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ORIGINAL ARTICLE

Malnutrition Among Pre-Dialysis Patients of Chronic Kidney Disease

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ABSTRACT

Objective: To determine the frequency of malnutrition among pre-dialysis patients of chronic kidney disease presenting to a tertiary care hospital.

Methodology: This cross sectional study was conducted at Nephrology department, Jinnah hospital, Lahore during the year 2019, we enrolled a total of 200 pre dialysis patients of both gender presenting with chronic kidney disease. In All patients underwent measurement of weight in kilogram using digital weighing machine while height was measured by measuring scale with precision of 1mm using standard protocol. BMI was calculated, and all findings were recorded.

Results: Age range in this study was from 20 to 80 years with mean age of 47.605±8.34 years. Male gender was dominant in this study with 73% patients as compare to 27% females. Malnutrition among pre-dialysis patients was seen in 46% patients.

Conclusion: Pre-dialysis CKD patients frequently experience malnutrition. Malnutrition rates rise with both age and declining renal function. These patients require frequent and early evaluations of their nutritional status.

Keywords: Chronic kidney disease, Pre-dialysis, Malnutrition

INTRODUCTION

The prevalence of chronic kidney disease (CKD) is being acknowledged as a major global public health issue. [1] It implies to conditions that result in a decline in glomerular filtration rate (GFR), which is a measure of decreased renal function. Renal difficulties are caused by a variety of communicable and noncommunicable diseases, and a number of persons with kidney disease do not have access to care. Kidney disease causes, effects, and prices have an impact on public health policies worldwide. [2]

Malnutrition is a significant risk factor for morbidity and mortality, and a widespread in both poor countries and industrialised countries. [3] Unlike previously where malnutrition was linked to poor socioeconomic conditions, it is seen that its prevalence is further increasing with the recent increase in the chronic conditions. Patients with chronic kidney disease are at substantial risk for malnutrition and need regular nutritional surveillance and counseling.[4] Studies have shown that a considerable proportion of chronic kidney disease patients suffer from malnutrition ranging from 18% to 56% especially in patients with end stage renal disease with regular maintenance hemodialysis.[5,6] However, literature regarding the burden of disease in patients in the early stages of chronic kidney disease is scarce on international as well as local level. A study conducted in Karachi reported that malnutrition was present among 66% of the pre-dialysis patients with chronic kidney disease. Moderate malnutrition cases were 42.3% while severe malnutrition was observed in 23.35% of the pre-dialysis patients with chronic kidney disease.[7] Not much other regional studies are available in this aspect.

~~The rationale of this~~We conducted a study ~~study was~~ to determine the frequency of malnutrition among patients of chronic kidney disease presenting to tertiary care hospital of Lahore. Malnutrition is very common in chronic diseases and nutritional surveillance must be a part of the routine follow up. However, it is usually ignored in out setup especially in patients of chronic kidney disease at an earlier stage. Moreover, scarcity of literature on local and regional level is the main hindrance in highlighting its disease burden.

Thus this study will bridge this gap and will provide information to the clinicians regarding the undiagnosed disease burden of malnutrition among the patients of chronic kidney disease providing further information on regional variation as well. This will help in developing a evidence based protocol for the early diagnosis and a prompt multidisciplinary management of the nutritional problems leading to a better outcome among these patients. Moreover, in the light of the results further research can be conducted regarding the risk factors, management and outcome after early diagnosis and intervention of these interlinked yet manageable conditions leading to decrease morbidity and mortality.

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METHODOLOGY:

This cross sectional study was conducted at Nephrology department, Jinnah hospital, Lahore during the year 2019, we enrolled a total of 200 cases with age range 20 to 80 years of both sexes with pre dialysis presenting with CKD-V whereas those with previous history of myocardial infarction or coronary artery disease determined on history, electrocardiography and echocardiography, chronic liver disease determined by coarse shrunken liver on ultrasonography, active – or history of recent – infection during last three weeks determined by history of high grade fever > 100 F and TLC >11000 cells/mm^3, diabetes mellitus determined by history and medical record, any other chronic disease like malignancy for a duration of more than 6 months and those on hemodialysis determined by history and medical record were excluded from the study. An informed consent was taken from them before enrolling in the study. Information regarding their demographic data was also noted. All patients underwent measurement of weight in kilogram using digital weighing machine while height was measured by measuring scale with precision of 1mm using standard protocol. BMI was calculated and the cases having a BMI of <18 kg/m2 were considered as malnutrition. All findings were recorded in the proforma as well. Confidentiality of the data was ensured. For data entry and analysis, we used SPSS 21.0, a statistical programme specifically designed for the social sciences. A numerical variable, age, was summarisedsummarized using mean and standard deviation. Quantitative measures were reported as frequencies and percentages, while qualitative factors such as gender and malnutrition were also included. Age, gender, socioeconomic position, chronic kidney disease stage, and duration were used to stratify data and eliminate confounding variables. Statistical significance was determined using the chi-square test after stratification, with a cutoff of.05.

RESULTS

Age range in this study was from 20 to 80 years with mean age of 47.605±8.34 years, male gender was dominant in this study with 73% patients as compare to 27% females.

Malnutrition among pre-dialysis patients was seen in 46% patients as shown in Table-I.

Table- I1: Malnutrition among pre-dialysis patients (n=200)

Variables		Malnutrition		p-value
		Yes	No	
Age (years)	20-50	55(42.3%)	75(57.7%)	0.153
	51-80	37(52.9%)	33(47.1%)	
Gender	Male	70(47.9%)	76(52.1%)	0.364
	Female	22(40.7%)	32(59.3%)	
Socioeconomic status	Low	53(89.8%)	6(10.2%)	0.000
	Middle	36(28.8%)	89(71.2%)	
	High	3(18.8%)	13(81.2%)	
CKD stages	III	28(40.6%)	41(59.4%)	0.497
	IV	45(50%)	45(50%)	
	V	19(46.3%)	22(53.7%)	
Duration of disease (months)	7-15	56(41.2%)	80(58.8%)	0.046
	>15	36(56.2%)	28(43.8%)	

DISCUSSION

In this particular research, 46 percent of individuals with CKD who were pre-dialysis suffered from some kind of malnutrition. In earlier assessments, the prevalence of malnutrition ranged anywhere from 28 to 65% of the population. [8-12] This is because the diagnostic criteria utilisedutilized in these research varied, as did the patients in the trials themselves, in terms of whether or not they were participating in maintenance dialysis.

A study conducted in Karachi reported that malnutrition was present among 66% of the pre-dialysis patients with chronic kidney disease. Moderate malnutrition cases were 42.3% while severe malnutrition was observed in 23.35% of the pre-dialysis patients with chronic kidney disease.[7]

In their research on pre-dialysis patients in India, Prakash and coworkers reported a high frequency of 65%. [12] This relatively high prevalence, in comparison to what was found in the previous research, may be interpreted in this way. Initially, only individuals with stage 5 chronic kidney disease, who are thought to have more severe illness, were evaluated, while we looked at patients with stages III, IV, and V of chronic kidney disease. Patients undergoing haemodialysis in Morocco were found to have a prevalence of malnutrition that was 29% according to Kadiri and colleagues. [9] It's possible that alternative methods were used to evaluate the patients for malnutrition, which accounts for the low prevalence when compared to the results of our research.

This research also demonstrated that malnutrition is present at an early stage of CKD and worsens over the time. Consistent with previous studies in children and adults with CKD. [13,14] Malnutrition is a risk for patients with renal impairment because these people are more likely to have anorexia, lack of appetite, decreased food intake, vomiting, and diarrhoea as their kidney function worsens. Inadequate nutritional status monitoring and food restrictions can make this worse for these people. [14] Malnutrition is common in the latter stages of CKD, and it has been shown that hormonal imbalance plays a major role in this condition. [15]

In this research, malnutrition was more common among the older CKD patients than among the younger and middle-aged patients. It was consistent with prior findings. [10,11] This trend is not unexpected, given that ageing itself is linked to malnutrition in the elderly, even in the absence of CKD. [16] Malnutrition in geriatric CKD patients is exacerbated by age-related declines in growth hormone and insulin growth factor-1, as well as free radical buildup, decreased immunity, and chronic inflammation. [17,18]

In keeping with the findings of the article by Tayyem et al., this study found that men had a higher incidence of malnutrition than females with CKD, despite the fact that the difference not being statistically significant. [19] It has been shown that male patients with CKD have a greater risk of losing muscle mass and experiencing protein depletion, however the cause for this is not completely known. [2]

A Nigerian study ruled out the occurrence and pattern of malnutrition in pre-dialysis cases, and recorded 46.7% of the cases which is significantly higher than control group (27.5%). It was concluded that it is more common in CKD cases even in early stages of CKD.[21]

In our study, elderly population were more common with malnutrition, however, it was not significantly different, but other studies reveal significant higher malnutrition in elderly poplation.[22-23]

Regarding gender dominance, male cases had higher malnutrition than females but not significantly different, it is consistent with a recent Indian study.[24]

A worse quality of life, sleep disorders, depression, hyporesponsiveness to erythropoietin, greater susceptibility to infections, and worsening of heart failure are all potential outcomes of malnutrition. [25-28] As a result of the findings of this research, which demonstrated that malnutrition begins at an early stage in the progression of CKD, there is reason for including nutritional evaluation as part of the management of CKD patients even in the early stages.

While dietary therapies have the potential to enhance nutritional status and lower the risk of cardiovascular problems, is still debatable on this issue. Low protein diet supplements in CKD patients on the verge of commencing dialysis have been shown to improve nitrogenous product retention, acid-base balance, postpone RRT beginning, and maintain nutritional status. [29] In this regard, a local study in 2016, is evident that nutritional status is improved in ERSD cases after effective dietary counseling.[30]

CONCLUSION

Pre-dialysis CKD patients frequently experience malnutrition. Malnutrition rates rise with both age and declining renal function.

These patients require frequent and early evaluations of their nutritional status.

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