



## COMPLICATIONS AND EFFECT ON NUTRITIONAL STATUS ON INCREASED CREATININE LEVELS IN DIALYSIS DEPENDENT CHRONIC KIDNEY DISEASE (CKD) PATIENTS WITH SPECIAL REFERENCE TO BHOPAL CITY

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# COMPLICATIONS AND EFFECT ON NUTRITIONAL STATUS ON INCREASED CREATININE LEVELS IN DIALYSIS DEPENDENT CHRONIC KIDNEY DISEASE (CKD) PATIENTS WITH SPECIAL REFERENCE TO BHOPAL CITY

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## ABSTRACT

Chronic kidney disease has emerged as serious health problem of the enduring loss of kidney function. Dialysis is an easiest way to lead rest of the life with CKD, but there are many complications that have to be handled with great concern and preventative measure. This study focuses to assess and detect out the physical and nutritional complications arises in between two dialysis, as they require proper guidance and counseling regarding their nutrition intake especially calorie and protein intake. For this study dialysis dependent CKD patients are selected who were undergoing various anthropometry measurements, biochemical assessments, 24-hours dietary recall assessment to observe the nutritional deprivation during the two concurrent dialysis of the single patient.

This study concluded that the nutritional instability is major complication in dialysis dependent CKD patients. As, dialysis is the only a stand by treatment for these patients which is accompanied with many complications therefore, it is necessary to timely identify the nutritional problem of the patients and provide high-quality nutritive support to reduce the complication like severe malnutrition and other associated obstacles.

**Keywords:** *Kidney Function, dialysis, creatinine levels, biochemical profile, Protein and calorie, blood pressure etc.*

## INTRODUCTION

Chronic Kidney Disease (CKD) is a widespread disease, where the kidneys are damaged and cannot filter blood the way they should. The major risk factors for budding kidney disease are diabetes, high blood pressure, heart disease, and a family history of kidney failure. CKD patients are at increased threat of heart attack or stroke, particularly if they smoke or overweight. These patients should have routine observation of their kidney function, blood pressure and other vital functions of the body. The most significant step taken to treat kidney disease is to control blood pressure [1-5]. Healthy habits can also help to manage kidney disease, healthy diet that includes nutritious foods facilitate in maintaining the kidney health and even can cure the worsen status of the kidney. Early detection can help to prevent the succession of kidney disease to kidney failure

### Symptoms of Chronic Kidney Failure

Most people may not have any severe symptoms until their kidney disease is highly developed. However, feeling more tired and have less energy, having trouble concentrating and sleeping, poor appetite, trouble having muscle cramping at night, swollen feet and ankles, puffiness around eyes

especially in the morning, dry, itchy skin, need to urinate more often, especially at night. These symptoms should not be ignored:

Chronic kidney disease embraces conditions that damage kidneys and reduce their capacity to filter wastes from blood. If kidney disease deteriorates, wastes can build to high levels in blood and following complications may develop in CKD [6-7]:

- high blood pressure
- anemia (low blood count)
- weak bones
- poor nutritional health
- nerve damage

When kidney disease advances, it may eventually lead to kidney failure, which requires dialysis or a kidney transplant to maintain the life.

### Prevalence

Chronic kidney disease (CKD) is increasingly being recognized as interpreter for both end-stage renal disease (ESRD) and cardiovascular disease. End-Stage Renal Disease (ESRD) is a medical condition where a person's kidneys stop functioning

on a permanent basis leading to the need for a normal and regular course of long-term dialysis or a kidney transplant to maintain life. It is a devastating medical, social and economic problem for patients and their families [8-12]. In a recent study it has been noted that 53% of deaths in India in 2005 were due to chronic disease.

Glomerulonephritis and interstitial nephritis were reported to be the predominant causes of ESRD. The causes of chronic kidney diseases reflect this change and diabetes, together with hypertension, is now the major cause of end-stage renal failure worldwide, not only within the developed world, but also increasingly within the emerging world (2005).

Recent research suggests that around 1 in 10 of the population may have CKD, but it is less common in young adults, being present in 1 in 50 people. In those aged over 75 years, CKD is present in 1 out of 2 people. However, many of the elderly people with CKD may not have 'diseased' kidneys, but have normal ageing of their kidneys [13]. Although severe kidney failure will not occur with normal ageing of the kidneys, there is an increased chance of high blood pressure and heart disease or stroke, so medical checks will be helpful [14-18]. Less than 1 in 10 patients with CKD ever necessitate dialysis (artificial kidney treatment) or kidney transplantation.

### Dialysis

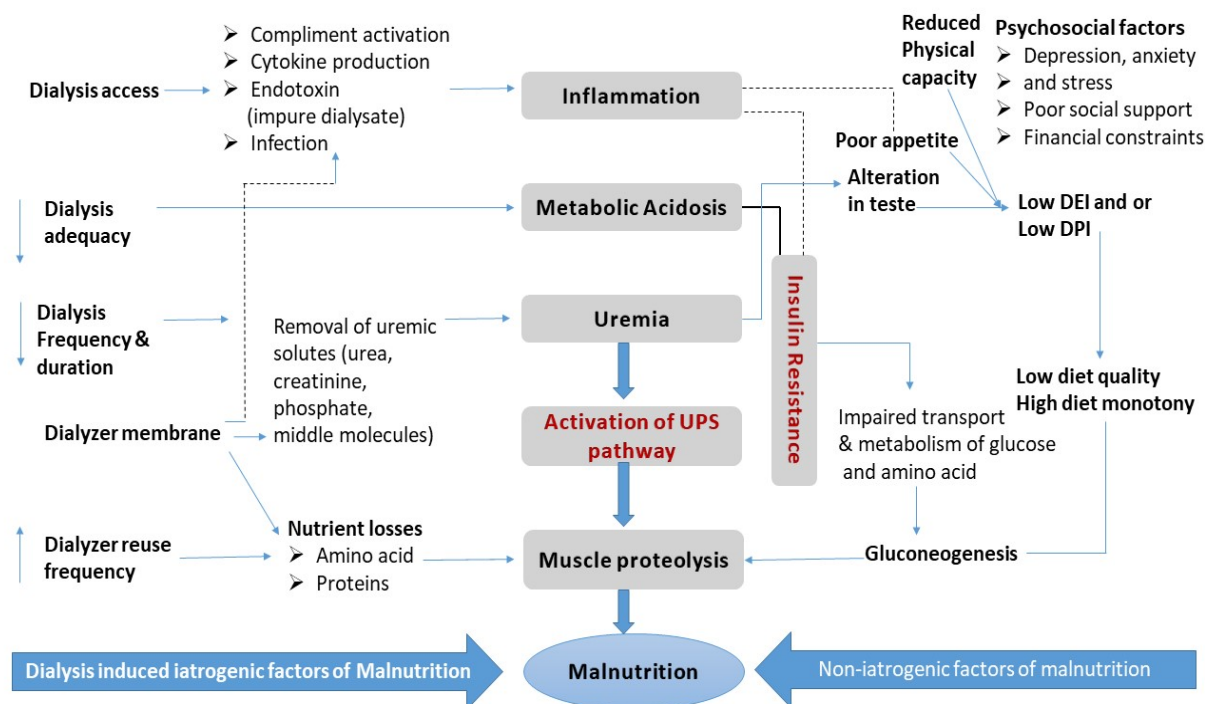
Dialysis is a procedure to remove waste products and excess fluid from the blood when the kidneys are not functioning properly for example, in advanced chronic kidney disease (kidney failure). If the kidneys may not be able to clean the blood properly then, waste products and fluid can build up to dangerous levels in the body and if left untreated, this can cause a number of unpleasant symptoms and eventually be fatal.

It's not always possible to carry out a kidney transplant straight away, so dialysis may be needed until a suitable donor kidney becomes available. Dialysis makes it possible to continue living with end-stage kidney disease for many years or even decades.

### Causes of malnutrition in CKD dialysis dependent patients

Malnutrition is very common among CKD dialysis dependent patients. As far as the diet intake is concerned there are many other complications accompanied with the disease.

Such complications as nausea and vomiting, oedema, breathing problem arises simultaneously with increased level of serum creatinine and BUN (blood urea nitrogen) which adversely affect the food intake and leads to malnutrition.



Abbreviations: DEI (Dietary energy intake); DPI (Dietary protein intake); UPS (Ubiquitin proteasome system)

Fig.1: Showings the factors and causes of malnutrition in CKD patients

Issues that contribute to the development of malnutrition may be categorized as of iatrogenic and non-iatrogenic origin (Figure 1). Iatrogenic factors are an inadvertent consequence of dialysis for ESKD patients, whereas non-iatrogenic factors develop spontaneously from contributive factors accompanying the progression of CKD but not related to the primary treatment.

This study is aimed to observe the complications and their consequences as the blood or biochemical profile changes after taking a dialysis. Mostly the dialysis dependent patient has to get dialysis twice a week.

### AIM AND OBJECTIVES

This aim and objective of this study is to observe the nutritional complications which are responsible for the malnutrition in dialysis dependent CKD patients and also improving their food intake and nutritional status by diet counseling. Careful preventive measures were followed for improving the nutritional status.

**Sample selection**-The sample are selected on convenience basis of the patients after explaining them the about the study as well as their consent are taken. The finalized sample size for the study was 50 patients who undergo this study.

All the selected samples are dialysis dependent which is composed of both genders male and female and their age varied from 28 to 65years, mean age is  $41.5 \pm 13.5$  years.

### MATERIAL AND METHODS

The selected samples undergo the various assessments like anthropometry assessment for BMI, biochemical assessment which includes serum creatinine levels, BUN, Hemoglobin, blood pressure. Their dietary intake is assessed in terms of calories and protein by using 24 hours recall method for previous day of dialysis. Clinical assessment was done to know the effect on dietary insufficiency by observing nausea and vomiting accompanied with anorexia and edema.

### RESULT AND ANALYSIS

The study group is comprised of both genders male and female. Male were almost double in number in comparison to females.

The age ranges widely as the minimum age of the

subject was 28 and maximum was 65 years. The mean weight of the individuals found to be 52.9 kgs. and BMI calculated ranges between 17.5-29.5. The higher side of BMI may be due to oedema in some subjects.

The mean of Serum creatinine levels of the population is  $10.6 \pm 5.75$  s.d. and the mean deviation is calculated  $10.6 \pm 0.8$  that means most of the diseased individuals have to face the problems with constant increased levels of serum creatinine.

The BUN (blood urea nitrogen) mean is 140.7 which are very high as the normal value should lie between 13 to 43mg/dl.

Hemoglobin percentage mean is  $7.79 \pm 2.12$  S.D. which confirms the anemia among CKD patients.

The insufficient calorie intake is calculated as the mean is  $1026 \pm 20.5$  kcal per day. Dietary Protein intake mean is  $23.3 \pm 9.14$  which is may include the protein sources of low biological value.

70% individuals from the group mentioned the problem of vomiting and nausea and 30% says they don't have the same complication. Anorexia is also a common complication of CKD patients which leads to malnutrition. 30% of the study group has this problem and 70% do not have the problem of anorexia.

### DISCUSSION AND SUGGESTIONS

Chronic kidney disease (CKD) is a devastating condition which is liable for towering the morbidity and mortality rate and also is a financial load on government and society, because of its expenditure and the complexity of its treatment. Now a day's chronic kidney disease (CKD) has become a chief community health concern globally and also a significant contributor to the overall non-communicable disease trouble. Proper care is available to very few patients worldwide; lack of awareness is the main cause of this.

Mortality from CVD is estimated to be at least 8- to 10-fold higher in CKD subjects compared to non-CKD subjects.

This identify for the necessitate of a global effort to raise awareness of CKD, to incorporate prevention of CKD progression program in the public health agenda and to implement programs for early screening and detection of CKD,

This study is indicates towards the nutritional instability in dialysis dependent CKD patients. The

patients suffering from any renal complication have to fight with some other troubles like anorexia, nausea, vomiting, and diarrhea, low blood pressure which takes them away from their adequate food intake and so increases the malnutrition grade in them. Though, already there are so many limitations recommended for CKD patients in their diet. Nausea and vomiting have been found to be increased as the creatinine levels increases so their malnutrition status aggravate. This worsens the CKD patient's health status and is the basic reason for being lethal.

### CONCLUSION

Chronic kidney disease is a complicated illness which increases as the disease progresses. Dialysis is a stand by treatment for CKD but also accompanied with many complications therefore, it is necessary to timely recognize the problem of the patients and make good nutritive support to reduce the complication along with nutritional status of the dialysis dependent patients.

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