Journal of Home Economics
Volume 29, Number (2), 2019
http://homeEcon.menofia.edu.eg

Journal of Home Economics
ISSN 1110-2578

Assessment of nutritional status for renal failure patients in Al-Madinah Al-Munawarah

El Gendy, M. S.
Nutrition and food sciences department, Faculty of Home Economic, Al Azhar University, Egypt

Abstract:

Malnutrition is a common problem in patient with renal failure. There are many risk factors to develop chronic kidney disease (CKD), like diabetes, hypertension and obesity. This study aimed to assess the nutritional state of hemodialysis patients in Al Madinah Al-Munawarah. A cross sectional study was conducted included 62 female hemodialysis patients, attending at hemodialysis center of King Fahd hospital and other privet centers. Interview questionnaire was used to collect socio-demographic, patient status, medical and dietary history. Anthropometric measurements included weight, height, ideal body weight, body mass index, waist circumference and use of body fat analyzer. Also, collecting lab result as serum phosphorus, calcium, total protein, albumin and hemoglobin from patient's files.

It was found that 48.4% of the sample have hypophosphatemia, 77.4% hypocalcemia and 87.1% mild anemia. For BMI (Body mass Index) 59.7% of the sample were having normal BMI, followed by 14.5% overweight, 11.2% obese, and 14.5% underweight. When compare the sample intake of food for two days with the RDI (Reference Dietary Intake), we found out that 75.8% and 71% of the sample were having intake under the recommendation from energy and protein, the same were for calcium, phosphate, total iron, potassium, zinc, magnesium and vitamin D. While vitamin A and folic acid were above RDI intake in most of the sample.

The study showed that most respondents consume energy, protein and nutrients less than the RDI.

Key words: Nutritional status, hemodialysis, malnutrition, BMI, WC, anemia, zinc, iron, calcium, potassium, energy, protein, magnesium, vitamin A, vitamin D, folic acid.

Introduction:

Chronic kidney disease (CKD) is commonly associated with malnutrition, affecting approximately one-third of patients with advanced renal failure (RF). Chronic kidney disease is a syndrome characterized by fast deterioration of the renal function, resulting in hydro-electrolytic imbalance and lead to accumulation of nitrogen catabolism products, such as creatinine and urea **(Fernanda *et al.*, 2008)**. As the presence of protein-energy malnutrition (PEM) is one of the greatest predictors of morbidity and mortality in hemodialysis patients (HDP), it is critical that dietitians precisely assess PEM in these patients. This is specifically true in Saudi Arabia, where in 2006, 7,584 patients were treated with hemodialysis, a figure that is estimated to exceed 11,000 in the end of 2010 **(Souqiyyeh *et al.*, 2001)** and in last statics in 2014 there is 14366 HDP **(SCOT Data, 2015)**. Nutritional assessment of patient on hemodialysis is necessary to determine the overall health. Also it is important for the dietitian to define the nutritional status of the patient and make the necessary changes to achieve proper health outcome. Hemodialysis is a treatment method for patients with kidney failure that use a machine containing filter to filtrate patient blood from extra salts, extra fluid, and wastes **(Roberts *et al.*, 1980).** There are a lot of risk factors to develop chronic kidney disease (CKD); like diabetes, hypertension, obesity, and glomerulonephritis. They may be inherited or congenital. Blood pressure, glucose, protein, electrolytes, acid and base should be monitored for hemodialysis patients to decrease the risk of heart disease and prevent end stage renal disease arrival **(Mahan *et al.*, 2013).** More traditional biochemical measures such as serum protein, albumin, transferrin indicate the HDP nutritional status **(Mahan *et al.*, 2013).** Nutritional assessment of hemodialytic patient in Al Madinah Al-Munawarah is poorly studied. The goal of the study was to determine the prevalence of malnutrition among adult female hemolytic disease patients in Al- Madinah Al Munawarah, Saudi Arabia.

Materials And Methods:

Design:

Cross Sectional study was conducted from February 2013 to April 2013.

The study subject:

Sixty two female patients at hemodialysis center of King Fahd Hospital and private centers in Al Madinah, Saudi Arabia were

participated in this study. Dialyzed patients were grouped into two groups; one was dialyzed on Saturday, Monday and Wednesday, while other was dialyzed on Sunday, Tuesday, and Thursday. These centers have two shifts or three shifts, dialysis take four hours for each patient.

Inclusion criteria:

1. Females aged from 25 years old to 50 years old.
2. Receiving hemodialysis three times per week or twice.
3. Patients with no acute illness, such as pneumonia
4. Had undergone hemodialysis for at least 2 months.

Ethical consideration:

The approval of study by the ethics committee of the hospital was obtained. The patients were informed about the purpose of the study. They were informed that their participation is voluntary and they have the right to withdraw at any time and will not affect their treatment at the hospital

Methodology:

1. Interview questionnaire:

Interview with patient for taking information about:

a) Socio-demographic characteristics of patient; age, marital status, number of family, job and level of education.
b) Patient status and medical history; causes of renal failure, symptoms at diagnosis and now, beginning of hemodialysis, medication that use or supplements and family history of renal failure.
c) Dietary history; dietary habit and dietary recall

i. Dietary habit including; do you eat all meals of day, do you eat at restaurants, what the method that using to prepare foods, also we ask about foods hygiene, feeling after food consumption, source of water and drinks with meals.

ii. The 24-hr diet recalls; the 24-hr recalls are relatively quick assessment modalities to obtain the most recent information about food intake **(Bingham *et al.*, 1994)**. The 24 hour recall analyzed by using Diet organizer program (version 3.1).

2. Anthropometric measurements:

a. Weight

Dry weight in dialyzed patient is post-dialysis weight. Physician scales was used to obtain the weight.

b. **Height**

Height was measured with the patients bare footed and head upright using physician scales.

c. **Ideal Body Weight (IBW)**

Ideal body weight was calculated using this equation Females: IBW = 45.5 kg + 2.3 kg for each inch over 5 feet.

d. Body Mass Index (BMI)

The Body mass index was calculated according to the patients post dialysis weight in kilogram (Kg) divided by height in meter square (m2). Patients were categorized to the **WHO** criteria (underweight: < 18.5, desirable weight: 18.5 to 24.9, overweight: 25 to 29.9, obese: ≥ 30). **(WHO, 2006 and Health direct, 2014).**

e. Body fat analyzer:

Body fat was obtained using GIMA Analyzer. This includes measuring fat percent, lean percent, basal metabolic rate and water contained in the body. GIMA Body Fat Analyzer measures the flow of electrical signals (total body electrical resistance or impedance) as they pass through fat, lean (muscle, bones, vital organs) or water. The 4 electrodes are placed over metacarpus and metatarsus where a 50 kHz current is introduced.

3. Biochemical measurements

Biological measurements including serum phosphorus, calcium, total protein, albumin and hemoglobin were collected from patient's files if available **(Barron *et al.*, 2017).**

Statistical analysis:

Descriptive analysis (mean, standard deviation, frequency distribution and correlation coefficient) was performed by statistical package of social science (SPSS) version 20. The minimal level of significance will be set at $P < 0.05$ **(Nie *et al*., 1975).**

Results:

Socio-demographic data:

Most of patients were below 45 years old, while middle adulthood represent one third of studied sample (Fig. 1). More than half of patients sample were married (53.2 %) while more than quarter of patients sample were single (38.7 %) and (8.1 %) were divorced (Fig. 2). Moreover (11.3 %) of patients were uneducated, (42 %) were below high school education, (46.8 %) of patients were high school educated, about half of them completed education by bachelor degree (Fig. 3).

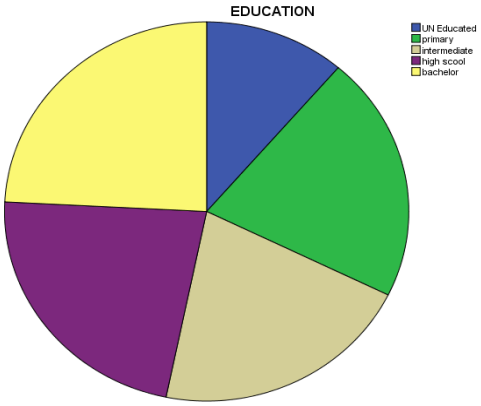

Figure 1

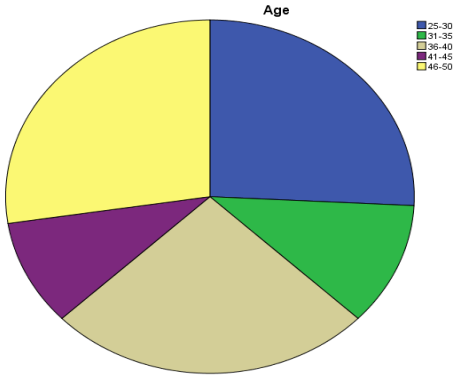

Figure 2

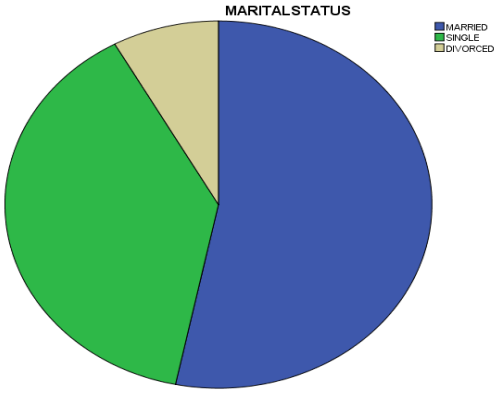

Figure 3

Frequency distribution of renal pathophysiology:

Figure (4) showed that date of HD beginning in 1 year to 5 years more than 11 years and more, more than 3 months to 1 year and 6 years to 10 years with magnitudes of (50.0%),(33.9%), (8.1%) and (8.1%) respectively. The most symptoms which patients suffer from are general weakness then dizziness after that nausea while few of patients suffer from vomiting or colic (Fig. 5). Most of the sample had no family history (64.5%), and the most cause for renal failure in patients under Hemodialysis was hypertension, then unknown ,then diabetes and hypertension with atrophy, then lupus with hypertensions, then hypertension with diabetes and lupus and other with magnitudes of (35.5%), (19.4%), (14.5%), (6.5%) and (3.2%) respectively (Fig. 6).

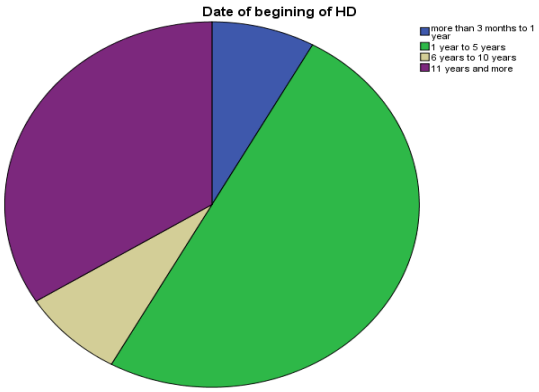

Figure 4

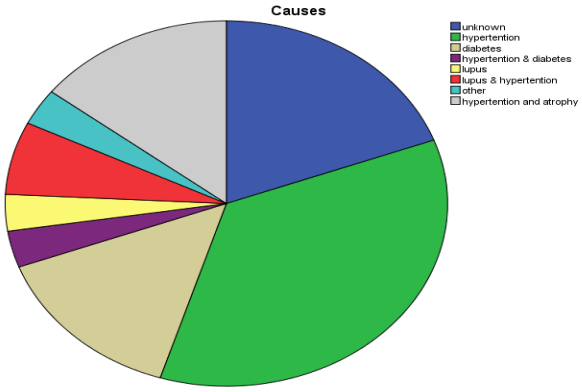

Figure 5

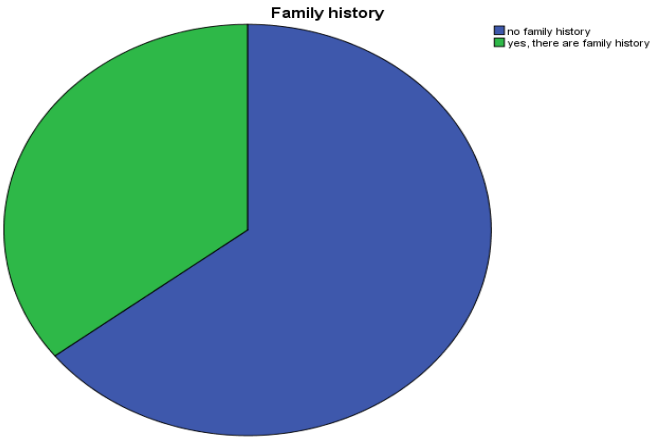

Figure 6

Frequency distribution of Dietary Data:

Table (1) represents the dietary habits of hemodialysis patients. It was showing that highest number of patients do not commitment (or sometimes) to the three meals while third were committing to the three meals daily. A highest percentage of patients finished them plate while (30.6 %) leftover half of amount in plate, (19.4 %) of sample leftover quarter of portion meals. Most of the patients eating normal diet and small number eating on special diet for hemodialysis patients. (30.6 %) of patients have nausea after finished meals while half of patients did not feel anything and small numbers of patients have vomiting, dizziness, dyspnea and general weakness. Most of sample ate from restaurants although half of them do not eat food which contain artificial colors.

The amount of salt per day which consumed was 1 tbsp for most patients (61.3%), while there is small percentage of patients adding 3 tbsp of salt and more to them foods (11.3%). Most of patients drink while they ate (58.1 %). Large percentage of patients drink bottled water (87.1 %). Most of the sample using calcium supplement and iron supplement.

Table1: Frequency distribution of Dietary Data.

Variable		NO (n=62)	%
Do you eat 3 meals daily?	**No**	19	30.6
	Sometimes	24	38.7
	Yes	19	30.6
What the type of diet?	Normal diet	57	91.9
	Special diet (for renal failure)	5	8.1
What you feel after finishing the meal?	Nausea	19	30.6
	Vomiting	1	1.6
	Dizziness	2	3.2
	Dyspnea	6	9.7
	General Weakness	3	4.8
Which of these supplements you take it?	Ca	18	29.0
	Fe	1	1.6
	Ca and Fe	37	59.7
	None	6	9.7
Do you eat from Restaurant?	Yes	44	71.0
	No	18	29.0
	Total	62	100.0
What amount of salt per day?	Never	2	3.2
	1 tbsp of Salt	38	61.3
	2 tbsp of Salt	15	24.2
	3 And More tbsp of Salt	7	11.3
	Total	62	100.0
Do you eat foods contain artificial colors?	Yes	31	50.0
	No	31	50.0
	Total	62	100.0
Do you drink with food?	Yes	36	58.1
	No	23	37.1
	Sometimes	3	4.8
	Total	62	100.0
What is the source of water?	Tap Water	2	3.2
	Bottled Water	54	87.1
	Wells And Springs	6	9.7
	Total	62	100.0

Anthropometry assessment

Table (2) showed that half of the sample have fat percent higher than normal, while one third were below the normal, The normal range for fat percent for female individuals aged from 20 -56 is 21% to 34%.

With respect to lean body mass, half of the sample were below the normal range. For the BMR, more than half of sample were have lower calorie intake than they need. It was found that mean body water % is 57.3%.

Table 2: Mean and SD for anthropopathy measurements:

Variables	Mean	SD	Reference	Below	Normal	Above
Weight (kg)	54.2	9.1	59.7	14.5%	59.7%	25.7%
Height (cm)	150	15.01	163	72.6%	27.4%	0 %
BMI	24	4.1	21.5	14.5%	59.7%	25.7%
Waist circumference (cm)	87.5	13.7	74-80	0%	38.7%	61.2%
Fat body mass%	31.1	5.3	21-35	32.3%	24.2%	43.5%
Lean body mass %	68.3	11.1	69-75	43.5%	24.2%	32.3%
BMR (calories)	1298.4	214.3	1316	67.7%	9.7%	22.6%
Body Water %	57.3	9.3	57-60	24.2%	38.7%	37.1%

BMI: Body mass index, BMR: basal metabolic rate.

Waist circumference, low risk <80.01 cm, moderate risk 80.01-88.9 cm, high risk > 88.9 cm

Classification of body mass index

The majority of the sample had normal BMI (59.7%), followed by (14.5%) over weight, (11.2%) obese and (14.5%) in the underweight category (Table 3).

Table 3: Distribution of study subject according to BMI classification:

BMI classification	Number	Percentile
Under weight	9	14.5
Normal	37	59.7
Over weight	9	14.5
Obese class 1	2	3.2
Obese class 2	2	3.2
Obese class 3	3	4.8

Underweight: < 18.5, desirable weight: 18.5 to 24.9, overweight: 25 to 29.9, obese: ≥ 30

Classification of waist circumference

Most of the sample (43.5%) were at high risk of chronic diseases, however 38.7% were healthy and 17.7% were at risk of chronic diseases (Table 4).

Table 4: Classification of waist circumference:

Waist classification	Number	Percentile
High risk of chronic diseases	27	43.5
Risk to chronic diseases	11	17.7
Healthy	24	38.7

Waist circumference, low risk <80.01 cm, moderate risk 80.01-88.9 cm, high risk > 88.9 cm

Biochemical measurements:

Table (5) showed that 80.6% of the patients had normal serum albumin, 48.4% had hypophosphatemia, 77.4% had hypocalcaemia.

Table 5: Mean & SD of biochemical measurements for statistical subjects:

Variables	Mean	SD	Percentage of Low	Percentage of Normal	Percentage of High
Serum albumin (g/dl)	3.92	0.59	14.5 %	80.6 %	4.8 %
Serum phosphorus (mg/dl)	3.73	0.51	48.4 %	16.1%	35.5%
Serum calcium (mg/dl)	5.72	0.80	77.4 %	22.6 %	0 %
Hemoglobin (g/dl)	11.68	1.75	54%	46%	0 %

Serum Albumin: **(3.2 – 5 g/dl)**, Serum Phosphorus: **(3.4 – 4.5 mg/dl)**, Serum Calcium: **(8.5 – 10.2 mg/dl)**, Hemoglobin: **(11.5 – 16.5 g/dl).** N=62 female patients.

Classification of anemia:

Table 6 showed that 87.1% have mild anemia.

Table 6: Classification of anemia:

Variables	Number	Percentage
Moderate anemia	8	12.9%
Mild anemia	54	87.1%

Nutrients values according to RDI:

The results in Table (7) showed that most of patients had energy (85.5%), protein (71%), calcium (90.3%), Phosphate (72.6%), total iron (98.4%), Potassium (91.9%), zinc (91.9%), magnesium (98.4%) and vitamin D (93.5%) intake of RDI. Vitamin B12 (75.8%) of RDI. While Sodium (43%), vitamin A and Folic acid (85.5%) intake of RDI.

Table 7: Nutrient intake for studied sample:

Variables	Mean	SD	RDI	% under RDI	% normal	% above RDI
Energy (Kcal)	1068	202	2403	85 .5	0	14.5
Protein(g)	41.7	8.0	46	71	16.1	12.9
Calcium (mg)	556	88.9	1000	90.3	9.7	0
Phosphorus (mg)	658	91.3	700	72.6	19.4	8.1
Iron(mg)	8.2	1.13	18	98.4	0	1.6
Sodium (mg)	4345	608	1500	38.7	17.7	43.5
Potassium (mg)	1262	215.1	4700	91.9	0	8.1
Zinc (mg)	4.7	0.62	8	91.9	6.5	1.6
Magnesium (mg)	150.6	24.2	320	98.4	0	1.6
Vitamin A (ug)	6506	778	700	8.1	6.5	85.5
Vitamin D (ug)	1.2	0.22	5	93.5	6.5	0
Folic acid (ug)	232.6	27.1	400	14.5	0	85.5
Vitamin B12 (ug)	2.21	0.35	2.4	3.2	75.8	21

Correlation coefficient between blood parameters and anthropometric measurements:

Results showed that there is a positive correlation coefficient between blood calcium and waist circumference, and between blood phosphorus and weight and BMI, while there is a significant negative correlation between serum albumin and ideal body weight (Table, 8).

Table 8: Correlation coefficient between blood parameters and anthropometric measurements: n=62

		Weight	IBW	Height	BMI	WC
Hemoglobin	Pearson Correlation	-.140	-.143	-.011	-.085	-.059
	Sig. (2-Tailed)	.279	.266	.933	.509	.648
Serum Calcium	Pearson Correlation	.160	.127	-.031	.192	.204**
	Sig. (2-Tailed)	.214	.324	.813	.135	.111
Serum Phosphorus	Pearson Correlation	.090**	-.043	-.132	.145**	.062
	Sig. (2-Tailed)	.489	.738	.307	.262	.632
Serum Albumin	Pearson Correlation	-.037	-.022**	-.267	-.011	.052
	Sig. (2-Tailed)	.776	.863	.036	.934	.686

IBW: ideal body weight, BMI: body mass index, WC: waist circumference.

Correlation coefficient between nutrient intake and blood parameters:

Results showed significant negative correlation coefficient between protein intake and blood phosphorus and between calcium intake and blood albumin, phosphorus, calcium and hemoglobin and between phosphate intake and blood phosphorus and hemoglobin and between iron intake and blood calcium (Table, 9).

Table 9: Correlation coefficient between nutrients intake and blood parameters

Variables	P	R
Protein VS. Albumin	.367	-.117
Protein VS. Phosphorous	.373	-.115 **
Protein VS. Calcium	.655	-.058
Protein VS. Hemoglobin	.873	.021
Calcium VS. Albumin	.365	-.101 **
Calcium VS. Phosphorus	.738	-.102 **
Calcium VS. Calcium	.446	-.130 *
Calcium VS. Hemoglobin	.869	-.018 **
Phosphate VS. Albumin	.434	-.055 **
Phosphate VS. Phosphorous	.430	-.093 **
Phosphate VS. Calcium	.315	-.206
Phosphate VS. Hemoglobin	.888	-.169 **
Potassium VS. Albumin	.108	-.099
Potassium VS. Phosphorous	.474	-.190
Potassium VS. Calcium	.669	-.075
Potassium VS. Hemoglobin	.189	.113
Iron VS. Albumin	.645	-.056
Iron VS. Phosphorous	.604	-.030
Iron VS. Calcium	.208	-.192 *
Iron VS. Hemoglobin	.935	-.046
Folic Acid VS. Albumin	.665	-.074
Folic Acid VS. Phosphorous	.814	-.078
Folic Acid VS. Calcium	.134	-.081
Folic Acid VS. Hemoglobin	.721	-.058
Vitamin D VS. Albumin	.566	-.119
Vitamin D VS. Phosphorous	.549	.011
Vitamin D VS. Calcium	.530	-.112
Vitamin D VS. Hemoglobin	.656	-.037
Vitamin A VS. Albumin	.358	-.102
Vitamin A VS. Phosphorous	.933	-.037
Vitamin A VS. Calcium	.386	-.146
Vitamin A VS. Hemoglobin	.773	-.004
Zinc VS. Albumin	.430	.002
Zinc VS. Phosphorous	.775	-.048
Zinc VS. Calcium	.258	-.085
Zinc VS. Hemoglobin	.977	-.110
Mg VS. Albumin	.989	-.090
Mg VS. Phosphorous	.711	-.111
Mg VS. Calcium	.513	-.220
Mg VS. Hemoglobin	.395	.015
Vitamin B12 VS. Albumin	.485	-.090
Vitamin B12 VS. Phosphorous	.388	-.111
Vitamin B12 VS. Calcium	.086	-.220
Vitamin B12 VS. Hemoglobin	.910	.015

Discussion:

Most of the sample had low energy and protein intake. It is important to provide a sufficient amount of energy to patients with chronic kidney disease (CKD) to maintain adequate nutritional status for these patients **(Souqiyyeh *et al*., 2001)**. The recommended dietary protein and calorie intake for sedentary hemodialysis (HD) patients are 1.2 – 1.4 g/kg and 30 – 35 kcal/kg, respectively **(Kopple, 2001)**. In this study 85.5 % of sample were not having the accurate amount of calories, as for the protein 71 % of the sample have a low intake. Another study done in 2013 showed that actual intake of calories, protein, fats and minerals were lower than the recommended intake for hemodialysis patients. More than 50 percent of patients on hemodialysis were at risk of malnutrition. Malnutrition was related to low nutrient intake **(Bibi *et al*., 2013)**.

Body weight, body composition, percentage of body fat mass (BFM) are the best way of conducting malnutrition in hemodialysis patient **(Qureshi, 1998)**. Overweight in end-stage renal disease patients is reported to be associated with better survival than obese. 43.5% of the present sample had a high fat mass. Honda and colleagues indicated that a high BMI and a high fat body mass were associated with survival advantage **(Honda *et al*., 2007)**. Another study assumed that increasing muscle mass is better to enhance performance and quality of life **(Johansen *et al*., 2003).**

In this study, water percent from fat analyzer was compared with the normal values of water in normal person. It was found that, 24.2% were dehydrated and 37.1% were overhydrated. Clinical overhydration was more prevalent in pre-HD (hemodialysis) and PD (peritoneal dialysis) patients compared to post-HD patients **(Devolder *et al*., 2010)**. According to **Kopple, (1994)** the three major causes of malnutrition in hemodialysis patient are low nutrient intakes, underlying illnesses, and the dialysis procedure itself. Malnutrition is a major risk factor for mortality in hemodialysis patients **(Kopple, 1994)**. The results showed that most of patients had low intake of vitamin D (93.5 % under RDI).

Vitamin D deficiency is associated with cardiovascular disease, the most common cause of mortality in hemodialysis patients **(Wolf *et al*., 2007)**. Also, zinc is an essential component in more than 120 zinc-dependent enzymes and hence, the symptoms of zinc deficiency are complex and non-specific. They can stimulate deficiency of essential amino acids, fatty acids and vitamins and can also resemble symptoms usually attributed to chronic renal insufficiency **(Yonova, 2012)**. Zinc (Zn) deficiency has been reported in 40-78% of hemodialysis (HD) patients and may be associated with anemia and pruritus and probably limiting the expression of renal osteodystrophy **(Dashti-Khavidaki *et al*., 2010)**. Most of the sample had (91.9 %) lower intake than RDI. Most of study patients had low intake in Mg. Massy and his colleague showed that low serum magnesium may be an independent risk factor for premature death in CKD patients, and patients with mildly elevated serum magnesium levels could have a survival advantage over those with lower magnesium levels **(Massy and Drüeke, 2012)**.

The results showed that 87% of patients had mild anemia and 13 % had moderate anemia. Anemia is a common problem in patients with chronic kidney disease and its incidence increase as glomerular filtration rate declines **(Lanhorst and Wish, 2010)**. Anemia in renal failure is caused by the lack of sufficient quantities of endogenous erythropoietin **(Fehally *et al*., 2003)**. Iron deficiency, either absolute or functional, will occur in most, if not all, patients on hemodialysis even receiving erythropoietin because of the increased demand for iron driven by the accelerated erythropoiesis that occurs with exogenous erythropoietin administration, coupled with ongoing blood losses from dialyzer and tubing, blood sampling, gastrointestinal blood loss, and blood losses at the time of dialysis and even due to decreased intake because of diminished appetite (**Bossola *et al*., 2009**).

Most of the sample (80.6%) has normal serum albumin, however (14.5 %) has hypoalbumineima. It was reported that studies that adjusted for the confounding effect of inflammation showed a significantly lower relation between serum albumin and all-cause mortality compared with

those that did not adjust for inflammation. This may be explained by the finding that serum albumin, although recognized as a nutrition marker, may be decreased in the presence of inflammation, possibly as a consequence of changes in the fractional catabolic rate **(Nissenson and Stropos, 1999)**. The inverse relation between mortality and serum albumin was still significant, however, indicating that the relation with serum albumin cannot be explained solely by the presence of inflammation. The amount likely mechanisms thought to explain an inverse relation among serum albumin and mortality include a compromise of the immune response as a result of malnutrition, an increased risk of infections and an effect on the heart, malnutrition, inflammation and atherosclerosis is often coexist in patient on hemodialysis **(Kaysen, 2001 and Carrero *et al.*, 2007)**. These investigations were in line with results on table 2 where the main cause for hemodialysis were hypertension, diabetes, lupus and atrophy. Serum albumin remains the biochemical marker for malnutritional status, because it may be affected by hydration status, infection, and other causes of inflammation that stimulate the cytokine-mediated acute phase response and capillary leakage of albumin **(Fernandez- Rye *et al.*, 2000)**. Serum albumin level seems to be a poor nutritional marker in patients with advanced chronic renal failure **(Heimbürger *et al.*, 2017)**.

In Conclusion, Patients with renal failure have low intake of energy and protein, also have deficiency of Vitamin D, iron, calcium, and zinc.

References:

Barron, L.J.; Barron, R.F.; Johnson, J.C.S.; Wagner, I.; Ward, C.J.B.; Ward, S.R.B.; Barron, F.M. and Ward, W.K. (2017): A retrospective analysis of biochemical and haematological parameters in patients with eating disorders. Journal of eating disorders, 5: 32.

Bibi, H.; Muhammad, S. and Rattan, K. (2013): Nutritional status assessment of hemodialysis patients at Rehman Medical Institute, Peshawar. ARPN Journal,8(4): 329-336.

Bingham, S.A.; Gill, C. and Welch, A. (1994): Comparison of dietary assessment methods in nutritional epidemiology: weighed records v. 24 h recalls, food-frequency questionnaires and estimated-diet records. Br J Nutr. 72: 619–643.

Bossola, M.; Giung, S.; Luciani, G. and Tazz, L. (2009): Appetite in chronic hemodialysis patients: A longitudinal study. Journal of renal nutrition, 19(5): 372-379.

Carrero, J.S.; Gureshi, A.R.; Axelsson, J.; Avesani, C.M.; Suliman, M.E. and Kato, S. (2007): Comparison of nutritional and inflammatory markers in dialysis patients with reduced appetite. Am J Clin Nutr., 85: 695-701.

Dashti-Khavidaki, S.; Khalili, H.; Vahedi, S. and Lessan-Pezeshki, M. (2010): Serum zinc concentrations in patients on maintenance hemodialysis and its relationship with anemia, parathyroid hormone concentrations and pruritus severity. Saudi journal of kidney diseases and transplantation: an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia., 21(4): 641–645.

Devolder, I.; Verleysen, A.; Vijt, D.; Vanholder, R. and Van Biesen, W. (2010): Body composition, hydration, and related parameters in hemodialysis versus peritoneal dialysis patients. Peritoneal Dialysis International, 30(2): 208–214.

Fehally, J.; Floege, J. and Johnson, R. (2003): Comprehensive clinical nephrology. Philadelphia: Mosby Elsevier, p. 853-860.

Fernanda, T.N.; Gianine, D.C.; Sandra, M.; Xavier, D.P.; Leandro, M.; Ka´tia, C.; Denise, G. and Maria, R.M. (2008): Dialysis adequacy and nutritional status of hemodialysis patients. Hemodialysis International. 12: 45–51.

Fernandez- Rye, M.J., Alvarez-undef, V., Sanchez, R. Mon, C. Iglesias, P. and Vazquy, A. (2000). Nutritional status, comorbidity and inflammation in hemodialysis. Nefrologia, 20:540 -549.

Health direct (2014) Body Mass Index (BMI) and waist circumference. Available at: https://www.healthdirect.gov.au/body-mass-index-bmi-and-waist-circumference (Accessed: 18 January 2017).

Heimbürger, O.; Qureshi, A.R.; Blaner, W.S.; Berglund, L. and Stenvinkel, P. (2017): Hand-grip muscle strength, lean body mass, and plasma proteins as markers of nutritional status in patients with chronic renal failure close to start of dialysis therapy', American Journal of Kidney Diseases, 36(6), pp. 1213–1225.

Honda, H.; Qureshi, A.R.; Axelsson, J.; Heimburger, O.; Suliman, M.E.; Barany, P.; Stenvinkel, P. and Lindholm, B. (2007): Obese sarcopenia in patients with end-stage renal disease is associated with inflammation and increased mortality. Am J Clin Nutr., 86(3): 633-638

Johansen, K.L.; Shubert, T.; Doyle, J.; Soher, B.; Sakkas, G.K. and Kent-Braun, J.A. (2003): Muscle atrophy in patients receiving hemodialysis: Effects on muscle strength, muscle quality, and physical function', Kidney International, 63(1): 291–297.

Kaysen, G.A. (2001): The microinflammation state in uremia : causes and potential sequences. JAm soc Nephrol, 12:1549 -1557.

Kopple, J.D. (2001): National kidney foundation K/DOQI clinical practice guidelines for nutrition in chronic renal failure. Am J Kidney Dis., 37: S66–S70.

Kopple, J.D. (1994): Effect of Nutrition on Morbidity and Mortality in Maintenance Dialysis Patients. American journal of kidney disease, 24 (6): 1002–1009.

Lankhorst, C.E. and Wish, J.B. (2010): Anemia in renal disease: diagnosis and management. Blood reviews, 24:39-47.

Mahan, K.L.; Raymond, J.L. and Escott-Stump, S. (2013): Krause's food & the nutrition care process. 13th edn. Philadelphia, PA, United States: Saunders. pp. 729–791

Massy, Z.A. and Drüeke, T.B. (2012): Magnesium and outcomes in patients with chronic kidney disease: Focus on vascular calcification, atherosclerosis and survival. Clinical Kidney Journal, 5(Suppl_1): 52–61.

Nie, N.H.; Bent, D.H. and Hull, C.H. (1975): SPSS: Statistical package for the social sciences. Second Edition, New York: McGraw-Hill Book Co.

Nissenson, A. and Strobos, J. (1999): Iron deficiency in patients with renal failure. Kidney international, 69: 18–21.

Qureshi, R.A. (1998): Factors predicting malnutrition in hemodialysis patients: A cross-sectional study', Kidney International, 53(3): 773–782.

Roberts, C.; Kopple, J.D.; Gutman, R.A.; Chan, Y.K., Barbuour, G.L.; Blumenkrantz, M.J.; Shen, F.H.; Gandhi, V.C.; Tucker, C.T.; Curtis, F.K. and Coburn, J.W. (1980): Methods for assessing nutritional status of patients with renal failure. The American Journal of Clinical Nutrition, 33(7): 1567-1585.

SCOT Data (2015): Dialysis in Kingdom Saudi Arabia. Saudi Journal of Kidney Diseases and Transplantation, 26(4): 839-848.

Souqiyyeh, M.; Al-Attar, M.; Zakaria, H. and Shaheen, F. (2001): Dialysis Centers in the Kingdom of Saudi Arabia. Saudi Journal of Kidney Disease and Transplantation, 12(3): 293-304.

WHO (2006): Global database on body mass index. Available at: http://apps.who.int/bmi/index.jsp?introPage=intro_3.htm (Accessed: 18 January 2017).

Wolf, M.; Shah, A. and Gutierrez, O. (2007): Vitamin D levels and early mortality among incident hemodialysis patients. Official journal of the international society of nephrology, 72(8): 1004–1013.

Yonova, D.; Vazelov, E. and Tzatchev, K. (2012): Zinc status in patients with chronic renal failure on conservative and peritoneal dialysis treatment. Hippokratia, 16(4): 356–359.

Journal of Home Economics, Volume 29, Number (2,4), 2019

تقييم الحالة الغذائية لمرضى الفشل الكلوي بالمدينة المنورة

منال صلاح الجندي

قسم التغذية وعلوم الأطعمة – كلية الاقتصاد المنزلي – جامعة الازهر

الملخص العربى:

يعتبرسوء التغذية من المشاكل الشائعة في مرضى الفشل الكلوي. ومن أهم العوامل المؤثرة في حدوث أمراض الكلى المزمنة كما دلت عليها الأبحاث الطبية السكري وارتفاع ضغط الدم والسمنة.

تهدف هذه الدراسة إلى تقييم الحالة الغذائية لمرضى الغسيل الكلوي الاناث في المدينة المنورة. وقد اجريت دراسة مقطعية ل 62 مريضة فشل كلوي في مركز غسيل الكلى في مستشفى الملك فهد ومراكز خاصة أخرى، وتم استخدام استبيان لمعرفة الحالة الاجتماعية والديموغرافية للمرضى، وكذلك حالة المريض العامة والتاريخ الطبي والغذائي للمريض. شملت القياسات الانثروبومترية، الوزن ، الطول ، مؤشر كتلة الجسم ومحيط الخصر، كما تم أخذ نتائج جهاز تحليل الدهون. هذا وقد تم جمع نتائج تحاليل الدم لكل من: الفوسفور، والكالسيوم، البروتين الكلي، الألبومين، BUN (النيتروجين في الدم والبول)، والكريانينين، والهيموجلوبين من ملفات المرضى.

تشير النتائج إلى أن 48.4٪ من العينة لديهم نقص في سيرم الفوسفات، 77.4 ٪ لديهم نقص في سيرم الكالسيوم و 83.9% لديهم فقر دم خفيف. وبالنسبة لمؤشر كتلة الجسم فقد وجد أن 59.7 ٪ من العينة كان لديهم مؤشر كتلة جسم طبيعي، و 14.5٪ كانوا يعانون من زيادة الوزن، 11.2٪ يعانون من السمنة المفرطة، و14.5٪ يعانون من نقص الوزن.

وبمقارنة العناصر الغذائية المتناولة للعينة لمدة ثلاثة ايام مع RDI وجد أن 85.5% و 71% من العينة كانوا يتناولون كمية ضئيلة جداً من التوصيات الغذائية للطاقة والبروتين، ونفس الكميات الضئيلة لكل من: الكالسيوم، الفوسفات، الحديد الكلي، البوتاسيوم، الزنك والمغنسيوم وفيتامين (د) في حين أن فيتامين (أ) وحمض الفوليك كان يتم تناولهم أعلى من RDI في معظم العينة.

أظهرت الدراسة أن معظم الحالات تستهلك طاقة وبروتين ومغذيات أقل من النسبة الموصى بها عالمياً.