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Research Article

Reason analysis for the causes of chronic kidney disease cases admitted in dialysis unit, satisfaction and their awareness and practices about restrictions in their dietary intake

G. Vishal Rao[1], B. T. Rao[1]*, K. Valleswary[1], N. Laksmana Rao[2]

[1]Department of Community Medicine, Rajiv Gandhi Institute of Medical Sciences, Ongole, Prakasam District, Andhra Pradesh, India
[2]Department of Community Medicine, Maharaja Institute of Medical Sciences (MIMS), Nellimarla, Vizaya Nagaram District, Andhra Pradesh, India

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***Correspondence:**
Dr. B.T. Rao,
E-mail: thiru74_ushachennai@rediffmail.com

ABSTRACT

Background: Dialysis treatment is useful in chronic renal failure, which removes waste products from the blood. CKD is one of the leading causes of mortality and morbidity and there are a number of clinical indications to initiate dialysis in patients with CKD. Energy intake to be maintained at normal levels in dialysis patients and recommended is 35kcal/kg body weight per day and study was conducted with objectives of analysing main reasons of chronic renal failure patients admitted in dialysis unit and also to assess patient's self-satisfaction about dialysis and to know about the awareness and practice of dietary restrictions.
Methods: A cross sectional study was conducted among 100 chronic kidney disease patients who received dialysis in Rajiv Gandhi Institute of Medical Sciences, Ongole, Prakasam District, Andhra Pradesh.
Results: Common causes for CKD were Hypertension - 39%, Diabetes and hypertension-20% and Diabetes only - 8%. Mean overall health satisfaction among patients was 6.25 ± 1.36; highest satisfaction was noticed in following spirituality 7.31±1. Significant association was found between the mean patient satisfaction undergone for dialysis and the way staff of dialysis unit interacting with patients ($P<0.05$). Patients were not satisfied with the development of fatigability and weakness after dialysis.
Conclusions: Major reasons for dialysis were observed to be hypertension, diabetes and pain killers. Staff interaction was found to be good and patients were less satisfied about developing fatigability, pains, and cramps after dialysis. They were also not satisfied about number and length of dialysis.

Keywords: Chronic kidney disease, Dialysis, Energy intake, Renal diet practice, Satisfaction

INTRODUCTION

Dialysis as treatment is useful in chronic renal failure and also in end stage renal failure case, which removes waste products and excess fluids from the blood while maintaining the proper chemical balance. There are two types of dialysis treatment: haemodialysis and peritoneal dialysis, out of which the first one was commonly practicing in India and developed countries.[1-3] The principle of haemodialysis involves diffusion of solutes across a semi permeable membrane utilizes counter current flow, where the dialysate is flowing in opposite direction to blood flow. Fluid removal is achieved by adjusting the hydrostatic pressure of the dialysate

compartment. The treatment lasts approximately three to four hours, and needs to be performed approximately three times per week at a dialysis centre or appropriate health clinic.[4]

There are a number of clinical conditions to initiate dialysis in patients with CKD. A bleeding diathesis attributable to uraemia, persistent metabolic disturbances refractory to medical therapy like hyperkalemia, metabolic acidosis, hypercalcemia, hypocalcemia, hyperphosphatemia, fluid overload refractory to diuretics, hypertension poorly responsive to antihypertensive medications, persistent nausea and vomiting and evidence of malnutrition.[5-7] In dialysis the patients may lose many of nutrients and minerals and a proper diet is very much requiring for them.[8-9]

The most important causes of NCD mortality in 2008 were cardio vascular diseases (17 million or 18% of NCD deaths) and diabetes contributed 1.3 million deaths in addition to other causes. NCD mortality was projected to raise 15% (44 million deaths) worldwide from 2010 to 2020.[10] Chronic Kidney Disease (CKD) is a global public health problem; it is the 12th leading cause of mortality and 17th leading cause of disability globally.[11] As per WHO global burden disease project, disease of kidney and urinary tract contributes roughly 8,50,000 deaths every year and 115,010,107 Disability Adjusted Life Years (DALYs).[12]

Activities of daily living, vocational, social and recreational activities may be adversely affected by a regular three times per week haemodialysis schedule.[13] Getting the right amount of calories is important to overall health and helps to give you energy. The National Kidney Foundation's guidelines recommend 30-35 calories/kg body weight per day for stable dialysis patients. For sedentary individuals older than 60 years and obese patients with oedema-free body weight >120% of the desirable body weight may be prescribed 30 kcal/kg/d.[14]

Renal dialysis unit of Rajiv Gandhi institute of Medical Sciences Medical Sciences, Ongole is serving population of Prakasam district, even public from Guntur district and Kurnool district were also availing these services. Patients were undergoing dialysis treatment for various conditions. A study was planned with objectives of analyzing the main reasons of chronic renal failure patients admitted in dialysis unit, and to assess the patient's self-satisfaction about the received treatment and to determine the impact of the therapy on the patients and also to know about the awareness and practices of dialysis diet intake and restrictions in food intake.

METHODS

A cross sectional study was conducted among the patients who received the management at renal dialysis unit of Rajiv Gandhi Institute of Medical Sciences, Ongole, Prakasam District from April to September 2014 were studied. Patients with more than 18 years of age, and receiving dialysis treatment for a minimum period of the six months from this institute were considered for this study. Permission for the conduction of the study was taken from the Director of the institute and also official letter of request was given to respective departmental head to conduct the study. This study was conducted as a part of Indian Council of Medical Research, Short Term Student (STS) project and the study was approved by ethical committee of this Institute.

Specific planned interviews were conducted by using pre-tested detailed questionnaires. This questionnaire consists of 4 sections and the first section was about socio economic and demographic profile. Second section was about different causes leading to chronic renal failure in the patients as per the diagnosis of attending physician.[15] Third section was about the patient self-satisfaction regarding the dialysis treatment and also to know about the impact of the therapy. Patient self-satisfaction was focused on 15 aspects of domains of life- overall health, stress level, family life, social life, independence, finances, mood, religion/spirituality, sex life, energy level, recreation/hobbies, exercise ability, living arrangements, appetite, and body image. The questions were graded on a standard scale from 1 to 10, ten being the most satisfaction with and one being the least satisfaction.[16]

Fourth section was about the types of diet they are consuming in 24 hours dietary recall method and dietary assessment of the each patient was taken by using standard dietary chart. Details regarding practices and awareness of consumable food items and non-consumable food items were asked in detail.[17] Details about awareness on consumables food items like pulses, panner, fruits like apple, guavas, pine apple, papaya and pears, after retching vegetables like fenugreek leaves, beetroot, bottle guard, cucumber, beans, peas, brinjal, lady finger, potato, pumpkin, unripe tomato, radish, unripe mango, cabbage, cauliflower, banana, onion and yam were taken. Retching is a process in which peel will be removed from all the vegetables and after that cut those into small pieces then boil these vegetables in a plenty of water. Pour out all boiled water from cooked vessel and then boil it again, after removing the water for second time these vegetables are ready for cooking.

Awareness on consumption of non-consumable food items like salt rich foods, meat, crabs, pickles, papads, salt biscuits, packet mixtures, salt fishes, fruit chips, popcorns, ground nuts seeds, corn seeds, almond, salted butter and cheese, china salt, cool drinks, complain, horlicks, bourn vita, spinach, amaranths, meat and yeast products, tomato sauce and soya sauce, bake products like cakes, wafers and pastries, and puffs. A brochure (the Braun Company) on renal diet was given to each haemodialysis patient for their understanding. This is

available in convenient Telugu language with detailed consumable, non-consumable food items and specific renal diet restrictions. Assessment was done about practice of all consumable and non-consumable foods.

Out of 224 total registered cases, 100 chronic kidney disease patients attending renal dialysis unit were interviewed for this study. All the registered patients were not visited the dialysis centre because of the summer and the personal reasons. Some of the patients were severely ill; these patients were not considered for the study. Univariate analyses like descriptive statistics were used to analyze the quantitative variables and dependent variables. SPSS version 16 has been used for the purpose of analysis. Chi-square test was done to find out the relation between the Independent variables and outcome variables.

RESULTS

Mostly patients belonging to 43 mandals of Prakasam district have been utilizing the dialysis services, among these maximum numbers of cases were from Ongole and Kandukuru divisions. Out of the total cases interviewed 78 were males and 22 were females. Most of the patients (62%) were illiterate, 17% completed up to 10th standard. Before getting dialysis 51% of the patients were involved in the agriculture labour work, 14% of them were involved in non-agriculture daily wage labour work. Among the females 50% were going for the labour work. As per modified BG Prasad Socioeconomic status scale 62% of these patients belonging to lower middle socioeconomic status and 32% were lower status (Table 1).

Table 1: Socio demographic factors of dialysis patients.

Socio demographic factors	N=100
Males	78%
Mean age	50.98±12.5
Illiterates	62%
High school	17%
Agriculture labour work	51%
Non-agriculture daily wage labour	14%
Lower socio economic status	32%
Lower middle	62%

According to the diagnosis of attending physicians there were various reasons identified because of which patients were landed up for the dialysis. The common causes were hypertension only- 39%, diabetes and hypertension-20% and due to diabetes only-8% and pain killers were also contribute to 8% of these cases. It was also found that in 22% of the cases causes were unknown. Among the total cases 50% cases were above 50 years of age group (Table 2).

Table 2: Major reasons for the renal dialysis.

Major reasons	N=100
Hypertension	39%
Diabetes and hypertension	20%
Diabetes	8%
Unknown causes	22%
Pain Killers	8%

Mean overall health satisfaction among the patients was 5.39±0.09, highest satisfaction among the patients were noticed in praying Lord and following spirituality 7.31±1.7 followed by the support of the family members at household level 6.9±1.76. They were less satisfied about the decreased energy levels for performing daily activities 3.76±1.78, their exercise abilities, recreational abilities drastically affected. They are not performing active work after starting dialysis and less satisfied because of the deteriorating their financial status 4.19±1.83 (Table 3).

Table 3: Mean satisfaction about various domains in haemodialysis patients.

Domain	Haemodialysis patients
Family level	6.9±1.76
Independence	4.84±1.9
Religion/spirituality	7.31±1.7
Energy level	3.76±1.78
Living situations	5.4 ±2.12
Stress level	5.63±1.77
Overall health	6.25±1.36
Social life	6.74±1.77
Mood	4.90±1.66
Exercise ability	4.14±2.83
Recreation	4.19±1.73
Appetite	5.68±1.82
Body image	4.42±1.59
Finances	4.19±1.83
Mean patient satisfaction	5.39±0.09

In all the cases they are undergoing for 4 hours haemodialysis in each visit of the renal dialysis centre and staff interaction was good. Communication, management and treatment with patients was good and friendly manner in 99% of the cases. Social interaction with relatives, friends and neighbours was not decreased and in 88% of the cases they move friendly, discuss the problems and speak with them in a good way. Most of the times patients are coming to the hospital on their own and some of them accompanied by attendants, and the level of independence has been decreased among the patients.

It was noticed that for 22% of the cases were accessible to the needle sticks and related requirements in the renal dialysis centre. The most common problem they were observing was fatigability and weakness in 56% of the cases and it was one of the astonishing clinical features

experienced by 40% of patients was that a cramping sickness after completion of the treatment. All the patients (100%) were travelling to dialysis centre with their own expenses and they are frustrated with duration and length of the dialysis (Table 4).

Table 4: Most frequently observed impact among the patients.

Positive response	N=100	Negative response	N=100
Staff Interaction	99	Length of treatment	100
Being alive and well	98	Needle stick access	22
Frequent Medical care	94	Fatigue and weakness	56
Social Interaction	88	Cramps and sick after treatment	40
Improved strength	55	Frequency of treatment	20
		Transportation to unit	100

Brochure about consumables, non-consumable food items and practices of renal diet in local language was received by 62% patients, among them 58% were able to read and understand about the contents. Maximum (75%) numbers of patients were aware that Gua can be consumed, and then 59% were having knowledge about intake of pulses. It was well known by 53% of the patients that Papaya as a consumable food in dialysis patients. None of them aware about radish as a consumable item, Some of the patients were aware about intake of cucumber-39%, onion-38%, bottle guard-37%, brinjal-38%, unripe tomato-37%, cabbage-28%, cauliflower-25% and beet root-24%, as a consumable food items for renal dialysis patients. Awareness about renal diet restrictions were known renal dialysis patients and they got this information from different sources like by advice from doctor (88%) and also from reading material like brochures provided by Renal Dialysis Unit (Figure 1).

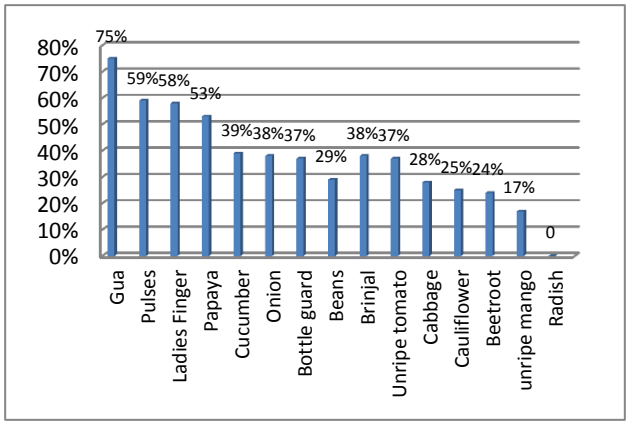

Figure 1: Awareness about known consumable renal food items.

None of them aware about almond, salted butter, Chinese salt, meat, yeast products, tomato, soya sauce and cakes as a non-consumable food items. Only few of them aware about crabs, pickles, papads, salt biscuits, packet mixture, soup, salt fish, popcorn, wafers, pastries, puffs, spinach, bourn vita, complain and corn seeds should not be taken by the patients who are on dialysis. It was noted that about 62% aware about a non-consumption of salt rich diets, 57% about the pickles, 51% about meat. It was also known that 34% aware about non-consumption of cool drinks and 27% aware about non-consumption of ground nuts. Even though hospital is providing health education material like brochure to the patients still they need improvement regarding awareness about known non consumable items (Figure 2).

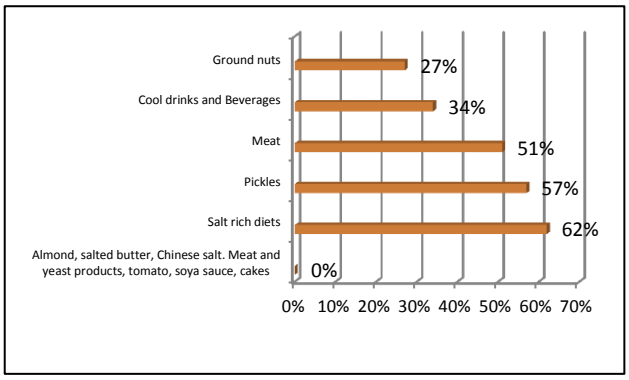

Figure 2: Awareness about known non-consumable renal food items.

Patients were commonly consumed idlis in the breakfast and in 52% of the cases rice with the vegetarian curry was taken in morning times. Rice is a staple diet and 80% of the patients were consumed rice during lunch time preferably with the vegetarian curry. Many patients restricted the intake of non-vegetarian diet and 10% of the cases consumed meat during the lunch time. Only 2% of the patients consumed non vegetarian diets during the night time. Mean caloric intake in the breakfast (343.1) and it was higher than the lunch (266.2) time. This was even lower in the supper time (231). Total mean caloric intake by all the patients was 866.35 K.cals (Table 5).

Table 5: Mean caloric intake among chronic kidney disease patients.

Time	K. Calories
Breakfast	343.15±138.8
Lunch	266.2±110
Snacks	24.6±6.0
Dinner	231±12.5
Total caloric intake	866.35±222.3

In 24 hours dietary recall of the patients, it was observed that 75% of the patients were consumed less than 1000 K.cals which is less in quantity. Whereas 22% of these patients were consumed between 1001 and 1500 K.Cals.

Only 3% were consumed between 1501 to 2000 K.Cals (Figure 3).

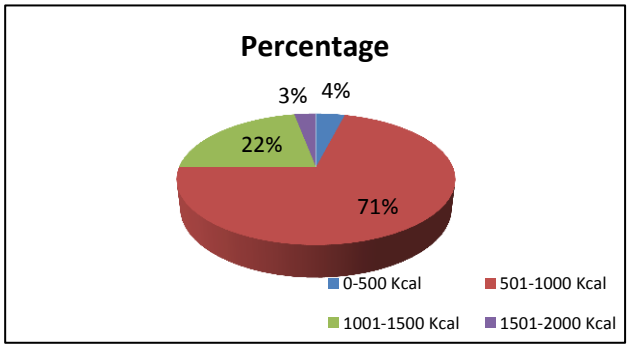

Figure 3: Total caloric intake among chronic kidney disease patients

It was found that significant association has been found between the mean patient satisfaction undergone for the renal dialysis and the way staff of the dialysis unit interacting with the patients. Doctors, dialysis unit staff and nurses are regular in touch with them and properly counseling and advising the patients (P<0.05) (Table 6).

Table 6: The relation between the mean patient satisfaction and staff interaction.

Total satisfaction		Staff interaction		Total
		Y	N	
Total Score	31-50	4	1	5
	51-60	31	5	36
	>60	55	4	59
Total		90	10	100
Chi square test P value =0.001, df:4				

Significant association was found between the awareness among the patients undergone for dialysis and their practice about renal diet restrictions (P<0.05) (Table 7).

Table 7: The relation between the awareness and practice of renal diet restrictions.

		Awareness		Total
		Y	N	
Practice of renal diet restrictions	Y	73	8	81
	N	18	1	19
		91	9	100
Chi-Square test P Value <0.05 df=2				

It was found that the relation between the practice of renal diet by the patients and total caloric consumption was non-significant which explains that even though recommended diet was 35 Kcal/Kg/day per patient their consumption was lesser than the expected. Only 3% of the patients were practicing the renal diet prescriptions. It was shown that because of the non-practice of the renal diet advice they were developing weight loss (P=0.373).

DISCUSSION

India has more than 2500 dialysis stations with 710 haemodialysis units and about 172 transplant centres, of these south India contributing two third and most of them are privately run. In India cost of dialysis therapy is about Rs. 10,000/month and that of transplant cost is 5 lakhs. The cost of immune suppressive drugs approximately is 10,000 per month.[18] The financial burden could affect health care resources in developed countries and it is not possible to meet such huge costs by poor people living low income countries.

CKD is a silent epidemic and will not be detected till it reached advanced stages. The study of population with earlier stages of CKD may improve the outcome of patients.[19] Long term maintenance haemodialysis has revolutionized the care of terminally ill renal failure patients.[20] Malnutrition in these patients may be attributed to anorexia due to uremic toxins, inter current illnesses, psychological and social factors and due to inadequacy of dialysis procedure itself.[21]

In our study 78% were males, 62% of them were illiterate and more than 50% were involved in the daily wage labour work. As per the renal data system of the USA the highest rate of patients on dialysis is found among people more than 65 years of age and in our study it was observed to be 51 years.[13] A study by Heren et al also revealed that 50% of the dialysis population is above 65 years of age patients and they were uneducated, married males with a family to support.[14]

Hypertension (39%) was found to be a main reason for the renal dialysis followed combination of hypertension and diabetes (20%) and diabetes only in 8% of the cases. In more than 32% of the cases reasons for the dialysis was unknown. Various evidence based studies were revealed that the diagnosis of hypertensive nephropathy accounts for the 19% incidence of ESRD in Sweden and 30% of the new cases in the USA.[13] Lindholm B et al study revealed that poor hypertension control clearly leads to increasing risk of cardiovascular morbidity and mortality and increasing risk of declining kidney function.[22] Keller CK et al study found that revealed that diabetic patients with CKD often present with higher incidence of cardiovascular co-morbidities. The relationship between type 2 diabetes and hypertension is particularly strong with 79% of patients having either hypertension or abnormal circadian blood pressure cycles at the time of diagnosis.[23]

Mean overall health satisfaction among the patients in our study found to be 5.39±0.09. Patients were worrying about the decreased energy level to perform the work and deteriorating financial levels. A study conducted by Erika Juergensen, et al found the mean satisfaction score for was in the dialysis patients was (7.4±1.4).[16] Patients expressed positive response about good social interaction (88%) and staff interaction (99%). All the patients

(100%) expressed negative response for travelling to Dialysis centre with their own expenses and they are frustrated with duration and length of the dialysis. Trinh B. Pifer et al viewed that satisfaction with dialysis staff and facility, and medical team presence was appeared to be very high among the Patients.[24] Suetonia C Palmer et al observed that as respondents the most frequently ranked and excellent was staff attention to dialysis vascular access (52% to 56%).[25]

In our study, maximum (75%) numbers of patients were aware that Gua can be consumed, and then 59% were having knowledge about intake of pulses. None of them aware about almond, salted butter, Chinese salt meat, yeast products, tomato, soya sauce and cakes as a non-consumable food items. It was noted that about 62% aware about a non-consumption of salt rich diets. Mean caloric intake of the patients was 866.35±222.3 Kilo calories, on average 14.3 K.cal/Kg/day was consuming by the patients. The recommended daily energy intake for dialysis patients is 35 kcal/kg body wt per day. So in this study patients did not consume required amount of energy rich foods as per their requirement. Vincent C et al revealed that although the recommended calorie intake is 35 Kcal/kg of ideal body weight (IBW) but 60% patients were consumed 25-27 Kcal/kg; 26% were consumed <25 Kcal/kg and only 14% were eating 35 or >35 Kcal/kg of IBW.[26] In various scientific studies observed that sixty to seventy percent patients reported a mean calorie intake of 25 Kcal/kg/IBW and the recommended calorie intake is 35 Kcal/kg of ideal body weight (IBW).[27-28]

CONCLUSION

Most of the patients who are attending the renal dialysis centre of RIMS medical college and hospital are illiterates and involved in agriculture and labour work. Major reasons for dialysis were observed to be hypertension, diabetes and pain killers and for many other unknown causes like heavy metals, fluorosis and pesticides further research will be required. Staff interaction was found to be good at the time of dialysis and patients were less satisfied about developing fatigability, pains, and cramps after dialysis. They were also not satisfied about number and length of dialysis. Satisfaction was found to be higher in the people who are getting very good support from family members and also who are doing spirituality. Total calorie intake among these patients was found to be lesser in comparison with standard ideal intake of Kilo Calories of energy and 97% of them are not taking adequate calorie intake. Awareness about known consumable food items was found to be good for few foods. Awareness about non-consumable food items were found mostly for salt rich diets and pickles. Early diagnosis and treatment of the underlying reasons for chronic kidney disease will be helpful for planning of primary and secondary preventive measures is essential in patients with CKD. Health care staff and doctors working in renal dialysis units need to create more awareness to the patients about recommended consumable and non-consumable food items and also renal dietary practices.

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