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A Study to Assess the Effectiveness of Education Module on Knowledge Regarding Renal Rehabilitation among Chronic Renal Failure Patients Undergoing Dialysis at Selected Dialysis Units of Bagalkot

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Abstract | **Original Research Article**

Background: Dialysis is a lifesaving therapy that takes the place of kidneys for people experiences kidney failure. For many patients the transition to dialysis is life changing & takes significant lifestyle adjustment one way to ease the transition is to bring dialysis into a patient home allow to do the dialysis where they are comfortable on a schedule that works for them. ***Objective:*** To determine the effectiveness of Education Module on knowledge regarding renal rehabilitation among chronic renal failure patients under going hemodialysis. ***Methods:*** The research design selected for this study was Quasi-experimental one group pre-test and post-test design. The sample size comprises of 50 chronic renal failure patients attending the dialysis units of Bagalkot. The sampling technique adopted for this study was non-probability convenient sampling technique. In the present study the data will be collected by self-made knowledge questionnaires, thedata analysis done by using descriptive and inferential statistics, in term of frequency distribution, parentage, mean, mean parentage, standard deviation chi-square test. ***Results:*** The finding revealed that there is statistical significance difference found between mean pre-test and post-test scores [t=17.312]. A significant association was not found between pre-test scores with socio-demographic variables. ***Conclusion:*** The study proved that administration of education module was effective in improvises the knowledge of chronic renal failure patients regarding renal rehabilitation.

Keywords: Assess, Effectiveness, Education module on knowledge, Chronic renal failure, renal rehabilitation& hemodialysis.

INTRODUCTION

The human urinary system, also known as the urinary tract or renal system, consists of the kidneys, ureters. Bladder and the urethra. The purpose of the urinary system is to eliminate waste from the body, regulate blood volume and blood pressure, control levels of electrolytes and metabolites, and regulate blood P^H. The urinary tract is the body's drainage system for the eventual removal of urine. The kidneys have an extensive blood supply via the renal arteries which leave the kidneys via the renal vein. Each kidney consists of functional units called nephrons. Following filtration of blood and further processing, wastes (in the form of urine) exit the kidney via the ureters, tubes made of smooth muscle fibers that propel urine towards the urinary bladder, where it is stored and subsequently expelled from the body by urination. The female and male urinary systems are very similar, differing only in the length of the urethra [1].

Filtration, which takes place at the renal corpuscle, is the process by which cells and large proteins are retained while materials of smaller molecular weights are filtered from the blood to make an ultrafiltrate that eventually becomes urine. The adult human kidney generates approximately 180 liters of filtrate a day, most of which is reabsorbed. The normal range for a twenty-four-hour urine volume collection is 800 to 2,000 milliliters per day. The process is also known as hydrostatic filtration due to the hydrostatic pressure exerted on the capillary walls. Secretion is the reverse of reabsorption: molecules are transported from the per tubular capillary through the interstitial fluid, then through the renal tubular cell and into the ultra-filtrate. The last step in the processing of the ultra-filtrate

is excretion, the ultra-filtrate passes out of the nephron and travels through a tube called the collecting duct, which is part of the collecting duct system, and then to the ureters where it is renamed urine. In addition to transporting the ultra-filtrate, the collecting duct also takes part in reabsorption [2].

Purification of blood by removal of waste products is the most important function of the kidney. The food that we consume contains protein. Protein is necessary for the growth and repair of the body. But as protein is utilized by the body it produces waste products. Accumulation and retention of these waste products is similar to retaining poison inside the body. Each kidney filters blood, and toxic waste products which are eventually excreted in the urine. Creatinine and urea are two important waste products that can easily be measured in the blood. their "values" in blood tests reflects the function of the kidney. when both the kidneys fail, value of creatinine and urea will be high in blood test. removal of excess fluid. the second most important function of the kidney is the regulation of fluid balance by excreting excess amount of water as urine while retaining the necessary amount of water in the body, that is essential for living. when the kidneys, fail they lose the ability of removing this excess amount of water. Excess water in the body leads to swelling. The kidneys play another important role of regulating minerals and chemicals like sodium, potassium, hydrogen, calcium, phosphorus, magnesium and bicarbonate and maintains normal composition of body fluid. Control of blood pressure. The kidneys produce different hormones (rennin, angiotensin, aldosterone, prostaglandin etc.) which help regulate water and salt in the body, which plays vital roles in the maintenance of good blood pressure control. Disturbances in hormone production and regulation of salt and water in a patient with kidney failure can lead to high blood pressure. Red blood cells production. Erythropoietin is another hormone produced in the kidneys; it plays an important role in the production of red blood cells (RBC). During kidney failure, production of erythropoietin is decreased, which in turn leads to decreased production of RBC resulting in low hemoglobin (anemia). This is the reason why in patients with kidney failure, the hemoglobin count does not improve despite supplementation with iron and vitamin preparations [3].

Optimal management of acute kidney injury requires close collaboration among primary care physicians, nephrologists, hospitalists, and other subspecialists participating in the care of the patient. After acute kidney injury is established, management is primarily supportive. Patients with acute kidney injury generally should be hospitalized unless the condition is mild and clearly resulting from an easily reversible cause. the key to management is assuring adequate renal perfusion by achieving and maintaining hemodynamic stability and avoiding hypovolemia. In some patients, clinical assessment of intravascular volume status and avoidance of volume overload may be difficult, in which case measurement of central venous pressures in an intensive care setting may be helpful. If fluid resuscitation is required because of intravascular volume depletion, isotonic solutions (e.g., normal saline) are preferred over hyper oncotic solutions (e.g., dextrans, hydroxyethyl starch, and albumin). A reasonable goal is a mean arterial pressure greater than 65 mm hg, which may require the use of vasopressors in patients with persistent hypotension. Renal-dose dopamine is associated with poorer outcomes in patients with acute kidney injury; it is no longer recommended. cardiac function can be optimized as needed with positive inotropes, or afterload and preload reduction. The main indication for use of diuretics is management of volume overload. Intravenous loop diuretics, as a bolus or continuous infusion, can be helpful for this purpose. However, it is important to note that diuretics do not improve morbidity, mortality, or renal outcomes, and should not be used to prevent or treat acute kidney injury in the absence of volume overload. All medications that may potentially affect renal function by direct toxicity or by hemodynamic mechanisms should be discontinued, if possible. For example, met form in (Glucophage) should not be given to patients with diabetes mellitus who develop acute kidney injury. The dosages of essential medications should be adjusted for the lower level of kidney function. Avoidance of iodinated contrast media and gadolinium is important and, if imaging is needed, noncontract studies are recommended. Supportive therapies (e.g., antibiotics, maintenance of adequate nutrition, mechanical ventilation, glycemic control, and anemia management) should be pursued based on standard management practices. in patients with rapidly progressive glomerulonephritis, treatment with pulse steroids, cytotoxic therapy, or a combination may be considered, often after confirmation of the diagnosis by kidney biopsy. In some patients, the metabolic consequences of acute kidney injury cannot be adequately controlled with conservative management, and renal replacement therapy will be required. the indications for initiation of renal replacement therapy include refractory hyperkalemia, volume overload refractory to medical management, uremic pericarditis or pleuritis, uremic encephalopathy, intractable acidosis, and certain poisonings and intoxications (e.g., ethylene glycol, lithium) [4].

Objectives

- To assess the pre-test and post-test level knowledge scores regarding renal rehabilitation among chronic renal failure patients undergoing hemodialysis.
- To determine the effectiveness of Education Module on knowledge regarding renal, rehabilitation among chronic renal failure patients undergoing hemodialysis.
- To find out the association between pre-test level of knowledge regarding renal,

rehabilitation among chronic renal failure with their selected socio-demographic variables.

METHODOLOGY

Study Design: A quasi-experimental one-group pre-test and post-test design was employed to evaluate the effectiveness of an education module on knowledge regarding renal rehabilitation among patients with chronic renal failure.

Study Setting: Setting is the physical location and condition in which data was collected. The present study was conducted at selected dialysis units of Bagalkot, Karnataka, India**.**

Population: The target population comprised patients with chronic renal failure undergoing hemodialysis in selected dialysis units of Bagalkot.

Sample: Patients with chronic renal failure undergoing hemodialysis who met the inclusion criteria were selected as samples for the study.

Sample Size: A total of 50 participants who met the inclusion criteria were included in the study.

Sampling Technique: Probability purposive sampling technique (lottery method) was used.

Inclusion Criteria:

- Patients aged 30–70 years
- Diagnosed with chronic renal failure undergoing hemodialysis
- Both male and female patients
- Able to understand Kannada, English, or Hindi
- Willing to participate in the study

Exclusion Criteria:

- Patients who were not willing to participate
- Patients who were critically ill
- Patients who were unable to cooperate

Tool for Data Collection: Knowledge was assessed using a structured questionnaire developed by the researcher.

- The tool consisted of 40 items
- Each correct answer = 1-mark, wrong answer = 0 mark

Intervention: The participants received a structured education module on renal rehabilitation**,** administered for 7 days**.**

Data Collection Procedure:

Baseline assessment (pre-test) was conducted using the knowledge questionnaire. After administering the education module for 7 days, a post-test was conducted to assess the effectiveness of the intervention.

Data Analysis: Data were analyzed using:

- **Descriptive statistics:** Frequency, percentage, mean, and standard deviation
- **Inferential statistics:** Paired t-test and chi-square test
- **Level of significance:** $p \leq 0.05$

RESULTS

PART I: Description of socio-demographic characteristics of sample

Table 1: Demographic characteristics of study subjects. N=50

SL. No	Socio-demographic variable	Frequency	percentage
1	**Age**		
	a)21-30 years	5	10%
	b31-40 years	7	14%
	c41-50 years	19	38%
	d)51-60 years	10	20%
	e)61 years and above	9	18%
2	**Gender**		
	a) Male	32	64%
	b) Female	18	36%
3	**Religion**		
	a) Hindu	26	52%
	b) Muslim	13	26%
	c)Christian	5	10%
	d)If any other specify	6	12%
4	**Education status**		
	a) No formal Education	2	4%
	b) Primary education	12	24%
	c)Secondary education	15	30%
	d)PUC	18	36%

SL. No	Socio-demographic variable	Frequency	percentage
	e) Degree and above	3	6%
5	**Occupation**		
	a) House wife	7	14%
	b) Cooli	15	30%
	c)Private employee	20	40%
	d)Government employee	6	12%
	e) Others	2	4%
6	**Type of family**		
	a) nuclear family	26	52%
	b) Joint family	24	48%
7	**Family monthly income**		
	a)5000-10000	16	32%
	b)10001-20000	21	42%
	c)20001-30000	3	6%
	d)30001-40000	6	12%
	e)40001and above	4	8%
8	**Place of residence**		
	a) Rural	28	56%
	b) Urban	22	44%
9	**Diet**		
	a) Vegetarian	13	26%
	b) Non –vegetarian	20	40%
	c)Mixed	17	34%
10	**Since How long you have been suffering with disease**		
	a) Below one year	4	8%
	b) One -two year	15	30%
	c)Two -Three year	15	30%
	d)Three year and above	16	32%
11	**Frequency of haemodialysis**		
	a) Once a week	9	18%
	b) Twice a week	31	62%
	c)Thrice a week	10	20%
12	**Source of information regarding renal rehabilitation programme**		
	a) Book and news Paper	6	12%
	b) Friends and relative's	12	24%
	c)Health professional	21	42%
	d)others	11	22%

PART II: Assessment of pre-test and post-test level of knowledge among chronic renal patients.

Table 2: Assessment of Mean, SD and paired 't' test of pre-and post- test scores of knowledges regarding renal rehabilitation among chronic renal failure patients. N=50

Level of knowledge	Mean	SD	Mean Diff.	SD Diff.	t-value	p-value
Pre-test	15.56	5.696	12.28	1.60	17.312	0.00001*
Post-test	26.84	4.092				

*p<0.05

Findings related to the significance of the difference between pre-test and post- test scores of Chronic renal failure patients shows that, difference between mean pre-test [15.56] with SD 5.696and mean post-test [26.84] with SD 4.092, was found to be statistically difference at 0.05 level of significance [t=17.312 (p valve=0.00001) p<0.05]. As Hypothesis H_1 states that, the mean post-test knowledge score will be **Hence H_1 is accepted**.

significantly higher than the mean pre-test knowledge score among chronic renal failure patients.

Hence it is clear that there was statistically significant difference between mean pre-test scores and post-test scores of knowledges among chronic renal failure patients.

PART III: Evaluation of the Effectiveness of education module on knowledge regarding renal rehabilitation among chronic renal failure patients.

Table 3: Comparison between Pre-test and post-test knowledge score regarding renal rehabilitation among chronic renal failure patients. N=50

Levels of knowledge	Pre test		Post test	
	NO	%	NO	%
Excellent	0	0.00	29	58.00
Very good	0	0.00	14	28.00
Good	8	16	7	14.00
Bad	14	28	0	0.00
Very bad	28	56	0	0.00
Total	50	100.00	50	100.00
Wilcox on matched pairs test, Z= 5.645, p=0.00001*				

*p<0.05

The study results showed that findings about the comparison of knowledge scores of chronic renal failure patients. In pre-test, the patients with excellent and very good knowledge were 0 (0%), with good 8 (16%), with bad 14(28%) and with very bad 28(56%). In post-test, the patients with excellent knowledge were29 (58%), with very good14(28%), with good were 7 (14%), bad and very bad were zero out of 50 subjects. The above stated results clearly suggest that chronic renal failure patient's knowledge score was increased in post-test, as compared to the knowledge score in pre-test. Hence, Education module was successful in increasing the knowledge score among chronic renal failure patients.

PART IV: - Table 4: Association between levels of pre-test knowledge with their selected socio-demographic Variables. N=50

SI NO	socio-demographic variables	Chi-square	P value	Association
1	Age	0.141	0.7072	Not significant
2	Gender	0.045	0.8329	Not significant
3	Religion	1.282	0.2575	Not Significant
4	Educational status	0.019	0.8898	Not significant
5	Occupation	0.0191	0.8898	Not significant
6	Type of family	0.063	0.8019	Not significant
7	Family monthly income	0.002	0.9601	Not Significant
8	Place of residence	0.127	0.7212	Not Significant
9	Diet	0.018	0.9141	Not significant
10	Since from how long suffering with disease	0.219	0.6396	Not Significant
11	Frequency of haemodialysis	0.090	0.7638	Not Significant
12	Source of information regarding renal rehabilitation programme	0.014	0.9043	Not Significant

The study results findings related to the association between pre-test knowledge scores of renal rehabilitation among chronic renal failure patients with their selected socio demographic variables reveals that, there was no significant association found between the pre-test knowledge scores among chronic renal failure patients of Age ($\chi2$=0.141, P=0.7072), Gender ($\chi2$=0.045, P=0.8329), Religion ($\chi2$=1.282, P= 0.2575), educational status ($\chi2$=0.019, P=0.8898), occupation ($\chi2$=0.0191, P=0.8898),types of family($\chi2$=0.63, P=0.8019), family monthly income ($\chi2$=0.002, P=0.9601), place of residence($\chi2$=0.127, P=0.7212), Diet($\chi2$=0.018, P=0.9141),since From how long suffering disease($\chi2$=0.219, P=0.6396),frequency of haemodialysis($\chi2$=0.090, P=0.7638),source of information regarding renal rehabilitation programme ($\chi2$=0.014, P=0.9043).No significant association found between knowledge scores and all the socio demographic variable.

Hence H2: is rejected for the all the socio-demographic variables.

CONCLUSION

The study concluded that the education module on renal rehabilitation was effective in improving the knowledge of patients with chronic renal failure undergoing hemodialysis. There was a significant increase in post-test knowledge scores compared to pre-test scores, indicating that structured educational intervention plays an important role in enhancing patient awareness and promoting better health outcomes.

REFERENCES

1. "The Urinary Tract & How It Works. NIDDK". National Institute of Diabetes and Digestive and Kidney Diseases
2. Hall JE (2016). Guyton and Hall textbook of medical physiology (13th ed.). Philadelphia, PA: Elsevier Health Sciences. p. 1129. ISBN 978-0-323-38930-3.
3. Vikaspedia Kidney and its function [Internet]. 2025 [cited 2025 Aug 23]. Available from: https://en.vikaspedia.in/viewcontent/health/diseases/kidney-related/basic-information-about-kidney/kidney-and-its-function
4. Rahman M shad, Smith Mc. acute kidney injury: a guide to diagnosis and management. American family physician [internet]. 2012 oct 1; 86(7):631–9.