The Renal Diet Paradox: Navigating the Complex Web of Psychosocial, Environmental, and Physiological Barriers to Dietary Adherence in Hemodialysis Patients

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Abstract:- **Title: Assess the perceived barrier regarding dietary modifications among patients undergoing hemodialysis.**
Objectives: To identify the perceived barriers on dietary management among hemodialysis patient, To find out the association between the perceived barriers among with their selected demographic variables Hypothesis: There is a significant difference between the level of perceived barriers regarding dietary modification among dialysis patients with their selected demographic variable There is a statistically association between the level of perceived barrier regarding dietary modifications with their demographic variables. Design: Descriptive research design was adopted. Setting: Trichy SRM Medical College &Research Centre. Sample: 50 haemodialysis patient were selected for this study. Sampling technique: purposive sampling technique. Intervention: The ethics were followed. Verbal consent was obtained from the patient. Pertest level of knowledge was obtained by self-made questionnaires, Outcome measures: level of perceived barrier on dietary modification among haemodialysis patients was obtained and the data were interrupted and analysed. Result: The study found that there is a significant association between the level of perceived barriers with their demographic variables and it's highly statistically proven. The result revealed that 50% of haemodialysis patient had low level of perceived barriers, 26% of patients had higher level of perceived barriers, 24% of haemodialysis patient had low medium level of perceived barriers.
Conclusion: This study supports that haemodialysis patients had perceived barrier on diet.

Key words: **Chronic Kidney Disease, Dietary Adherence, Haemodialysis, Psychosocial Barriers, Renal Diet**

INTRODUCTION

Health is the level of functional or metabolic efficiency of a living organism. In humans, it is the general condition of a person's mind and body, usually meaning to be free from illness, injury or pain (as in "good health" or "healthy"). The World Health Organization (WHO) defined health in its broader sense in 1946 as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity". (1)

There are many conditions and illness that can be considered chronic diseases. Recent focus in surveillance of chronic disease has been on 12 chronic conditions identified in the National Public Health Partnership's paper. These conditions pose a significant burden in terms of morbidity, mortality and health care costs in Australia, and are amenable to preventive measures. They are Ischemic heart disease, Stroke, Lung cancer, Colorectal cancer, Depression, Type II diabetes mellitus, Arthritis, Osteoporosis, Asthma, Chronic obstructive pulmonary disease, Chronic kidney disease and Oral disease. (2)

CRF is a common clinical syndrome characterized by decline in glomerular filtration, perturbation of extracellular fluid volume, electrolyte and acid base homeostasis and retention of nitrogenous waste from protein catabolism. Chronic renal failure (CRF) results from partial or total loss of renal function. It exists when residual renal function is less than 15% of normal. Renal failure can be treated by dialysis. There are two types of dialysis namely Hemodialysis and Peritoneal Dialysis. (3)

A number of symptoms can develop if kidney disease is not found early or it gets worse despite treatment. Symptoms can include weight loss and poor appetite, swollen ankles, feet or hands – as a result of water retention (oedema), shortness of breath, tiredness, blood in your pee (urine), an increased need to pee – particularly at night , difficulty sleeping (insomnia), itchy skin, muscle cramps, feeling sick, headaches, erectile dysfunction

in men. This stage of CKD is known as kidney failure, end-stage renal disease or established renal failure. It may eventually require treatment with dialysis or a kidney transplant (4)

Dialysis is used to correct fluid and electrolyte imbalances and to remove metabolic waste products accumulated due to declined renal functions. In hemodialysis, the blood, laden with toxins and nitrogenous wastes, is diverted from the patient to a machine, a dialyzer, where toxins are filtered out of blood and the blood is returned to the patient. Diffusion, Osmosis and Ultra filtration are the general principles of dialysis (5)

Hemodialysis is used for patients who are acutely ill and require short-term dialysis (days to weeks) and for patients with advanced ESRD who require long-term treatment for survival. Hemodialysis prevents death but does not cure renal disease and does not compensate for the loss of endocrine or metabolic functions of the kidneys.(6)

Many patients may not fully understand the necessity of dietary changes or the specifics of their renal diet. Haemodialysis patients often have complex nutritional needs that must be met to prevent complications like fluid overload, electrolyte imbalances, and cardiovascular issues. However, understanding these needs may be difficult, especially if the patient is overwhelmed with medical information. Some patients may believe that they can still eat a broad range of foods despite their condition, especially if they have not received comprehensive counselling or education on their dietary restrictions.(7)

Dietary Fatigue and Mental Health: Adhering to a restrictive diet over a long period can lead to fatigue, frustration, or depression. The emotional toll of chronic illness, especially with the limitations on food, can increase feelings of deprivation and loss of control, which may lead to poor adherence to dietary guidelines. Some patients may find it emotionally difficult to adjust to dietary restrictions, particularly if they have to give up favourite foods or adopt completely new eating habits, leading to feelings of resentment or defiance toward the dietary modifications.(8)

Some dietary modifications may require specialized foods that can be more expensive than regular grocery items. Patients on limited incomes may find it difficult to afford these foods, leading them to revert to cheaper, less nutritious options that may not comply with dietary recommendations. For some patients, access to fresh produce or specialty foods (such as low-sodium options) may be limited, especially in rural or underserved areas. This limitation can prevent them from following a prescribed renal diet effectively. Many hemodialysis patients are often dealing with fatigue, especially after dialysis sessions, which can leave them with little energy or time to prepare complex meals. Additionally, some patients may not have cooking skills to prepare renal-friendly meals, leading them to opt for pre-packaged or fast foods that may not meet dietary guidelines. Without adequate support or guidance on meal planning, patients may find it difficult to make informed choices. Lack of access to dietitians or proper nutrition counselling can exacerbate this issue.(9)

The new analysis suggests that in 2017, the global prevalence of CKD was 9.1% (697.5 million cases). The age-standardized global prevalence of CKD was higher in women and girls (9.5%) than in men and boys (7.3%). Nearly one-third of all cases of CKD were in China (132.3 million) or India (115.1 million), 10 countries had >10 million cases and 79 countries had >1 million cases. The all-age and age-standardized global incidence of dialysis and kidney transplantation also increased between 1990 and 2017 (by 43.1% and 10.7%, respectively, for dialysis and 34.4% and 12.8%, respectively, for transplantation), reflecting increasing availability of these therapies. (10)

They found the prevalence of CKD as 17.2% with stage 1, 2, 3, 4, 5 as 7%, 4.3%,4.3%, 0.8% and 0.8% respectively. 43.1% of their cohort had hypertension, and 18.8% had diabetes; a figure that is not a true representation of Tamil Nadu population. The global prevalence of CKD is estimated to be around 9-13% of the adult population. According to a study published by the Global Burden of Disease Study 2019, 697.5 million people were living with CKD worldwide, with varying rates depending on region, age, and other factors. Incidence: Every year, millions of new cases are diagnosed, with some estimates indicating that around 1 in 10 people worldwide will experience some form of CKD in their lifetime Global Prevalence of Chronic Kidney Disease (CKD)(11)

United States: According to the Centres for Disease Control and Prevention (CDC), approximately 15% of U.S. adults (about 37 million people) have CKD. Of those, more than 600,000 individuals have end-stage renal disease (ESRD), which requires dialysis or a kidney transplant. .End-Stage Renal Disease (ESRD) in the U.S. The number of people in the U.S. with ESRD has been steadily increasing. As of 2020, over 786,000 people in the U.S. were living with ESRD, with around 500,000 on dialysis and more than 200,000 living with a kidney transplant. Europe: In Europe, the prevalence of CKD is estimated to be 12%, with substantial variations between countries. The most recent data suggest that 1 in 5 people aged over 75 years in Europe have some form of CKD. Asia: In countries like China and India, the prevalence of CKD is rising due to increasing rates of diabetes and hypertension. For example, a study in China found that the overall prevalence of CKD was around 10.8%, with the majority of cases being in the early stages (1 and 2). (12)

Chronic kidney disease (CKD) is a worldwide public health problem with increasing incidence and prevalence leading to patients with kidney failure requiring replacement therapy, with poor outcomes and high cost. Further, it is essential to understand that, CKD was the cause of 956,000 deaths globally in 2013, up from 409,000 deaths in 1990 and also age-adjusted death rate due to CKD raise from 11.6 in 1990 to 15.8 in 2013 per lakh population. The U.S. Centre for Disease Control and Prevention states that CKD affected an estimated 16.8% of U.S. adults aged 20 years and older in the period from 1999 to 2004.UK estimates suggested that in 2007 8.8% of the population of Great Britain and Northern Ireland had symptomatic CKD.(13)

OBJECTIVES

•To identify the perceived barriers on dietary management among hemodialysis patient

•To find out the association between the perceived barriers among with their selected demographic variables

Operational definition

Assess

Assessment refers to the collection and interpretation of clinical information. It focuses on gathering the data about a client's state of wellness, functional ability, physical states, strengths and responses to actual and potential health problems.

Perceived barriers

Perceived barriers are a person's estimate of the challenges they may face when trying to achieve a goal or health behavior. This includes social, personal, environmental, and economic obstacles.

Dietary modification

Dietary modification can refer to changes made to food during preparation, processing, or consumption, or to meal plans that restrict certain foods

Haemodialysis

Haemodialysis is a treatment that filters waste and excess fluid from the blood when the kidneys are no longer healthy enough to do so. It's a life-saving treatment that can help people with advanced kidney failure live longer and feel better.

MATERIALS AND METHOD

Methods:

The present study used cross sectional descriptive design to assess the perceived barriers on dietary modification among hemodialysis patient .50 Patients undergoing hemodialysis for chronic kidney disease were included in the study with purposive sampling. Inclusion criteria & exclusion criteria was as follows

Inclusion criteria

•Patients who are on dialysis for more than 3 months
•Hemodialysis patients who are willing to participate
•Hemodialysis patients who can understand / read / write Tamil and English

Exclusion criteria

•Those who are sick or who had been admitted for treatment within 3 months for comorbid condition
•Those who have the history of renal transplantation
•Known cognitive impairment
•Known psychiatric illness

DESCRIPTION OF TOOL n=50

Part I:

Socio demographic variables (Age, Gender, Education, Occupation, Family income, Marital status , type of diet, duration of period undergoing hemodialysis , frequency of dialysis)

Part II:

Self-made questionnaire on Perceived Barriers to Healthy Eating Scale

SCORING PROCEDURES: Self-made perceived barriers to healthy eating scale questions were used to assess the knowledge regarding chronic kidney disease and dietary pattern. It consists of 30 questions. Each question carries one mark. The total score was 150. Each correct answer was given a score one (1) and wrong answer was scored as (0) zero. The total score was 30, based on the obtained score, the subjects will be grouped into three groups

SCORE INTERPRTETATION:

S.No	Score	Level of perceived barriers
1.	1-50	low level of perceived barriers
2.	51-100	1ow Medium level of perceived barriers
3.	101-150	Higher level of perceived barriers.

Data collection

Data collection procedure: After obtaining permission from ethical committee Rapport established with the patients. After a brief introduction about the study its purpose, consent was obtained and data collection was done Plan for data analysis: After the data collection, data were organized, tabulated, summarized and analyzed. The data were analyzed according to the objectives of the study by using descriptive and inferential statistics. Collected data is to analyzed by using both descriptive and inferential statistics.

RESULTS

SECTION-A Distribution of the samples according to the demographic variable

Table- 1: Percentage Distribution of samples according to Demographic variables

S.No	DEMOGRAPHIC VARIABLES	FREQUENCY (N)	PERCENTAGE (%)
1	AGE IN YEAR		
	1.1 30-40 years	2	4
	1.2 41-50 years	7	14
	1.3 51-60 years	17	34
	1.4 61-70 years	24	40
2	GENDER		
	2.1 Male	43	86
	2.2 Female	7	14
3	MARITAL STATUS		
	3.1 Married	46	92
	3.2 Unmarried	4	8
4	RELIGION		
	4.1 Hindu	46	92
	4.2 Christian	2	4
	4.3 Muslim	2	4
5	EDUCATION		
	5.1 No formal	9	18
	5.2 Primary education	19	38
	5.3 Secondary education	15	30
	5.4 Graduation	7	14
6	OCCUPATION		
	6.1 Home maker	5	10
	6.2 Daily wages	15	30
	6.3 Government employee	3	6
	6.4 Private employee	10	20
	6.5 Self-employee	17	34
	6.6 Un employee	0	0
7	FAMILY MONTHLY INCOME		

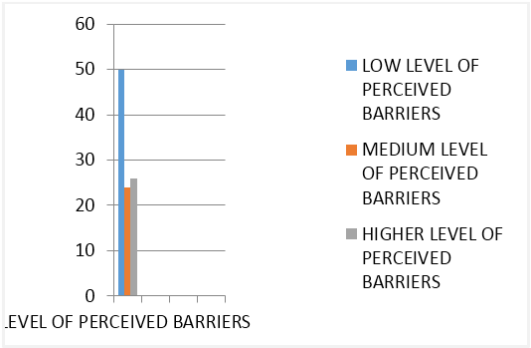
	7.1 Below - 3000	1	2
	7.2 3001-5000	7	14
	7.3 5001-10000	26	52
	7.4 Above - 10000	16	32
8	LOCALITY		
	8.1 Urban	9	18
	8.2 Rural	41	82
9	FOOD HABIT		
	9.1 Vegetarian	5	10
	9.2 Non vegetarian	2	4
	9.3 Mixed diet	43	86
10	CO-MORBODITIES		
	10.1 Diabetic mellitus	25	50
	10.2 Hypertension	19	38
	10.3 Any Others	6	12
11	DURATION OF DIALYSIS		
	11.1 Less than 3 years	34	68
	11.2 3-4 Years	9	18
	11.3 More than 4 years	7	14
12	TYPES OF ASSESS		
	12.1 Central venous catheterization	12	24
	12.2 AV fistula	38	76
	12.3 AV graft	0	0
13	MEDICAL SERVICE		
	13.1 Self-pay	0	0
	13.2 Insurance scheme	50	100
14	FREQUENCY OF DIALYSIS PER WEEK		
	14.1 Twice a week	0	0
	14.2 Thrice a week	50	100

SECTION-B

Assess the level of perceived barrier regarding dietary modifications among patients undergoing haemodialysis

Table no: 2: Assess the frequency and percentage distribution of level of perceived barrier regarding dietary modifications among patients undergoing haemodialysis

Level of perceived barriers	Frequency	Percentage
Low level of perceived barriers	25	50%
Medium level of perceived barriers	12	24%
Higher level of perceived barriers.	13	26%



Section c: Find out association between the levels of perceived barriers among patients undergoing hemodialysis with their selected demographic variables.

S. No	DEMOGRAPHICVARIABLES	x^2	DF	Table Value	Levels of significance
1	AGE IN YEAR 1.1 31-40 years 1.2 41-50 years 1.3 51-60 years 1.4 61-70 years	x^2 = 1.46	9	16.92	NS
2	GENDER 2.1 Male 2.2 Female				

	2.3 Transgender	x^2 = 0.03	6	12.59	NS
3	MARITAL STATU S 3.1 Married 3.2 Unmarried 3.3 Widow	x^2 = 0.9	6	12.59	NS
4	RELIGION 4.1 Hindu 4.2 Christian 4.3 Muslim	x^2 = 0.84	6	12.57	NS
5	EDUCATION 5.1 No formal 5.2 Primary education 5.3Secondary education 5.4 Graduation	x^2 = 6.3	9	16.92	NS
6	OCCUPATION 6.1 Home maker 6.2 Daily wages 6.3Government employee 6.4 Private employee 6.5 Self-employee 6.6 Un employee	x^2 = 3.1	15	24.99	NS
7	FAMILY MONTHLY INCOME 7.1 Below -3000 7.2 3001-5000 7.3 5001-10000 7.4 Above -10000	x^2 = 7.91	9	16.92	NS
8	LOCALITY 8.1 Urban 8.2 Rural	x^2 = 2.77	3	7.82	NS
9	FOOD HABIT 9.1 Vegetarian 9.2 Non vegetarian 9.3 Mixed diet	x^2 = 2.26	6	12.59	NS
10	CO-MORBODITIES 10.1 Diabetic mellitus 10.2 Hypertension 10.3 Any Others	x^2 = 0.03	6	12.59	NS
11	DURATION OF DIALYSIS 11.1 Less than 3 years 11.2 3-4 Years 11.3 More than 4 years	x^2 = 0.04	6	12.59	NS
12	TYPES OF ASSESS 12.1 Central venous catheterization 12.2 AV fistula 12.3 AV graft	x^2 = 0.43	6	12.59	NS
13	MEDICAL SERVICE 13.1 Self-pay 13.2 Insurance scheme	x^2 = 0	3	7.82	NS
14	FREQUENCY OF DIALYSIS PER WEEK 14.1 Twice a week 14.2 Thrice a week	x^2 = 0	3	7.82	NS

DISCUSSION

The study examined perceived barriers regarding dietary modification among patient undergoing hemodialysis. Adequate knowledge regarding dietary modification is essential to make appropriate changes in dietary routine in renal patients. Despite of increasing knowledge regarding dietary modifications and increasing efforts towards patients teaching compliance to renal diet does not necessarily improves. Durose CL et al (2004) studied the relations between dietary adherence and knowledge of the required dietary restrictions and the medical complications of dietary non-adherence in CKD. Patient knowledge alone is not sufficient to ensure the compliance to dietary modifications. Rather greater knowledge of dietary modifications likely to result in poor compliance. Patients with poor compliance had better Level of knowledge than the ones who had better compliance.

In the study, majority of patients had highly adequate knowledge and few patients had inadequate knowledge of dietary modification. Knowledge regarding Sodium and Potassium was

highest followed by knowledge related to calories and proteins, followed by fluid allowance.

Perceived barriers were either no longer a problem at all or only a minor one for the patients in the present investigation, and for nearly none of them, it was an important issue. Perceived behavioral challenges were a major issue, followed by resource sufficiency, physical condition, and technical challenges. The obvious obstacle that was the least problematic was the social network. Patients who have strong social support from friends, family, and relatives are more likely to exhibit demanding behavior and attitudes, which makes it challenging for them to alter their eating habits. Patients who experienced some difficulties adhering to dietary changes found it challenging to stay motivated to eat healthily.

Clark M.N, et al. (2018) conducted a study on 'Perceived barriers to adherence to hemodialysis dietary recommendations' with the purpose to explore perceived barriers to adherence to dietary recommendations in a diverse hemodialysis patient population. Time, convenience and financial constraints hindered dietary adherence.11 Stevenson J, et al. (2018) studied 'Experiences and perspectives of dietary management among patients on hemodialysis' and identified the exacerbating disruptions (adding to treatment burden, contradicting healthy eating, confused by fragmented advice, conflicting cultural norms, changing appetite and palate, isolation from family and friends) and losing control (rises derailing discipline, frustrated by failure, combating bodily need for hydration)

Finding based on objectives

Objective 1: To identify the perceived barriers on dietary management among hemodialysis patientIn this study the majority of patients have low level of perceived barriers 25(50%), 12(24%) patients have low medium level of perceived barriers, 13(26%) have high level of perceived barriers

Objective 2: To find out the association between the perceived barriers among with their selected demographic variables.Find the relationship between the level of knowledge with their background variables. In this study there is a significant difference in the chi square value with their selected demographic variables

CONCLUSION

Because dietary intake, which is influenced by individual food choices, is an intricate endeavor involving biological, social, cultural, and psychological elements as well as their interactions, it is thought that the behavior in managing dietary and fluid intake is influenced by this. Food provides a social tie, a source of energy, pleasure, and reward, and decisions are a reflection of all these aspects. In addition to maintaining ongoing education regarding healthy eating practices, behavioral interventions must be put in place to reduce hemodialysis patients' dietary discomfort, enhance adherence, and regulate clinical parameters that will enhance their quality of life. A thorough dialysis treatment plan that addresses all of their requirements, such as prescription drugs, dietary adjustments.

REFERENCES

[1] Health – GDFUnityinDiversity. https://gdfunityindiversity.org/health/. Accessed 13 Dec. 2024.
[2] Heggdal, Kristin. "Health Promotion Among Individuals Facing Chronic Illness: The Unique Contribution of the Bodyknowledging Program." Health Promotion in Health Care – Vital Theories and Research, edited by Gørill Haugan and Monica Eriksson, Springer, 2021. PubMed
[3] http://www.ncbi.nlm.nih.gov/books/NBK585658/.
[4] https://www.ncbi.nlm.nih.gov/books/NBK535404/
[5] https://www.nhs.uk/conditions/kidney-disease/symptoms/.
[6] https://www.mountsinai.org/health-library/special-topic/dialysis-hemodialysis. Accessed 13 Dec. 2024.
[7] Hemodialysis and Your Diet | National Kidney Foundation. https://www.kidney.org/kidney-topics/hemodialysis-and-your-diet. Accessed 13 Dec. 2024.
[8] Heidari, Masoud, et al. "Influence of Food Type on Human Psychological–Behavioral Responses and Crime Reduction." Nutrients, vol. 15, no. 17, Aug. 2023, p. 3715. PubMed Central, https://doi.org/10.3390/nu15173715.
[9] Mozaffarian, Dariush, et al. "Cost-Effectiveness of Financial Incentives and Disincentives for Improving Food Purchases

and Health through the US Supplemental Nutrition Assistance Program (SNAP): A Microsimulation Study." PLOS Medicine, edited by Sanjay Basu, vol. 15, 10, Oct. 2018, p. e1002661. DOI.org (Crossref), https://doi.org/10.1371/journal.pmed.1002661.

[10] Carney, Ellen F. "The Impact of Chronic Kidney Disease on Global Health." Nature Reviews Nephrology, vol. 16, no. 5, May 2020, pp. 251–251. www.nature.com, https://doi.org/10.1038/s41581-020-0268-7.

[11] Singh, Ajay K., et al. "Epidemiology and Risk Factors of Chronic Kidney Disease in India – Results from the SEEK (Screening and Early Evaluation of Kidney Disease) Study." BMC Nephrology, vol. 14, May 2013, p. 114. PubMed Central, https://doi.org/10.1186/1471-2369-14-114.

[12] Quick Kidney Disease Facts and Stats | American Kidney Fund. 19 Apr. 2024, https://www.kidneyfund.org/all-about-kidneys/quick-kidney-disease-facts-and-stats.

[13] Global Facts: About Kidney Disease | National Kidney Foundation. https://www.kidney.org/global-facts-about-kidney-disease. Accessed 13 Dec. 2024.