cells and tissues. Essential amino acids are those that the body cannot produce on its own and hence must get from food. (Millward, 2015). Consuming grains and beans may provide amino acids that may supplement the diet and help meet the needs of essential amino acids. The bioavailability and digestibility of animal and plant-based proteins differ. Most people don't have issues with protein digestion since they get protein from a wide array of food sources (Khan & Salahuddin, 2017). Protein restriction has been one of the most debated dietary strategies for CKD. Renal hemodynamics are altered by the acute consumption of protein, namely the increase in renal plasma flow, intra-glomerular pressure, and GFR. This physiological process helps the kidneys flush out waste products of protein metabolism. In healthy people, consuming a lot of protein does not seem to harm the kidneys in the long run. A greater protein intake was linked to a lower GFR, however, among those with different forms of CKD. Caution should be exercised when patients with CKD take high protein diets (Koppe et al., 2019). Patients on dialysis need more protein in their diets (1.1 to 1.3g / kg / day). Preventing protein breakdown before, during, and after dialysis may be aided by providing a healthy diet (Kistler et al., 2018).

Vitamins are chemical compounds required by human cells in even minute quantities. Necessary for growth, health maintenance, and defense systems. Due to a lack of production in human tissues, it must be taken from external sources such as food, and sunshine. Hormones, blood vessels, nervous system chemicals, and genetic components may all benefit from vitamins. vitamins cause protein interactions that lead to the production of active enzymes (Majeed et al., 2020). Vitamins are classified into fat-soluble and water-soluble. Vitamins such as A, D, E, and K are fat-soluble vitamins. Vitamins C and B complexes are both water-soluble vitamins. Daily microdoses may be needed since they are not stored in human cells (Akram et al., 2020). Minerals are inorganic substances essential for healthy bodily systems. This amounts to around 4% of a full-grown person's total mass. Some of them, including sodium, potassium, magnesium, and chlorine, are known as macro-elements, and are needed in enormous quantities. Macro-elements, calcium, phosphorus, sulfur,

magnesium , potassium, chlorine, and sodium are required high concentrations by the body (Levin et al., 2020).

2.10 Vitamins

2.10.1 Vitamin B1 (Thiamin)

Inadequate levels of albumin in the plasma may have negative effects on the nervous system and the cardiovascular system, suggesting that vitamin B1 is an essential nutrient. Dialysis patients should have 1.1-1.2 milligrams per day of thiamine to prevent thiamine deficiency (Zhang et al., 2016)

2.10.2 Pyridoxine

It is established that the concentration of pyridoxine drops by 35% after only one session of dialysis. The vitamin is tightly linked to proteins, so any losses are likely to be negligible. CKD patients were found to have a B6 deficit when they did not take B6 supplements (Jankowska et al., 2016).

2.10.3 Vitamin B 12

Vitamin B12 have linked to metabolic disorders including obesity, insulin resistance, and diabetes, as well as cardiovascular issues like abnormal lipid profiles. Most of the vitamin B12 in blood is attached to proteins. CKD patients have poor vitamin B12 absorption in their tissue. There may be a risk of vitamin B12 deficiency in uremic individuals (McMahon et al., 2015).

2.10.4 Folic Acid

Each hemodialysis treatment causes a significant decrease in folic acid levels because of the weak relationship between folic acid and plasma protein in the blood. According to the available data, people may reduce their risk of hemodialysis-related folate deficiencies by increasing their daily folate intake to 1 mg. Supplementing with 2 milligrams per day of folate causes a fivefold increase in blood serum levels (Hannedouche et al., 2016).

2.10.5 Vitamin D .

Individuals in stages 1-5 of chronic kidney disease with vitamin D deficiency should take supplements. An individual should take between 1,000 and 2,000 international units (IU) per day of cholecalciferol to ensure enough vitamin D reproduction (Lok et al., 2020).

2.10.6 Magnesium

Magnesium has a crucial role in the human body. About 90% to 95% of the magnesium is reabsorbed into the body. As kidney function weakens, less waste products can be flushed away. Hypertension, arterial calcification, an increased risk of cardiovascular disease, and non-cardiovascular mortality are all associated with low magnesium levels (Van De Wal-Visscher et al., 2018). Magnesium salts should be used to magnesium deficiency. When CKD progresses from stage 4 to stage 5, there is an increase in magnesium excretion. With a decrease in GFR of less than 10 mL/min, the impact becomes much more apparent. (JiaChuan et al., 2019).

2.10.7 Calcium

The condition of hypercalcemia is common among those who need continuous dialysis treatment. Evidence has been accumulating linking high calcium levels to an increased risk of cardiovascular-related mortality and disability. If hypercalcemia persists, low calcium concentration dialysate (1.5-2.0 mEq / L) may be necessary. This is associated with an increased risk of arrhythmias and heart failure. therefore, it should be applied carefully (Brunelli et al., 2015).

2.10.8 Phosphorus / Phosphate

It is unclear how much dietary phosphorus/phosphate should be restricted in those with advanced CKD. Individuals with chronic kidney disease stages 3–5 are often receiving frequent dialysis treatment, as indicated by chronic kidney disease specific recommendations. Throughout the typical ranges of serum phosphate, a phosphate intake of 800–1,000 mg/d is recommended (Supplements, 2017).

2.10.9 Potassium

High potassium levels are thought to contribute to 3-5% of mortality among people on dialysis. Hyperkalemia was defined as a plasma potassium concentration of more than or equal to 6.0 mmol/l or 0.6 m Eq/L (Adil et al., 2016).

2.10.10 Sodium

An excessive intake of salt over a lengthy period may have physiological effects on the cardiovascular system, the heart muscle, the kidneys, and the brain. Sodium restriction has been shown to increase the pharmacologic efficacy of antihypertensive drugs, allowing for better control over the rise in blood pressure that is of paramount importance in CKD patients (Czogalla et al., 2016).

2.11 Fats Intake

Low levels of high-density lipoprotein and increased triglyceride levels are a hallmark of chronic renal disease. Chronic renal disease patients suffer from dyslipidemia. Pre-dialysis patients with low-density lipoprotein levels > 2.50 mmol/L, elevated triglyceride levels, and a low-density lipoprotein to high-density lipoprotein ratio 0.4 were shown to have significantly faster decline in kidney function. Decreased kidney function at the stage 3–5 of chronic renal failure has been associated to changes in cholesterol and low–density lipoprotein levels (Goeij et al., 2015)

2.12 Carbohydrate Intake

The consumption of excessive amounts of fructose has been linked to an increased risk of CKD because of its effect on the development of metabolic syndrome features such as insulin resistance, dyslipidemia, and hypertension. The breakdown of fructose triggers the formation of uric acid; this condition is associated with the onset of CKD (Levin et al., 2020) . Because of the widespread addition of added sugar to processed goods that have been cooked , sugar has become part of many people's daily meals. This fructose has been shown to increase uric acid levels if it is eaten more than basic metabolic requirements (Mende, 2015).

3. MATERİAL AND METHOD

3.1 Design of the study

A descriptive design was used in this study. This study was conducted to evaluate nurses' knowledge of the nutritional management of patients with chronic renal failure. The study was conducted at Al-Hussein Teaching Hospital in Al-Samawah City, Iraq. This study was carried out from April 2022 to July 2022.

3.2 Ethical consideration

Permission was obtained from the ethics committee of Çankırı Karatekin University to conduct the study (Appendix 1). A permit was obtained from the Ministry of Health and Environment/ Muthanna Health Directorate/ Training and Development Center (Appendix 2). For the use of the questionnaire, permission was requested from the Iraqi researcher Ihab Ahmed Irzaij by sending an e-mail and her consent was obtained (Irzaij & Atiyah, 2021) (Appendix 4). The researcher made it clear to all participants that the names of the nurses were not collected. Separate meetings were also held with nurses in the wards and dialysis units, as planned, to inform them of the study and its purpose. All participants were informed in detail about the study. The participants were informed that the survey results will be used for research purposes only and that they have the right to refuse participation in the research. The researcher distributed the questionnaire paper to nurses by face-to-face interview.

3.3 Setting of the study

At Al-Hussain Teaching Hospital for Nurses in Al -Samawah City, a knowledge evaluation on nutrition management for patients with chronic renal failure has been done. The city of Samawah is located (270 km) southwest of Baghdad and has a population of approximately (800,000) people. There is one dialysis unit in Al-Hussein

Teaching Hospital. An average of 300 patients are treated annually. There are 50 nurses working in the dialysis center. Total of 403 nurses working in all units and departments of the hospital. At the dialysis unit of the Al-Hussein Teaching Hospital in AL- Samawah City, patients are provided with "nutritional knowledge" along with nutritional advice.

3.4 Sample of the study

A descriptive design study, a selected sample of (200) nurses was selected using the sampling method. target sample is Nurses who work in the dialysis unit and dialysis departments at Al-Hussein Teaching Hospital in Samawah, Iraq. The response rate was 95%. An improbable example (appropriate example) . Yamane's Formula used to Calculate Sample Size. In addition to Cochran's formula, Yamane (1967) introduced another simpler formula for measuring the sample size of nurses. According to it, the sample size for 95% confidence level and p = 05 should be:

(N) size of nurses at Al-Hussein Teaching Hospital in Samawah city and (e) level of precision. (Kasiulevičius, V. et al., 2006) .

n = N / (1 + N(e) 2)

n = 403 / (1 + 403 (0.05) 2)

n= 200

(N = 403) Number of nurses at Al-Hussein Teaching Hospital in Samawah city

(e = 0.05) is the accuracy level.

(N = 200) This number represents the representative sample of the current study for all nurses at Al Hussein Teaching Hospital in Al Samawah City (Kasiulevičius et al., 2006).

3.4.1 Criteria for selection the sample

1. Nursing staff in dialysis wards and units.

2. Nurses who agree to take part in this study.

3. Nurses who work in both the morning and evening shifts.

3.4.2 Exclusion criteria

1. The exclusion criteria apply for any nurse who works in intensive care unit (ICU) and coronary care unit (CCU). Due to the serious health condition of the patients, the nurses were prevented from participating in any questionnaire and not leaving the unit for any reason.

2. Nurses who refused to participate in the study.

3.5 The study instrument

The questionnaire prepared for the participants consists of two parts: the first includes demographic information, and the second contains nutritional information for six areas (protein, vitamins, minerals, carbohydrates, fats, fluids, and the role of nurses in nutrition) (Appendix 3).

3.5.1 Data collection tools

This Part I: Concerned with Questionnaire that Associated with Socio - Demographic Characteristics of the Nurses. This section deals with all basic socio - demographic information from the nurses, which consists of (9) items including: Gender, age, marital status, professional qualification, working experience, training course participation of CKD nutrition, number of courses, total time of courses, location. The data obtained from the nurses by the interview and the time required to complete this part from (3-5) minutes.

This Part II: Concerned to Assess Knowledge about Nutritional Management. It consists of (43) questions in 6 domains which are classified as: When the answer is I know (3), when the answer is I am not sure (2), when the answer is I do not know (1) the minimum score to be taken from this module is 1 and the maximum score is 3 per question.

- First domain: Nurses Knowledge toward Protein That Found in Chronic Renal Failure Patient's Food.

This part was constructed to assess the nurses ' knowledge concerning protein and daily recommendation requirement of chronic renal failure patients. It consists of (6) items.

- Second domain: Nurses ' Knowledge toward Vitamins, and Their Sources for Patients with Chronic Renal Failure.

This part was constructed to assess the nurses ' knowledge concerning vitamins and daily recommendation requirement and types for chronic renal failure patients, it consists of (11) items.

- Third domain: Nurses` Knowledge toward Minerals and Their Sources for Patients with Chronic Renal Failure.

This part was constructed to assess the nurses ' knowledge concerning minerals and daily recommendation requirement and types of chronic renal failure patients. It consists of (9) items.

- Fourth domain**:** Nurses ' Knowledge toward Carbohydrates and Fats for Patients with Chronic Renal Failure.

This part was constructed to assess the nurses ' knowledge concerning carbs and fats for chronic renal failure patients, it consists of (5) items.

- Fifth domain: Nurses Knowledge toward Fluids and Their Relation to Patients with Chronic Renal Failure.

This part was constructed to assess the nurses ' knowledge concerning fluids of chronic renal failure patients. consisting of (5) items.

- Sixth domain: Nurses Roles in Nourishment of Chronic Renal Failure Patients.

This part was constructed to assess the nurses ' knowledge concerning nutrition in chronic renal failure patients, consisting of (7) items.

3.5.2 Validity of the instrument

This questionnaire was prepared by the Arab researcher Ihab Ahmed Irzaij in both English and Arabic versions. The study was conducted in 2021. It was applied in his study showed Results that there is a high degree of reliability which revealed that the Cronbach's alpha coefficient is 0.819 for nurses' knowledge towards nutritional status for patients with renal failure. The researcher's credibility was relied upon in using this questionnaire (Irzaij & Atiyah, 2021).

3.6 Data collection

Data were collected using a questionnaire (Arabic version). The researcher conducted interviews with the nurses and obtained their consent to participate in the study and clarify the study form. The interviews were conducted in Arabic, the official language of Iraq. Data were collected through a face-to-face interview, as well as by distributing the questionnaire to nurses. The interview took about (18-21) minutes. Data collection started April 1, 2022, to July 1, 2022.

Table 4.1 Cronbach's alpha value subdimensions in this study.

Tools	Cronbach's Alpha	N of Items
Nurses` knowledge toward protein	0.648	6
Nurses` knowledge toward vitamins, and their sources	0.663	11
Nurses` knowledge toward minerals and their sources	0.660	9
Nurses` knowledge toward Carbohydrates and fats	0.622	5
Nurses` knowledge toward fluids and their relation to patients	0.684	5
Nurses Role in the nutrition of Chronic renal failure Patients	0.679	7
Nurses` knowledge toward nutritional management	0.889	43

3.7 Statistical data analysis

SPSS was used (version 25) for data analysis. The following statistical data analysis approaches were used in analyzing and assessing results to achieve the goals of this study. In this study, number, percentage, mean, median, standard deviation, independent sample t test and one way ANOVA were used.

4. RESULTS

This section presents the finding of the data analysis in tables and their correspondence with the objectives of the study has shown below:

Table 4.2 Distribution of nurse according to social demographic features

Demographic data		F	%	Median
Age/years	20 – 24	109	54.5	2
	25-29	48	24.0	
	30 -34	11	5.5	
	35-39	27	13.5	
	40-44	5	2.5	
Gender	Male	67	33.5	1
	Female	133	66.5	
Marital Status	Married	92	46.0	2
	Single	108	54.0	
Education Level	High school nursing	93	46.5	2
	Diploma	50	25.0	
	Bachelor`s degree	46	23.0	
	High studies	11	5.5	
Working experience	Less than 2 years	47	23.5	2
	From 3-5 year	103	51.5	
	more than 5 years	50	25.0	
Training course participation	No	157	78.5	2
	Yes	43	21.5	
If the answer was yes, number of courses	1-2 times	35	81.4	2
	3-4 times	6	13.9	
	5-6 times	2	4.7	
Time of courses	1 week	33	76.7	2
	2 weeks	8	18.6	
	3 weeks	2	4.7	
	4 weeks and more	0	0.0	
Location of course	Without course	157	78.5	2
	Inside Iraq	43	21.5	
Total		200	100.0	

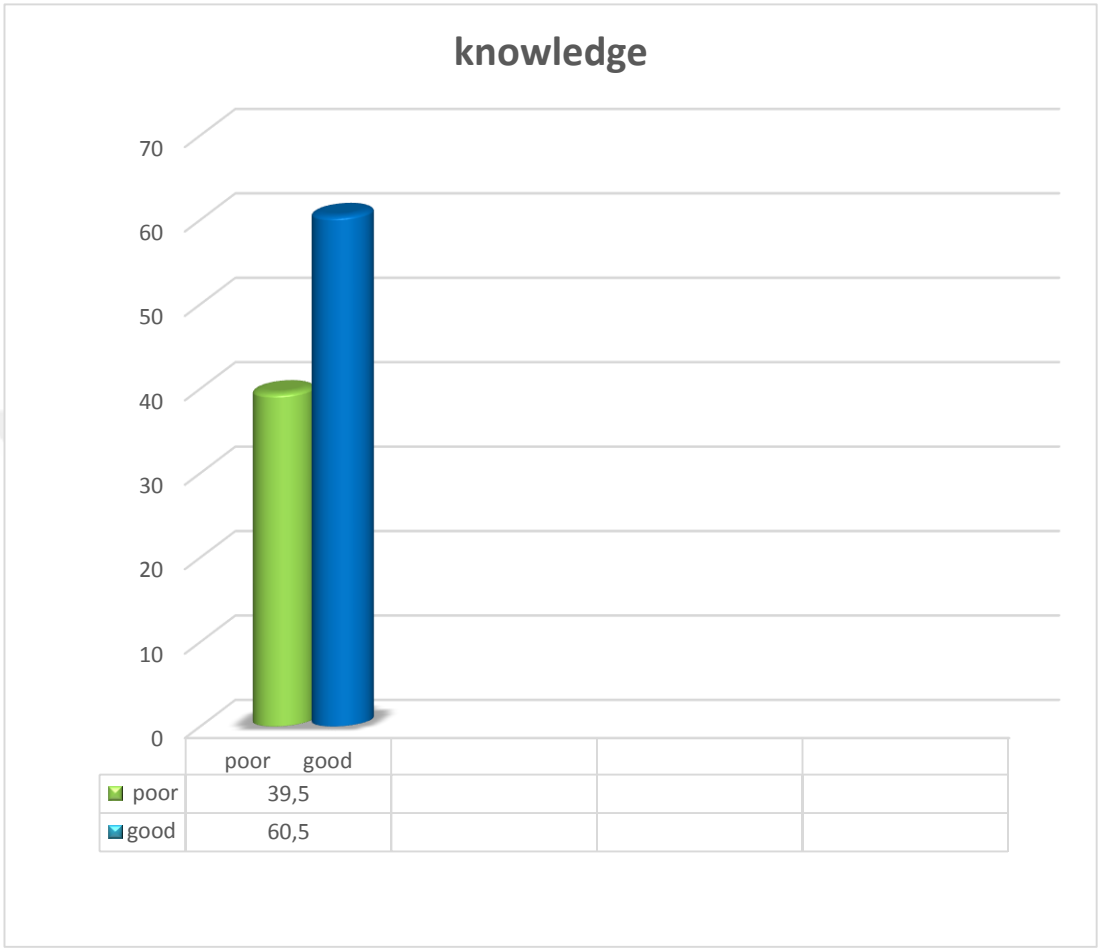
In the study, 54.5% of the nurse were between the ages of 20 – 24; Female 66.5 % ; un Married nurse 54.0% ; Education Level High school nursing 46.5%; Working experience of 3-5 year 51.5%; Training course participation (No) 78.5%; number of courses 1-2 times 81.4%; Time of courses 1 week 76.7%; Location of course Inside Iraq 100.0 %; (Table 4.1).

Table 4.3 Distribution of nurses according to their medical nutritional information

Medical nutritional information		Fre.	%	Mean ±S.D
A- Knowledge of nurses about protein	Poor knowledge	9	4.5	13.94± **2.32**
	Moderate	71	35.5	
	Good knowledge	120	60.0	
Poor: 7-11.62	moderate: 11.63-16.24		good: 16.25-21	
B- Knowledge of nurses about vitamins	Poor	0	0.0	25.12±**3.78**
	Moderate	105	52.5	
	Good knowledge	95	47.5	
Poor: 11-18.26	moderate: 18.27-25.52		good: 25.53-33	
C- Knowledge of nurses about minerals	Poor knowledge	1	.5	21±**2.85**
	Moderate	68	34.0	
	Good knowledge	131	65.5	
Poor: 9-14.94	moderate: 14.95-20.88		good: 20.89-27	
D- Knowledge of nurses about carbohydrates and fats	Poor knowledge	11	5.5	12.34±**2.03**
	Moderate	41	20.5	
	Good knowledge	148	74.0	
Poor: 5-8.3	moderate: 8.3-11.6		good: 11.6-15	
E- Knowledge of nurses about fluid	Poor knowledge	2	1.0	12.16±2.01
	Moderate	85	42.5	
	Good knowledge	113	56.5	
Poor: 5-8.3	moderate: 8.3-11.6		good: 11.6-15	
F-nurses role in the nutrition	Poor knowledge	2	1.0	18.24±**2.65**
	Moderate	53	26.5	
	Good knowledge	145	72.5	
Poor: 7-11.62	moderate: 11.63-16.24		good: 16.25-21	
Over all	Poor knowledge	0	0.0	103.03±**12.63**
	Moderate	79	39.5	
	Good knowledge	121	60.5	
Poor: 44-73.04	moderate: 73.05-102.08		good: 102.09-132	

The result showed majority of Knowledge of nurses about nutritional management for patients with chronic renal failure at Al Hussein Teaching Hospital was good (60.5%) **(**Table 4.2).

Figure 4.1. Distribution of nurses` knowledge toward nutritional management for patients with chronic renal failure at Al Hussein Teaching Hospital



It was determined that most of nurses (60.5%) had good knowledge.

Table 4.4 The relationship between the knowledge level of nurse and nurse gender

	Gender	N	Mean	Std. Deviation	F	P-value
Nurses` knowledge toward protein that found in chronic renal failure patient`s foods	Male	67	13.34	1.98	1.284	.010
	Female	133	14.24	2.43		
Nurses` knowledge toward vitamins, and their sources for patients with chronic renal failure	Male	67	24.83	3.30	4.839	.423
	Female	133	25.26	4.00		
Nurses` knowledge toward minerals and their sources for patients with chronic renal failure	Male	67	20.67	2.66	.579	.051
	Female	133	21.50	2.91		
Nurses` knowledge toward Carbohydrates and fats for patients with chronic renal failure	Male	67	12.13	2.05	2.173	.299
	Female	133	12.45	2.01		
Nurses` knowledge toward fluids and their relation to patients with chronic renal failure	Male	67	12.14	1.85	1.392	.957
	Female	133	12.16	2.09		
Nurses Role in the nutrition of Chronic renal failure Patients	Male	67	17.77	2.75	.119	.076
	Female	133	18.48	2.57		
Over all	Male	67	100.91	11.51	2.923	.092
	Female	133	104.10	13.07		

N: number , F: distribution, p-value: significant, significant at 0.05, high significant at 0.01, non- significant less than .05, in depended t-test test

The result showed there are no deference between nurse gender and dimension due to p-value more than 0.05, except with nurses` knowledge toward protein(0.01).

Table 4.4 The relationship between the knowledge level of nurse and nurse marital status

	Marital status	N	Mean	Std. Deviation	F	P-value
Nurses` knowledge toward protein that found in chronic renal failure patient`s foods	Married	92	14.17	2.08	2.583	.191
	Single	108	13.74	2.51		
Nurses` knowledge toward vitamins, and their sources for patients with chronic renal failure	Married	92	25.77	3.42	2.728	.024
	Single	108	24.56	3.99		
Nurses` knowledge toward minerals and their sources for patients with chronic renal failure	Married	92	21.56	2.88	.004	.120
	Single	108	20.93	2.80		
Nurses` knowledge toward Carbohydrates and fats for patients with chronic renal failure	Married	92	13.05	1.61	11.997	<.001
	Single	108	11.74	2.15		
Nurses` knowledge toward fluids and their relation to patients with chronic renal failure	Married	92	12.42	1.89	.066	.087
	Single	108	11.93	2.08		
Nurses Role in the nutrition of Chronic renal failure Patients	Married	92	19.15	2.17	18.057	<.001
	Single	108	17.47	2.78		
Over all	Married	92	106.14	10.48	6.6	.001
	Single	108	100.38	13.71		

N: number , F: distribution, p-value: significant, significant at 0.05, high significant at 0.01, non- significant less than .05, in depended on t-test test

The result showed there are deference between nurse marital status and dimension due to p-value less than 0.05, except Nurses Role in the nutrition (0.087), nurses` knowledge toward minerals (0.120), nurses` knowledge toward protein (0.191).

Table 4.5 The relationship between the knowledge level of nurse and nurse location of courses

	Location of Course	N	Mean	Std. Dev.	F	P
Nurses` knowledge toward protein that found in chronic renal failure patient`s foods	with out coursing	157	13.86	2.42	2.215	.393
	Inside Iraq	43	14.20	1.92		
Nurses` knowledge toward vitamins, and their sources for patients with chronic renal failure	with out coursing	157	24.92	3.91	3.791	.161
	Inside Iraq	43	25.83	3.17		
Nurses` knowledge toward minerals and their sources for patients with chronic renal failure	with out coursing	157	21.15	2.96	5.416	.485
	Inside Iraq	43	21.46	2.40		
Nurses` knowledge toward Carbohydrates and fats for patients with chronic renal failure	with out coursing	157	12.12	2.05	4.614	.001
	Inside Iraq	43	13.16	1.74		
Nurses` knowledge toward fluids and their relation to patients with chronic renal failure	with out coursing	157	12.03	2.09	6.876	.049
	Inside Iraq	43	12.62	1.61		
Nurses Role in the nutrition of Chronic renal failure Patients	with out coursing	157	18.28	2.57	2.524	.673
	Inside Iraq	43	18.09	2.93		
Over all	with out coursing	157	102.38	13.06	2.377	.167
	Inside Iraq	43	105.39	10.75		

N: number , F: distribution, p-value: significant, significant at 0.05, high significant at 0.01, non- significant less than .05, in depended on t-test test

The result showed there are no deference between nurse Location of Course and dimension due to p-value more than 0.05, except nurses` knowledge toward fluids (0.049), nurses` knowledge toward Carbohydrates and fats (.001).

Table 4.6 The relationship between the knowledge level of nurse and nurse age

	Age	N	Mean	Std. Dev.	F	p
Nurses` knowledge toward protein that found in chronic renal failure patient`s foods	20 – 24	109	14.11	2.60	1.311	.267
	25-29	48	14.14	1.72		
	30 -34	11	13.63	2.46		
	35-39	27	13.07	2.07		
	40-44	5	13.40	.89		
	Total	200	13.94	2.32		
Nurses` knowledge toward vitamins, and their sources for patients with chronic renal failure	20 – 24	109	25.40	4.03	1.007	.405
	25-29	48	24.68	3.22		
	30 -34	11	25.81	2.99		
	35-39	27	24.18	4.15		
	40-44	5	26.60	1.34		
	Total	200	25.12	3.78		
Nurses` knowledge toward minerals and their sources for patients with chronic renal failure	20 – 24	109	21.77	2.98	3.061	.018
	25-29	48	20.93	2.31		
	30 -34	11	19.63	2.94		
	35-39	27	20.14	2.91		
	40-44	5	21.40	.89		
	Total	200	21.22	2.85		
Nurses` knowledge toward Carbohydrates and fats for patients with chronic renal failure	20 – 24	109	12.38	1.99	4.551	.002
	25-29	48	12.79	1.68		
	30 -34	11	12.63	1.02		
	35-39	27	11.00	2.60		
	40-44	5	13.80	.44		
	Total	200	12.34	2.03		
Nurses` knowledge toward fluids and their relation to patients with chronic renal failure	20 – 24	109	12.24	2.03	4.411	.002
	25-29	48	12.27	1.83		
	30 -34	11	11.81	1.60		
	35-39	27	11.22	2.02		
	40-44	5	15.00	.00		
	Total	200	12.16	2.01		
Nurses Role in the nutrition of Chronic renal failure Patients	20 – 24	109	18.55	2.49	3.302	.002
	25-29	48	17.81	2.54		
	30 -34	11	18.90	1.13		
	35-39	27	17.07	3.49		
	40-44	5	20.60	.89		
	Total	200	18.24	2.6514		
Over all	20 – 24	109	104.47	12.78	2.621	.036
	25-29	48	102.64	10.41		
	30 -34	11	102.45	11.28		
	35-39	27	96.70	15.32		
	40-44	5	110.80	1.78		
	Total	200	103.03	12.63		

N: number , F: distribution, p-value: significant, significant at 0.05, high significant at 0.01, non- significant less than .05, ANOVA test

The result showed there are deference between nurse age and dimension due to p-value more than 0.05, except with nurses` knowledge toward protein (.267) , nurses` knowledge toward vitamins (.405).

Table 4.7 The relationship between the knowledge level of nurse and nurse education level

	Education level	N	Mean	Std. Deviation	F	p-value
Nurses` knowledge toward protein that found in chronic renal failure patient`s foods	High school Nursing	93	14.20	1.61	13.483	<.001
	Diploma	50	12.46	3.01		
	Bachelor`s degree	46	14.47	2.01		
	High studies	11	16.18	1.60		
	Total	200	13.94	2.32		
Nurses` knowledge toward vitamins, and their sources for patients with chronic renal failure	High school Nursing	93	25.46	2.97	36.554	<.001
	Diploma	50	22.18	3.57		
	Bachelor`s degree	46	25.93	2.84		
	High studies	11	32.18	1.53		
	Total	200	25.12	3.78		
Nurses` knowledge toward minerals and their sources for patients with chronic renal failure	High school Nursing	93	21.50	2.25	21.240	<.001
	Diploma	50	19.68	2.98		
	Bachelor`s degree	46	21.15	2.51		
	High studies	11	26.18	1.83		
	Total	200	21.22	2.85		
Nurses` knowledge toward Carbohydrates and fats for patients with chronic renal failure	High school Nursing	93	12.74	1.46	37.324	<.001
	Diploma	50	10.40	2.08		
	Bachelor`s degree	46	13.04	1.56		
	High studies	11	14.90	.30		
	Total	200	12.34	2.03		
Nurses` knowledge toward fluids and their relation to patients with chronic renal failure	High school Nursing	93	12.45	1.59	22.354	<.001
	Diploma	50	10.64	1.87		
	Bachelor`s degree	46	12.60	2.05		
	High studies	11	14.72	.64		
	Total	200	12.16	2.01		
Nurses Role in the nutrition of Chronic renal failure Patients	High school Nursing	93	18.50	2.30	14.746	<.001
	Diploma	50	16.50	2.90		
	Bachelor`s degree	46	19.00	2.30		
	High studies	11	20.81	.40		
	Total	200	18.24	2.65		
Over all	High school Nursing	93	104.87	8.00	41.418	<.001
	Diploma	50	91.86	13.62		
	Bachelor`s degree	46	106.21	9.66		
	High studies	11	125.00	4.95		
	Total	200	103.03	12.63		

N: number , F: distribution, p-value: significant, significant at 0.05, high significant at 0.01, non- significant less than .05, ANOVA test

The result showed there are high deference between nurse education leve and dimension due to p-value more than 0.01.

Table 4.8 The relationship between the knowledge level of nurse and nurses years experence

	years experence	N	Mean	Std. Dev.	F	p
Nurses` knowledge toward protein that found in chronic renal failure patient`s foods	Less than 2 years	47	14.59	2.00	2.879	.059
	from 3-5 year	103	13.85	2.54		
	more than 5 years	50	13.50	2.04		
	Total	200	13.94	2.32		
Nurses` knowledge toward vitamins, and their sources for patients with chronic renal failure	Less than 2 years	47	26.21	3.10	3.709	.026
	from 3-5 year	103	24.47	3.81		
	more than 5 years	50	25.42	4.09		
	Total	200	25.12	3.78		
Nurses` knowledge toward minerals and their sources for patients with chronic renal failure	Less than 2 years	47	21.74	2.35	1.093	.337
	from 3-5 year	103	21.12	2.85		
	more than 5 years	50	20.94	3.24		
	Total	200	21.22	2.85		
Nurses` knowledge toward Carbohydrates and fats for patients with chronic renal failure	Less than 2 years	47	12.89	1.73	2.396	.094
	from 3-5 year	103	12.23	1.96		
	more than 5 years	50	12.06	2.35		
	Total	200	12.34	2.03		
Nurses` knowledge toward fluids and their relation to patients with chronic renal failure	Less than 2 years	47	12.21	1.96	.400	.671
	from 3-5 year	103	12.24	1.97		
	more than 5 years	50	11.94	2.15		
	Total	200	12.16	2.01		
Nurses Role in the nutrition of Chronic renal failure Patients	Less than 2 years	47	19.80	1.45	12.346	<.001
	from 3-5 year	103	17.63	2.59		
	more than 5 years	50	18.04	3.05		
	Total	200	18.24	2.65		
Over all	Less than 2 years	47	107.46	7.55	3.903	.022
	from 3-5 year	103	101.56	13.09		
	more than 5 years	50	101.90	14.61		
	Total	200	103.03	12.63		

N: number , F: distribution, p-value: significant, significant at 0.05, high significant at 0.01, non-significant less than .05, ANOVA test

The result showed there are deference between nurse gender and dimension due to p-value more than 0.05, except with nurses` knowledge toward fluids (0.671), nurses` knowledge toward Carbohydrates and fats (0.094), nurses` knowledge toward minerals and their sources (0.337), nurses` knowledge toward protein(0.059).

Table 4.9 The relationship between the knowledge level of nurse and nurse time course training

	Time course	N	Mean	Std. Dev.	F	p
Nurses` knowledge toward protein that found in chronic renal failure patient`s foods	non course share	157	13.86	2.42	.739	.530
	1 week	33	14.21	1.93		
	2 weeks	8	13.75	1.98		
	3 weeks	2	16.00	.00		
	Total	200	13.94	2.32		
Nurses` knowledge toward vitamins, and their sources for patients with chronic renal failure	non course share	157	24.92	3.91	1.028	.381
	1 week	33	25.78	2.86		
	2 weeks	8	25.37	3.85		
	3 weeks	2	28.50	6.36		
	Total	200	25.12	3.78		
Nurses` knowledge toward minerals and their sources for patients with chronic renal failure	non course share	157	21.15	2.96	.542	.654
	1 week	33	21.27	2.37		
	2 weeks	8	21.75	2.37		
	3 weeks	2	23.50	3.53		
	Total	200	21.22	2.85		
Nurses` knowledge toward Carbohydrates and fats for patients with chronic renal failure	non course share	157	12.12	2.05	3.271	.022
	1 week	33	13.03	1.91		
	2 weeks	8	13.62	.74		
	3 weeks	2	13.50	2.12		
	Total	200	12.34	2.03		
Nurses` knowledge toward fluids and their relation to patients with chronic renal failure	non course share	157	12.03	2.09	1.123	.341
	1 week	33	12.57	1.60		
	2 weeks	8	12.62	1.76		
	3 weeks	2	13.50	2.12		
	Total	200	12.16	2.01		
Nurses Role in the nutrition of Chronic renal failure Patients	non course share	157	18.28	2.57	.804	..493
	1 week	33	18.12	3.02		
	2 weeks	8	17.37	2.72		
	3 weeks	2	20.50	.70		
	Total	200	18.24	2.65		
Over all	non course share	157	102.38	13.06	1.089	.355
	1 week	33	105.00	10.51		
	2 weeks	8	104.50	11.19		
	3 weeks	2	115.50	14.84		
	Total	200	103.03	12.63		

N: number , F: distribution, p-value: significant, significant at 0.05, high significant at 0.01, non- significant less than .05, ANOVA test

The result showed there are no deference between nurse time course training and dimension due to p-value more than 0.05, except with nurses` knowledge toward Carbohydrates and fats (0.022).

5. DISCUSSION

This chapter presents the discussion and explanation of the study results based on study objectives. Results were supported by literatures and previous studies.

5.1. Discussion of the sociodemographic variables of the study sample

The results in Table 4.1 show that most of the study sample (66.5%) were females. In one study, most of the participants were female (64.2%) (Emmanuel Gapira et al., 2020). In another study, the proportion of women was found to be 71% (Munuo et al., 2016). These findings are like the results of our study. We think that most of the sample consists of women, due to the policy of the Ministry of Health and Environment, which envisages employing 70% women, and the strategies of the ministry of higher education.

The age range of the participants was 20-24 in the majority (54.5%). In one study, about half of the participants were between the ages of 20-29 (Alramadan et al., 2019); In another study, 52.9% were found in the 20-30 age range (Rizwan et al., 2018). These findings are like the results of our study. The researcher believes that the majority of sample were (20 – 24 years) since most of the participants have High school nursing, as the High school students graduate at the age of 18 and they hired after one year, that percentage explains this majority.

Most of the participants (54%) were single. In a study conducted, 70.6% of the participants were found to be married (Soo, 2016). In another study, 68.6% of the participants were found to be married (Rasheed et al., 2018). These results support the result of our study. The researcher believes that most of the sample are newly recruited females who have secondary nursing.

Most of the participants were 46.5% high school graduates. Similarly, in a study, high school graduates were in the majority with 65.5% (Ahamed et al., 2018). On the other hand, in one study, the rate of postgraduate students was found to be 60% (Emmanuel Gapira et al., 2020). The researcher believes that (46.5%) of the study sample have

secondary nursing. This is related to the plans of the Ministry of Health and Environment and AL Muthanna Health Directorate to absorb the majority of health cadres from secondary nursing to study for a period of three years, as well as the efforts of the Ministry to provide them with opportunities The central appointment and the presence of three secondary schools for nursing in AL Muthanna Governorate, and this number is useful for patients and the health sector as a whole.

The ratio of those with 3-5 years of work experience was 51.5%. In one study, most of the participants (42.9%) worked in dialysis units for 2-5 years (Munuo et al., 2016). In another study, 37.3% of the participants were found to have 4-7 years of experience (Rasheed et al., 2018). The researcher thinks it is due to the distribution by the AL Muthanna Health Department, which places the most experienced nurses in dialysis centers, and the placement of secondary nursing graduates in dialysis units.

In the study, 78.5% of the nurses did not attend a training session. 81.4% of the course attendees attended 1-2 courses. This result agrees with the findings of the research conducted by (Ahamed et al., 2018) who reported that according to the sample results that 65.4 percent of nurses did not undergo a training course related to hemodialysis-related, while 34.6 percent did. These results come inconsistent with Desoky & Fathy (2019) who reported that the majority of the sample had previously completed dialysis training programs. Based on results that (78.5%) in the research sample were not engaged at a training session. The researcher believes that those in charge of setting courses to develop the nursing staff in Muthanna Governorate do not give importance to the nutrition of patients with kidney failure, so they do not include such courses in their monthly and annual curriculum.

5.2. Discussion of the study sample according to their medical nutritional information

Findings in table (4.2) showed that nurse's knowledge toward nutritional status for patients with chronic renal failure at al-Hussein teaching hospital in AL-Samawah City, Iraq was good (60.5%). This finding agrees with the result obtained from the study done by (Rasheed et al., 2018) who mentioned that the majority of the nurses in

the study were better able to deal with foods a good level. These results come consistent with (Emmanuel Gapira et al., 2020) They observed that a significant majority of nurses properly answered to examine nutrition in the case of CKD patients who were at risk for hyponatremia. The researcher believed that the respondents had a good level of knowledge due to their desire to learn about the patients' diet guidelines.

5.3. Discussion the relationship between the nurse's level of knowledge and demographic data

Except for the significant relationship between nurses' knowledge about protein in the foods consumed by patients (p=.010), there was no significant relationship between gender and nurses' knowledge of chronic kidney failure nutrition (p= .092). These results agree with (Rasheed et al., 2018) where he indicated in his study that there is no statistically significant relationship between knowledge and gender. The researcher believes there is no relation between gender and knowledge because acquiring knowledge depend on the person passion and willing to be efficient in specialty.

The findings showed a substantial link between nurses' expertise and age ($p<.05$), except there are a non-significant between age and knowledge of proteins in meals consumed by patients with chronic renal failure by nurse's role in the nutrition of chronic renal failure patients ($p>.05$). In some studies, it was stated that there was no statistically significant relationship between knowledge and age (Munuo et al., 2016; Iyawe et al., 2018).The researcher believes that the age group interferes with the acquisition of knowledge, as it is due to the increase in the length of experience for nurses on the job.

The result showed significant relationship between knowledge of nurses and nurse marital status ($p<0.05$). There are non-significant between marital status and Knowledge of proteins in meals consumed by patients with chronic renal failure by nurses, nurses` knowledge toward minerals , nurses` knowledge toward fluids ($p>0.05$). On the other hand, in one study, it was stated that there was no statistically significant relationship between knowledge and marital status (Rasheed et al., 2018). The researcher believes that this is more about the nurse's ability to search for correct

information for nutritional information than marital status.

In the study, a significant relationship was found between professional qualification (bachelor's degree) and knowledge of nurses ($p<0.01$). In a study, 42% of the participants have a bachelor's degree in nursing, with a similar result, and they have a high knowledge of nursing experience (Adejumo et al., 2018). The researcher thinks that this is due to the increase in the duration of undergraduate education and the focus of nurses on postgraduate studies. He also thinks that the outputs of the academic years are due to the increase in the level of knowledge compared to the nurses who have fewer school years.

The result showed there are deference between nurse gender and dimension due to $p> 0.05$, except with nurses` knowledge toward fluids (0.671), nurses` knowledge toward Carbohydrates and fats (0.094), nurses` knowledge toward minerals and their sources (0.337), nurses` knowledge toward protein (0.059). These results are in line with a study that stated that there was no statistically significant relationship between knowledge and work experience (Emmanuel Gapira et al., 2020).The researcher believes that there is no strong relationship between experience and level of knowledge due to the nurses' lack of interest in the nutritional aspect of the patient. Because nurses focus more on how to connect the patient to the dialysis machine and how to monitor the patient in case of complications.

The result showed there are no deference between nurse time course training and dimension due to ($p>.05$). There is a significant difference between the knowledge level of nurses about carbohydrates and fats (0.022). A similar result was found in a study (Ahamed et al., 2018). The researcher believes that those in charge of setting courses to develop the nursing staff do not give importance to the nutrition of patients with kidney failure, so they do not include such courses in their monthly and annual curriculum.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The following inferences are drawn from the current study's results and commentary by the researcher.

1. Female nurses made up the vast majority of the study's sample from hemodialysis clinics and waiting rooms. Nurses between the ages of 20 and 24 made up the bulk of the study's participants.

2. When it comes to nurses' educational backgrounds, the vast majority have only completed their secondary education in the field.

3. When it comes to the involvement in training courses for the nutrition of patients who have chronic renal failure, the great majority of nurses have not taken part in any training courses. In addition, all the nutrition training courses for patients with chronic renal failure that were given to nurses in Iraq were held within the country.

4. Nurses' understanding of nutritional therapy of patients with chronic renal failure does not differ significantly by (gender or number of training sessions). There was a statistically significant correlation between nurses' knowledge of nutrition management and (age, marital status, professional qualification, and years of experience).

5. Dialysis nurses were surprisingly well-versed in nutritional matters. There was a rise in postgraduate nurses' nutritional literacy.

6. The result showed there are deference between demographic da and nurses` knowledge toward nutritional status for patients with chronic renal failure due to p-value less than 0.05, except with time course training (.355), location of course (.167), gender (.092).

6.2 Recommendatıons

Researchers have made the following suggestions based on the findings of the study:

1. The study recommended conducting a training program focusing on patient nutrition for all nurses working in the dialysis unit.

2. The author of the study proposes to enhance the knowledge of nurses by allowing diploma holders to pursue bachelor's degrees and eventually obtain advanced degrees.

3. The study recommended the need to participate in training courses on nutrition for patients with chronic renal failure.

4. The study's author recommends creating a pamphlet for dialysis unit staff that details how to offer patients with a balanced diet via healthy eating habits.

5. The study recommends that further studies and research be conducted to evaluate the progress of nurses' experience and knowledge in dialysis centers.

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APPENDICES

APPENDIX 1. Approval the ethics committee of the ınstitute of health sciences, University of Cankiri

APPENDIX 2. Approval of the Iraq Ethics Committee

APPENDIX 3. Questionnaire (in English)

APPENDIX 3. Questionnaire format in Turkish

APPENDIX 3. Questionnaire format in Arabic

APPENDIX 4. **Permission to use the questionnaire.**

CURRICULUM VITAE

Surname : ALI KAREEM NAEMAH