

Assessment of Dietary Management of Patient during Dialysis

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Abstract: *Inadequate dietary intake is a major determinant of malnutrition in dialysis patients. Concerning the lack of information available on dietary intake of Dialysis patient in Hail, the present study was designed to assess the dietary intake of Dialysis patient in Hail hospital. [27 male, 33 female]. **Material and Method:** All patients who were received dialysis in Hail dialysis centre were considering to be cases for participation in the study. 60 questionnaires were submitted to collected information about dietary intake. **Finding:-** The average age of the patients ranged from 15-80 years. Weight 50-90 kg for men and 49-90 kg for women, and the average height for men 150-170 cm and women 149-161 cm. Hemo-dialysis 40% and 66.7% Peritoneal Dialysis, pathological signs of dialysis patients 45% of them Feeling physically weak, Hypertension beside kidney disease are 46.7%. Only 50% of the patients receiving nutrition education during dialysis.. **Conclusion** Most patients with kidney dialysis who are at the center King Khalid Hospital in Hail do not follow nutritional and healthy diet, lack of exercise. A patient on dialysis need nutrition education to maintains their health and reduces complications.*

Keyword: Dialysis, Dietary management, Nutrition education

1. Introduction

The kidney works to maintain fluid, electrolyte and acid-base balance by eliminating nitrogenous and other metabolic waste products from the body through the urinary system. Another key function of the kidney is to help maintain blood pressure, produce erythropoietin and activate vitamin D. The proper functioning of the kidney is impaired when there is loss of nephrons. The nephron is the functional unit of the kidney. When normal kidney function is greatly impaired, then dialysis becomes necessary [1].



1.1 Dialysis

It is a process by which waste products are removed from the blood in the event of kidney failure. There are two main forms of dialysis - **haemodialysis** and **peritoneal dialysis**. In haemodialysis, blood is cleaned outside the body via a machine. Peritoneal dialysis allows the blood to be filtered through the peritoneal membrane located in the abdomen. The common feature of both types of dialysis is the removal of wastes and excess fluids from the body. [1] In **dialysis patients**, the ability of the kidney to get rid of waste products and body fluids is compromised. Consequently, a **healthy balanced diet** is extremely important. The well-being of a dialysis patient depends on taking prescribed medications and on the choice of diet. The right amounts of energy, protein, fluids, vitamins and minerals need to be taken [1]

1.2 Nutritional Management

In view of the limited ability of dialysis patients to cope with excess fluid and other metabolic wastes, it is vital that nutrient content of foods consumed by such patients is given special considerations. Nutrient intakes of patients receiving maintenance dialysis are often inadequate, and several lines of evidence suggest that toxins that accumulate with renal failure suppress appetite and contribute to nutritional decline [2]

1.3 Protein-Energy Malnutrition

Malnutrition is common in dialysis patients and close to 40% of dialysis patients suffer from varying degrees of protein-energy malnutrition. Many dialysis patients are not able to meet the minimum energy requirement due to many causes including loss of appetite [anorexia]. Decrease in dietary protein and energy intake is one of the main causes of protein-energy malnutrition. The recommended daily protein intake is at least 1.2 g/kg body weight and the optimal energy intake is 35 kcal/kg body weights in patients <60 years, and 30 kcal/kg body weight in patients >60 years. Inadequate dietary prescription, as a direct consequence of some doctors' preference in prescribing diet restriction rather than providing appropriate nutritional counseling, can actually aggravates malnutrition in dialysis patients. Whereas higher intake of protein requires higher doses of dialysis, lower intake of protein with sufficient energy intake requires lower doses of dialysis, and both could give the same effects on nutritional status. Apart from protein-energy malnutrition, dialysis patients are also vulnerable to micronutrients deficiencies. The process of dialysis itself can cause loss of nutrients especially water soluble vitamins [2] [5]

1.4 Sodium

Diet high in sodium must be avoided because it can make one thirsty and thereby cause the body to hold on onto more fluid. In order to cut down on **salt** intake one may have to

flavor his/her food with herbs and spices instead of common salt. The consequence of high sodium may lead to:

- Swelling of the lower joints of the feet and hands;
- Increased weight associated with accumulated body fluids;
- Increase in blood pressure;
- Shortness of breath and
- Increased activity of the heart.



1.5 Phosphorus

Foods rich in phosphorus like, dairy products, nuts, beans, lentils, cola drinks, beer, and cocoa drinks are most likely to increase the phosphorus level in the blood. Unfortunately however, dialysis is unlikely to remove accumulated levels of phosphorus in the blood and this can cause the release of calcium from the bones. The continuous removal of calcium from the bones may eventually make them weak causing brittle bones. It is also known that high accumulation of phosphorus in the blood results in the formation of what is called calcium-phosphorus crystals in the joints, muscle, blood, heart etc. The calcium-phosphorus crystals may pose problems such as bone pain, poor blood circulation and even damage to the heart.



1.6 Potassium

Equally, persons undertaking haemodialysis may have to limit the intake of foods rich in potassium. Foods high in potassium include bananas, melons, oranges, potatoes, tomatoes, milk, poultry, pork and fish.

1.7 Fluids

Factors that can lead to increased intake of fluids must be watched and avoided. Fluids include any food or beverage that remains liquid at room temperature, for example gravy, soups, ice cream, tea, coffee, juices, water, fizzy drinks.

1.8 Nutrient supplementation

Kidney patients on dialysis may have to supplement their diet with vitamins and minerals in order to improve their nutritional status. For example, excess intake of water soluble B vitamins can easily be cleared from the body through the urinary system. Additionally, potassium-restricted or protein-restricted diets may be recommended for some dialysis patients but such diets may result in

thiamine [Vitamin B1] and riboflavin [Vitamin B2] deficiencies. Therefore supplementing dialysis patients is a safe way of ensuring deficiency of this group of vitamins is avoided. For thiamine, a supplemental dose of [1.0-1.5 mg/day] is adequate. The diet of dialysis patients may be supplemented with vitamin B2 at a dose level of 1.0-2.0 mg/day. However, some supplements especially fat soluble ones may be harmful as these can accumulate in the body. Another problem with nutritional supplements for dialysis patients has to do with low compliance. A study carried out in New Zealand showed that patient compliance with nutritional supplements was low and the main barrier was lack of appetite.

1.9 Important Dietary Tips for Dialysis Patients

- Consume fresh or plain frozen vegetables which often contain no added salt.
- Choose canned fruits which usually contain less potassium than fresh fruits.
- Use non-dairy creamers that contain low phosphorus instead of milk.
- Read labels on food packages to guide in choosing foods with only permissible ingredients.
- Help reduce the salt content of your diet by using herbs and spices instead of common table salt.

1.10 What to Eat when You Have Chronic Kidney Disease

Eating well is a key to maintaining your health when you are on dialysis. When you have chronic kidney disease, it's important to consult a dietician to create a diet that will help you preserve your kidney function for longer and slow down the progression of kidney disease. Your dietician will talk to you about the nutrients and minerals you need to manage your kidney disease, such as protein, potassium, salt [sodium], sugar, and phosphate. Your diet may differ depending on your dialysis treatment plan.

1.10.1 Protein

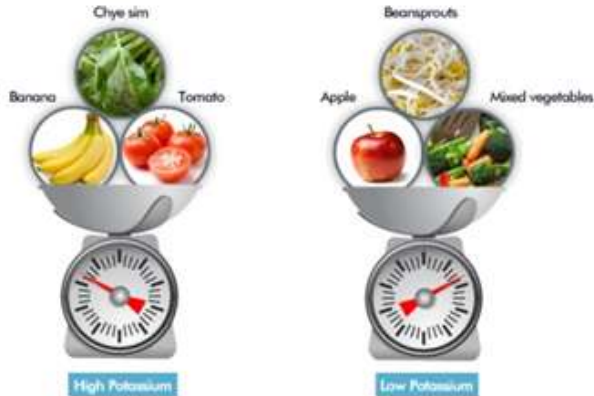
Your body uses protein to build and repair your muscles, tissues, and immune system. Before you reach end-stage kidney disease, you will need to limit the amount of protein you eat so that your kidneys will not have to work so hard. When you are on dialysis, especially peritoneal dialysis, you will need to eat more protein to replace the amount that is lost during dialysis treatments. Consult your dietician and doctor to see how much protein you need to eat. [3]



Source [12]

1.10.2 Potassium

Your body needs potassium to maintain your heart function, nerve conduction, and muscle contraction. Too much potassium can cause you to experience fatigue, poor respiration, and heart problems. If you're on peritoneal dialysis, you may not need to restrict your potassium intake very much. If you're on haemodialysis, however, potassium will build up between treatments so you will need to be more careful with the amount of potassium in your diet. Consult your dietician and doctor to see what foods fit within your potassium requirements [3] [9] [12]



Source [12]

1.10.3 Salt [Sodium]

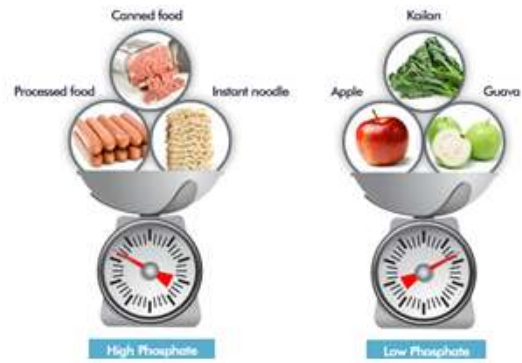
Changes in sodium levels determine the amount of fluid your body retains and in turn, influences your blood pressure. If you have high blood pressure, it is even more important for you to be careful with the amount of salt you eat. Both patients on haemodialysis and peritoneal dialysis need to watch their salt intake. Ask your dietician and doctor for more information [4] [12]



Source [12]

1.10.4 Phosphate

As your kidneys become less effective at filtering waste products, the amount of phosphate will begin to increase in your blood. Excess phosphate can lead to brittle bones, joint pain, and other health problems. Both haemodialysis and peritoneal dialysis patients need to control the amount of phosphate in their diet. Almost all patients with high phosphate levels will also need to take phosphate binders. Phosphate binders prevent the body from absorbing the phosphate from the food you eat. Ask your dietician and doctor for more information. [4] [13].



Source: [13]

1.10.5 Fluids

The amount of fluids you take in during the earlier stages of kidney disease is not restricted. As your kidney function declines, however, you will begin to retain more fluid in your body and you may experience swelling in your ankles or legs. You will need to take into account how much you drink as well as how much you eat in your food, such as soups, porridge, and frozen desserts. [11]

Your dietician will help you determine your daily fluid allowance. Peritoneal dialysis patients will need to see how much fluid is released during an exchange. Both peritoneal dialysis and haemodialysis patients will need to consider urine output, kidney function, and body size. [11]

2. Result and Discussion

Table 1: Socio- Demographic Profile of the study Population

| Variables | | Frequency | Percentage |
|-------------------|--------------|-----------|------------|
| Gender | Males | 27 | 45 |
| | Females | 33 | 55 |
| Income | <2000 SR | 17 | 28.3 |
| | 2000-5000 SR | 28 | 46.7 |
| | >5000 SR | 15 | 25 |
| Educational level | College | 12 | 20 |
| | Primary | 15 | 25 |
| | Secondary | 11 | 18.3 |
| | Uneducated | 22 | 36.7 |

Table 1 Shows that 45% of respondents are male and 55% are female, and the levels of education, primary 25% and majority are uneducated 36.7%, the income of patients at dialysis between 2000-5000 SAR is 46.7%.

Table 2: Age and Anthropometric Profile of the study Population

| Variables | | Minimum | Maximum | Mean | Standard Deviation | |
|-----------|--------|---------|---------|-------|--------------------|------|
| Age | Total | 15 | 80 | 37.8 | 16.1 | |
| | Gender | Male | 18 | 80 | 39.5 | 17.3 |
| | | Female | 15 | 75 | 36.5 | 15.1 |
| Wt | Total | 49 | 90 | 65.9 | 11.7 | |
| | Gender | Male | 50 | 90 | 66.6 | 11.1 |
| | | Female | 49 | 90 | 65.3 | 12.4 |
| Ht | Total | 149 | 170 | 157.2 | 5 | |
| | Gender | Male | 150 | 170 | 161.1 | 4.1 |
| | | Female | 149 | 161 | 154.5 | 3.4 |
| BMI | Total | 19.5 | 40 | 27.9 | 4.9 | |
| | Gender | Male | 20 | 35 | 26.7 | 4.4 |
| | | Female | 22 | 40 | 28.8 | 5.3 |

Table 2. Represents that the average age of the patients ranged from 15-80 years. The female are younger than male. Weight 50-90 kg for men and 49-90 kg for women, and the average height for men 150-170 cm and women 149-161 cm, increased weight may associated with accumulated body fluids, and BMI for men between 20-35, for women between 22-40. There are no significant differences between male and female in the standard deviation both on Wt & BMI.

Table 3: Medical and Genetic History of the study Population

| Variables | | Frequency | % |
|---------------------|-----------------------------|-----------|------|
| Type of Dialysis | Hemo-dialysis | 24 | 40 |
| | Peritoneal Dialysis | 18 | 66.7 |
| Pathological signs | Feeling physically weak | 27 | 45 |
| | Vomiting and nausea | 13 | 21.7 |
| | Muscle cramps and itching | 6 | 10 |
| | Metallic taste in the mouth | 4 | 6.7 |
| | Complications in the nerves | 4 | 6.7 |
| | Other signs | 6 | 10 |
| Other Diseases | Diabetes | 7 | 11.7 |
| | Hypertension | 28 | 46.7 |
| | Anemia | 16 | 26.7 |
| | Other | 9 | 15 |
| Nutrition education | Yes | 30 | 50 |
| | No | 30 | 50 |
| Family History | Yes | 10 | 16.7 |
| | No | 50 | 83.3 |

Table 3 shows the type of dialysis, 40% of patients had Hemo-dialysis and 66.7% Peritoneal Dialysis. Pathological signs. 45% of them have physically weak, 21.7 have vomiting and nausea. 10% have muscle cramps and itching. 6.7%, have Metallic taste in the mouth 6.7%, have Complications in the nerves. Majority of the cases are Hypertension 46.7%, only 50% are attended Nutrition education session, 83% have no family history concerning kidney disease.

Table 4: Gender differences in Medical History of the study Population

| Variables | | Males | | Females | |
|--------------------|-----------------------------|-----------|------|-----------|------|
| | | Frequency | % | Frequency | % |
| Type of Dialysis | Hemodialysis | 9 | 33.3 | 15 | 45.5 |
| | Peritoneal Dialysis | 18 | 66.7 | 18 | 54.5 |
| Pathological signs | Feeling physically weak | 12 | 44.4 | 15 | 45.5 |
| | Vomiting and nausea | 6 | 22.2 | 7 | 21.2 |
| | Muscle cramps and itching | 3 | 11.1 | 3 | 9.1 |
| | Metallic taste in the mouth | 1 | 3.7 | 3 | 9.1 |
| | Complications in the nerves | 2 | 7.4 | 2 | 6.1 |
| | Other signs | 3 | 11.1 | 3 | 9.1 |

Table 4 Shows that 44.4% of the peritoneal dialysis men and 45.5% of the peritoneal dialysis women have the same pathological sign of feeling physically weak. Vomiting and nausea come as second sign found on both male and female [22.2%, 21.2% respectively]

Table 5: Expectations of patients from medical staff and nutrition staff of the study Population

| Variables | | Frequency | % |
|---|--|-----------|------|
| What type of medical help | Kidney Transplant | 9 | 15 |
| | Pharmaceutical Drugs | 49 | 81.7 |
| | Psychological counseling | 0 | 0 |
| | Other | 2 | 3.3 |
| How can a nutritionist suggestions help | Controlling nutritional complications | 12 | 20 |
| | Prevention of progression of renal failure | 14 | 23.3 |
| | Provide an acceptable and attractive diet | 12 | 20 |
| | Help in controlling sodium - potassium ratio | 8 | 13.3 |
| | Support with motivation diet plans | 6 | 10 |
| | other | 8 | 13.3 |

Table [5] represents that 81.7% of the respondents expected pharmaceutical drugs are more helpful than kidney transplant to improve their condition. Only 23.3% of the cases though that the nutritionist advises help on preventing the progress of the renal failure and not controlling nutrition complication or provide an acceptable and attractive diet.

Table 6: Gender wise Expectations

| Variables | | Males | | Females | |
|-------------------------------|--|-----------|------|-----------|------|
| | | Frequency | % | Frequency | % |
| Type of medical help | Kidney Transplant | 6 | 22.2 | 3 | 9.1 |
| | Pharmaceutical Drugs | 20 | 74.1 | 29 | 87.9 |
| | Psychological | 0 | 0 | 0 | 0 |
| | Other | 1 | 3.7 | 1 | 3 |
| Nutritionist suggestions help | Controlling nutritional complications | 7 | 25.9 | 5 | 15.2 |
| | Prevention of progression of renal failure | 4 | 14.8 | 10 | 30.3 |
| | Provide an acceptable and attractive diet | 7 | 25.9 | 5 | 15.2 |
| | Help in controlling sodium - potassium ratio | 4 | 14.8 | 4 | 12.1 |
| | Support with motivation diet plans | 2 | 7.4 | 4 | 12.1 |
| | other | 3 | 11.1 | 5 | 15.2 |

Table [6] Shows that 74.1% of the respondents [men] and 87.9% [women] expected pharmaceutical drugs are help more in the patient treatment than kidney transplant and psychological counseling. While 51.8% of the respondents [men] think that nutritionist help in controlling nutritional complication and provide an acceptable, attractive diet. Only 30.4% of respondents [women] have the same thought.

3. Conclusion

Most patients with kidney dialysis who are at the center King Khalid Hospital in Hail do not follow nutritional and healthy diet, lack of exercise. Patients on dialysis need nutrition education to maintain their health and reduce complications.

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