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KNOWLEDGE REGARDING HAEMODIALYSIS THERAPY AMONG END STAGE RENAL DISEASE PATIENTS AT TEACHING HOSPITAL, BATTICALOA, SRI LANKA

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Abstract: **Chronic kidney disease is a common and rapidly increasing public health problem all over the world, both in developed and developing countries. Majority of the patients with chronic kidney disease on maintenance of haemodialysis are not aware of self-care management such medication, fluid, proper diet intake and regular follow up. This study aimed to assess the knowledge regarding haemodialysis therapy among end stage renal disease patients at Teaching Hospital, Batticaloa (THB), Sri Lanka. This is a hospital based descriptive cross sectional study about knowledge on factors contributing to non-adherence in dialysis patients. Data was collected by interviewer administered questionnaires at Teaching Hospital Batticaloa, Sri Lanka. A total number of 95 CKD patients undergoing haemodialysis in THB between the ages of 21 to more than 60 years were included in our study. The majority of patients were between 41-50 years (37%)]. Among them 50 (53%) were male &45 (47%) were female. There was association between respondents level of self-care knowledge regarding haemodialysis and demographic variables such as Educational status (p=0.001), Monthly income (p=0.002), Duration of dialysis (p=0.003) and Per weekly dialysis (p=0.013).The study provided overall knowledge regarding medication, fluid and diet of CKD patients 51% were found to have moderate knowledge and only 13% had very good knowledge. This result make us aware that patients who are affected with CKD need more awareness regarding proper maintenance on medication, fluid and diet balance who are undergoing dialysis treatment.**

Keywords: **Chronic kidney Disease, Haemodialysis, Knowledge, Medication, Fluid, Diet.**

1. INTRODUCTION

Chronic Kidney Disease (CKD), is a global epidemiological health problem with increasing incidence and prevalence which is estimated prevalence of 8% -16% worldwide and it's rising rapidly on the wave of the epidemics of diabetes and hypertension. Because of that now it is assumed to be another leading cause of mortality and leading to tremendous medical costs [1, 2]. Some studies estimate that the incidence of Chronic kidney disease of unknown etiology (CKDu) in Sri Lanka has been doubling every four to five years, so that currently 150,000 people are affected by the disease and about 3% of them lose their lives annually [3]. The irreversible advanced CKD leads to End Stage Renal Disease (ESRD) where there is permanent loss of kidney function causing extreme mortality rates among the population [4].

The most recognized common causes of CKD in the developing countries are chronic glomerulonephritis, systemic hypertension, diabetic nephropathy, obstructive uropathy, congenital diseases such as polycystic kidney disease, genetic predisposition, obesity, proteinuria, dyslipidaemia, low birth weight, snake bite, cigarette smoking and heavy metals [5].In Sri Lanka common causes of CKD identified were diabetic nephropathy (30.6%), hypertension (13.2%),

glomerulonephritis (9.9%), and obstructive uropathy (8.3%). The cause was unknown in 25.6% of patients with chronic renal disease and known as CKDu [6].

It is characterised by an irreversible worsening of renal function that could lead to end-stage renal disease (ESRD), which necessitates treatment with renal replacement therapy (RRT) such as renal transplant or haemodialysis (HD) [7,8]. HD is one of the most effective therapeutic techniques for patients with ESRD second to renal transplantation, but is expensive and burdensome therapy for patients with ESRD [9.10]. HD treatment requires adherence for fluid, food restrictions and multitude of medications [10].

In ,(HD) blood from the patient is pumped through an array of semi permeable membranes which bring the blood into close contact with dialysate, flowing countercurrent to the blood and remove nitrogenous and other waste products and corrects the electrolyte, water and acid-base abnormalities associated with renal failure. Frequency and duration of dialysis are adjusted to achieve adequate removal of uraemic metabolites and to avoid excessive fluid overload between dialysis sessions. An adult of average size usually receives 4–5 hours treatment three times a week. Successful HD depends on 4 factors. They are fluid restriction, dietary restrictions, medication and attendance at HD sessions. These patients are expected to adhere with severe fluid restriction (500 ml daily), dietary restrictions (limitation sodium, potassium& phosphorus), medication regimen to treat or prevent cardiovascular co morbid conditions and keep a stable mineral blood balance and attendance for dialysis sessions [11].

Although HD effectively contributes to long-term survival, morbidity and mortality of dialysis patients remains high, due to poor adherence to optimal management which includes fluid restriction, dietary restrictions, medication and attendance at haemodialysis sessions [12]. Study on self-care knowledge among chronic kidney disease patients undergoing maintenance HD patients with chronic kidney disease on maintenance haemodialysis require knowledge on fistula care, exercise, diet, blood pressure and weight monitoring. An educational program for HD patient on self-care definitely reduces the morbidity [13].

There were many studies have been carried out regarding poor prognosis due to poor adherence and poor knowledge with the medical advice in a group of HD patients were done and published in other countries. But in Sri Lanka only very few studies are carried out and in Batticaloa so far no any studies conducted or published. Therefore, carrying out this research will help to identify the self-care knowledge level of patients who are undergoing HD and based on finding could take appropriate measures such as health education and preventive measures to enhance their knowledge in better care and maintenance of haemodialysis.

2. METHODOLOGY

A. Study design

The study design was a Cross Sectional Descriptive Study conducted among HD patients attached to dialysis unit at Teaching Hospital of Batticaloa, Sri Lanka.

B. Study Population

The population consist of End stage renal disease patients who were attending for HD in dialysis unit Teaching Hospital of Batticaloa, during six month of time period and who were between 20 to more than 60 years of age. Both male and female patients who were willing to participate in the study on the day of visit were included under the research study. The total population included for this study were 95 patients who are attending HD for last 6month. There were no specific exclusion criteria for this study.

C. Procedures

Ethics Review Committee of the Faculty of Health-Care Sciences of Eastern University Sri Lanka granted ethical clearance to this study. A pretested, interviewer administered questionnaire was used to collect the data. The administration of the interviewer administered questionnaire for the collection of data was carried out by researchers after getting informed consent and permission from authorities. A suitable time and duration, comfortable environment and needed facilities were arranged to the participants.

D. Statistical Analysis

Overall knowledge of CKD patients who are undergoing HD on Medication, Fluid and Diet intake was assessed by using following scoring system:

Scores	Grade
1-20%	very poor Knowledge
21-40%	poor Knowledge
41-60%	moderate Knowledge
61-80%	good Knowledge
81-100%	very good Knowledge

Association between various demographic factors and overall knowledge were assessed through chi square test. *p* value, $p < 0.05$ was considered as a significant.

3. RESULTS

Chronic kidney disease is a common and rapidly increasing public health problem all over the world, both in developed and developing countries. Majority of the patients with chronic kidney disease on maintenance HD are not aware of self-care management such medication, fluid, proper diet intake and regular follow up. The present study was undertaken to estimate the existing knowledge of the patients with CKD regarding dialysis.

The study aim to assess the knowledge regarding HD therapy among end stage renal disease patients at Teaching Hospital, Batticaloa, Sri Lanka

a. *Demographic Details of participants*

This study includes 95 participants who are undergoing HD from whom the questionnaires were filled and collected by interviewers. Of all participants, male patients includes 50 (53%) and Female 45 (47%) Seventy-six percentages (76%) married the higher percentage of age group consisted between age 41-50 (37%) and lower age of participants > 60 (3.2%). Only27% completed their secondary education and most of participants were unemployed. Nearly 30% of participants' monthly income was between Rs.15, 001 to Rs.30, 000.

Table 1: Dialysis Related Information

Variable (n=95)	Number	Percentage
Diagnosed of Renal failure		
Chronic Renal Failure	95	100
Acute Renal Failure	-	-
Haemodialysis duration		
< 1year	30	31.6
1-5years	64	67.4
>5 years	01	1.0
How many days per week?		
2 days or less	13	13.7
3days	31	32.6
4 days	34	35.8
More than 4 days	17	17.9
Getting dialysis advices from whom?		
Doctors	35	36.8
Nurses	59	62.1
Dietician	01	1.1

Out of total of 95 participants all of them are (100%) diagnosed to have chronic renal failure. The duration of HD for most of the patients are 1-5 years 64 (67.4%) and 30 (31.6%) had less than 1 year. The patients receive dialysis more than 4 days, 3days and less than 2 days -17 (18%) 34 (36%), 31(33%) and 13 (14%) respectively. Most of the patients getting advice regarding dialysis from Nurses 59 (62.1%), Doctors 35 (36.8%) and very few from 1(1.1%) Dietician (Table 1).

Table 2: Knowledge on Medication Intake

Variables (n=95)	Number	Percentage
How important to take your medicines as scheduled?		
Highly important	47	49.5
Very important	35	36.8
Moderately important	12	12.6
A little important	01	1.1
Why do you think it is important to take your medicines as scheduled?		
Kidney condition requires to taking medicines as scheduled	45	47.4
Experienced that I was sick after I missed medicines	39	41.0
I was hospitalized because I missed medicines	11	11.6
What action will you take if have side effects of drugs?		
Consulting doctor	65	68.4
Continuation of drug	21	22.1
Omitting the drug	09	09.5
Have you missed taking medicine regularly?		
Yes	25	26.3
No	70	73.7
If no what is the reason?		
Forgetfulness	59	62.1
Decision to omit	13	13.7
Being busy	18	18.9
Felt unwanted effects after consuming drugs	04	4.2
Others	01	1.1

Regarding knowledge about medication intake 47 (49.5%) responded highly important and 35 (36.8%) said very important. The important reason to take medicines as scheduled required due to the condition of kidney 45 (47.4%), felt sick after missing the medicines 39(41%), was hospitalized because of missing medicines11(11.6%). Action to be taken for side effect of drugs are, consulting doctor 65 (68.4%), continuation of drug 21(22.1%) and omitting the drug 09 (0.09.5%). Missed taking medicine regularly 25(26.3%) responded yes and 70 (73.7%) said no. Most reason for missing to take medicine regularly are, forgetfulness 59 (62.1%), made decision to omit 13 (13 .7%) being busy 18 (18.9%) (Table 2).

Table 3: Knowledge Regarding Maintenance of Fluid Balance

Variable (n=95)	Number	Percentage
How much of fluid can you take daily?		
500ml - 750ml	30	31.6
750ml - 1000ml	36	37.9
1000ml - 1500ml	16	16.8
>2000ml	13	13.7
How important to limit fluid intake?		
Highly important	73	76.8
Very important	17	17.9
Moderately important	05	05.3
Why limiting of fluid intake is important?		
Understand kidney condition requires limiting Fluid intake.	58	61.1
Sick after I drank lots of fluid.	29	30.5
Hospitalized after drinking lots of fluid	08	08.4

Knowledge about fluid balance includes, the amount fluid intake need to be taken are, 500 - 750ml, 750- 1000ml, 1000 - 15000ml and more than 2000ml, 30 (31.6%), 36 (37.9%), 16 (16.8%) and 13(13.7%) respectively. Most of the patient responded that highly important to limit fluid intake 73 (76.8%). The important reason to limit fluid intake are, condition of kidney requires to limit fluid intake 58 (61%), feel sick after taking more fluids 29 (30.5%) (Table 3).

Table 4: Knowledge Related to Diet Intake

Food Items (no=95)	Reduced No (%)	Increased No (%)	Not changed No (%)
Rice, bread, string hoppers, pittu, sugar & noodles (Carbohydrate)	82 (86.3)	-	13 (13.7)
Meat , yoghurt ,fish & milk (High quality protein)	04 (4.1)	13 (13.8)	78 (82.1)
Meat, butter, egg, coconut oil, & cheese (Fat)	22 (23.2)	46 (48.4)	27 (28.4)
Salt, pickle & seafood (Sodium containing foods)	08 (8.4)	37 (39.0)	50 (52.6)
Fruits, fruit juices &king coconut (Potassium containing foods)	73 (76.8)	02 (02.1)	20 (21.1)

Diet related knowledge includes, reducing carbohydrate 82 (86.3%), no need to change the intake of high quality protein 78 (82%), increased of fat intake 46 (48.4%) not changed in sodium containing foods 50 (52.6%) and reduced potassium containing foods 73 (76.8) (Table 4).

Table 5: Association Between Demographic Factors and Overall Knowledge on Medication, Fluid and Diet Intake among Patient with Dialysis

Variables	Medication *P* value	Fluid *P* value	Diet *P* value
Gender	0.465	0.334	0.425
Age	0.774	**0.012***	**0.024***
Religion	0.672	0.823	0.760
Ethnicity	0.754	0.827	0.837
Residential Area	0.277	.815	0.396
Educational status	**0.001***	**0.001***	**0.001***
Monthly income	**0.002***	**0.047***	**0.032***
Occupation	0.445	0.113	0.221
Marital status	0.811	0.330	0.542
Duration of dialysis	**0.003***	**0.043***	**0.021***
Per weekly dialysis	**0.013***	**0.032***	**0.023***

***p<0.05 statistically significant**

According to the result of this study education, monthly income, duration of dialysis, and per weekly dialysis are significantly associated with knowledge on medication, fluid and diet intake of dialysis patient. Age is significant only about fluid and diet intake (Table- 05).

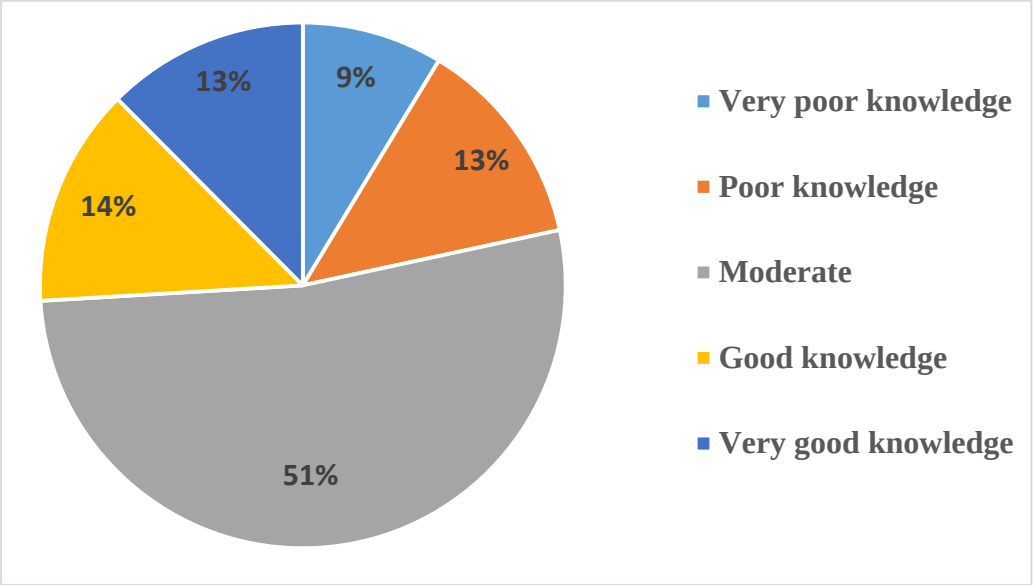

Figure 1: Overall Knowledge of CKD Patients who undergo Dialysis on Medication, Fluid and Diet intake

Overall knowledge regarding medication, fluid and diet intake of CKD patients who are undergoing dialysis are 51% of the patients in this group were found to have moderate knowledge,14% had good knowledge,13% had very good knowledge and 13 % had poor knowledge 9% very poor knowledge regarding medication, fluid and diet intake (Figure 1).

4. DISCUSSION

Chronic kidney Disease is increasingly recognized as a worldwide public health problems causes premature morbidity, mortality and lowers quality of life. At present this is one of the major health crises in Sri Lanka [3], and also this HD patients have to cope up with many difficulties such as limitation of fluid intake, control of diet and regular medication.

In present study number of male respondents is higher (52.6%) than the female respondents (47.4%) in CKD. Similar findings were reported in a study done by Tan AU et al which showed 55% male and 37.6% were female [14]. Another study conducted at National Kidney Center, Balaju Kathmadu [15] showed more male respondent (63%) higher than female respondent (37%). This may be probably because the prevalence of renal diseases is more common in males as compared to females.

In this study most of the patients aged group (41-50years) was highly affected by CKD. Similar finding was reported a study done in Dharan by Sultania et al., [16]. which showed that the mean age of HD client was 49±2 year, 38% were ≤45 year and 46% were ≥ 60 year. Regarding the knowledge level of HD client according to the age, there is no significance between level of knowledge and age group (P=0.827) in this study. Contradictory to our finding the London study reported that knowledge expectations on dialysis treatment were related to patient age, under 63 years (50 % of patients) had greater knowledge expectations than the elderly patients [17]

This study reveals that there was significant with medication, fluid intake and diet associated with episode and duration of the HD. A similar study conducted on “adequacy of HD in Nepalese patient undergoing maintenance HD” in BPKIHS Dharan, showed that mean duration of hemodialysis of 13.5±8.5 years [18]. The short duration of HD may be due low socioeconomic status, poor diet control of the patients.

In this study, there was association between level of knowledge of medication, fluid intake and diet on HD and educational status. Similar finding were reported that education contribute to have more information about the treatments, greater self-reported adherence, and a better relationship with their healthcare team [13, 19]. Another study carried out in district hospital at Karwar (UK), Karnataka, to assess the knowledge and attitude of patients undergoing HD regarding their dietary management has been observed that most of the patients undergoing HD were unaware about their dietary management [20].

There was association between longer duration of HD and with knowledge on medication, fluid intake and diet of CDK patients. Similar association found in a study conducted in Chinese haemodialysis patients [21].

Our study provided overall knowledge regarding medication, fluid and diet of CKD patients 52.1%, 13.1%, 13.7% 12.6% 8.4 % moderate, good, very good, poor, very poor knowledge respectively. Similar New York study reported about Knowledge regarding diet; 58.2% had moderate 23.19% had good and 18.61% had poor knowledge [22)].

5. CONCLUSION

This study found that, number of male respondents was higher than the female respondents and most of the patients were middle aged group who are highly affected by CKD. There was association between longer duration of HD influenced with knowledge on medication, fluid intake and diet of CDK patients.There was significant association between respondents' level of self-care knowledge regarding HD and demographic variables such as educational status, monthly income, duration of dialysis and per weekly dialysis. Also there was no association between level of self-care knowledge of the respondents and other variables such as, gender, marital status, religion, ethnicity, residential area and occupation. This study found overall knowledge of CKD patients undergoing HD in moderate level about medication, fluid and diet intake.

From this study we can conclude that these patients with CKD need more awareness regarding proper maintenance of medication, fluid and diet who are undergoing dialysis treatment.

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