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Evaluating the Efficacy of a Self-instructional Teaching Module on Home Care Management Knowledge for Renal Failure Patients Undergoing Hemodialysis in a Selected Hospital in Ambikapur, Chhattisgarh

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Abstract

The kidneys, with their remarkable organization and precision in regulatory functions, exhibit a level of sophistication that can be likened to a divine quality. In a conducted study, a substantial correlation was identified between the pre-test knowledge scores of participants and specific demographic factors, particularly educational qualifications. The chi-square values calculated for educational qualifications were 18.85, and for previous knowledge, it was 6.56. In both instances, the calculated values surpassed the table values for chi-square at a significance level of $p<0.05$. Consequently, the research hypothesis was validated. Notably, age, sex, income, and occupation were determined to be insignificantly associated with pre-test knowledge scores.

Keywords: Self-instructional module, hemodialysis, renal failure, home care management

INTRODUCTION

"The kidneys' remarkable organization and their precise regulatory functions are almost divinely precise, reflecting incredible knowledge and wisdom. It is difficult to find a better way to describe their exceptional design, to the extent that any person, whoever they may be, should take great pride in possessing a pair of kidneys."

—Aldus Huxley "anticltay"

The incidence of chronic renal failure varies widely by state and country. In the United States, the incidence is 331 new cases per million people. According to the Unites States renal data system, at the end of 2011, a total of 3,78,862 people were being treated for end stage renal disease; of these, 24.7% had a functioning transplant, and 64.5% received hemodialysis. United States renal data system (2003) also stated that 93,327 people commenced treatments for end stage renal disease annually in the Unites States. Over million people worldwide are surviving thanks to kidney dialysis or a healthy graft. The incidence of renal failure has doubled during the past 15 years, a trend that is likely to continue in the next decade. The patient and his family are subjected to severe restrictions due to hemodialysis. Two or three times a week, the patient is put in a condition where he is fully dependent on a machine and medical staff. He must follow a rigorous diet and take many medications

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each day [1–5]. The cost of not receiving treatment is prohibitive, and the days missed at work as a result of treatment increase financial strain. These patients frequently have depressed syndromes and low moods [6].

NEED FOR THE STUDY

The number of fatalities from irreversible renal failure rises every year. The incidence of renal failure has increased by almost 8% per year for the past 5 years with more than 30,000 patients being treated in the United States. Dialysis or Kidney transplantation becomes necessary for patient survival. The number of chronic renal failure patients increased to 117 at 30 months. Logic regression analysis revealed that age >65 years, hypertension and multiple aneurysms are independent risk factors for chronic renal failure. Hemodialysis clients usually attend outdoor patients. Usually, it is observed that renal failure patients were confused, had no clear concept and knowledge about home management. Researcher conducted a study to determine the knowledge of renal failure patients regarding their disease and care activities. The study revealed that 45% of the clients here are not able to carry out their care activities because of inadequate knowledge [7–10].

STATEMENT OF THE PROBLEM

A study to evaluate the efficiency of a self-instructional teaching module related knowledge on home care management among patients with renal failure receiving hemodialysis in a chosen hospital, at Ambikapur, Chhattisgarh.

OBJECTIVES OF THE STUDY

1. Determine the pre-test knowledge score on home care management among patients receiving hemodialysis for renal failure.
2. Develop an information booklet on home care management regarding knowledge on home care management among renal failure patients undergoing hemodialysis.
3. Determine whether the self-instructional teaching module was effective based on the increase in post-test knowledge score.
4. Examine the relationship between pre-test knowledge of home care management and particular demographic factors.

Hypothesis

- *H1:* According to a structured knowledge questionnaire, renal failure patients' post-test knowledge scores on home care management have significantly increased at the 0.05 level of significance.
- *H2:* When certain demographic factors are taken into consideration, there is a significant correlation between patients with renal failure receiving hemodialysis and their understanding of home care management.

Conceptual Frame Work

The "General system theory" created by Ludwig Von Bertalanffy in 1968 serves as the foundation for the conceptual framework in this study. This system depicts a collection of cooperating elements of a border that controls the kind and pace of energy, material, and information exchange with the environment.

Review of Literature

1. Review of literature related to knowledge of patients regarding hemodialysis.
2. Review of Literature regarding home Care management of hemodialysis patient.
3. Review of Literature regarding complications of hemodialysis.
4. Review of Literature regarding effectiveness of self-instructional teaching module.

RESEARCH METHODOLOGY

Schematic representation of research design is explained in Figure 1 including Target population, Accessible Population, Setting of the study, sampling technique, sample size, tools etc.

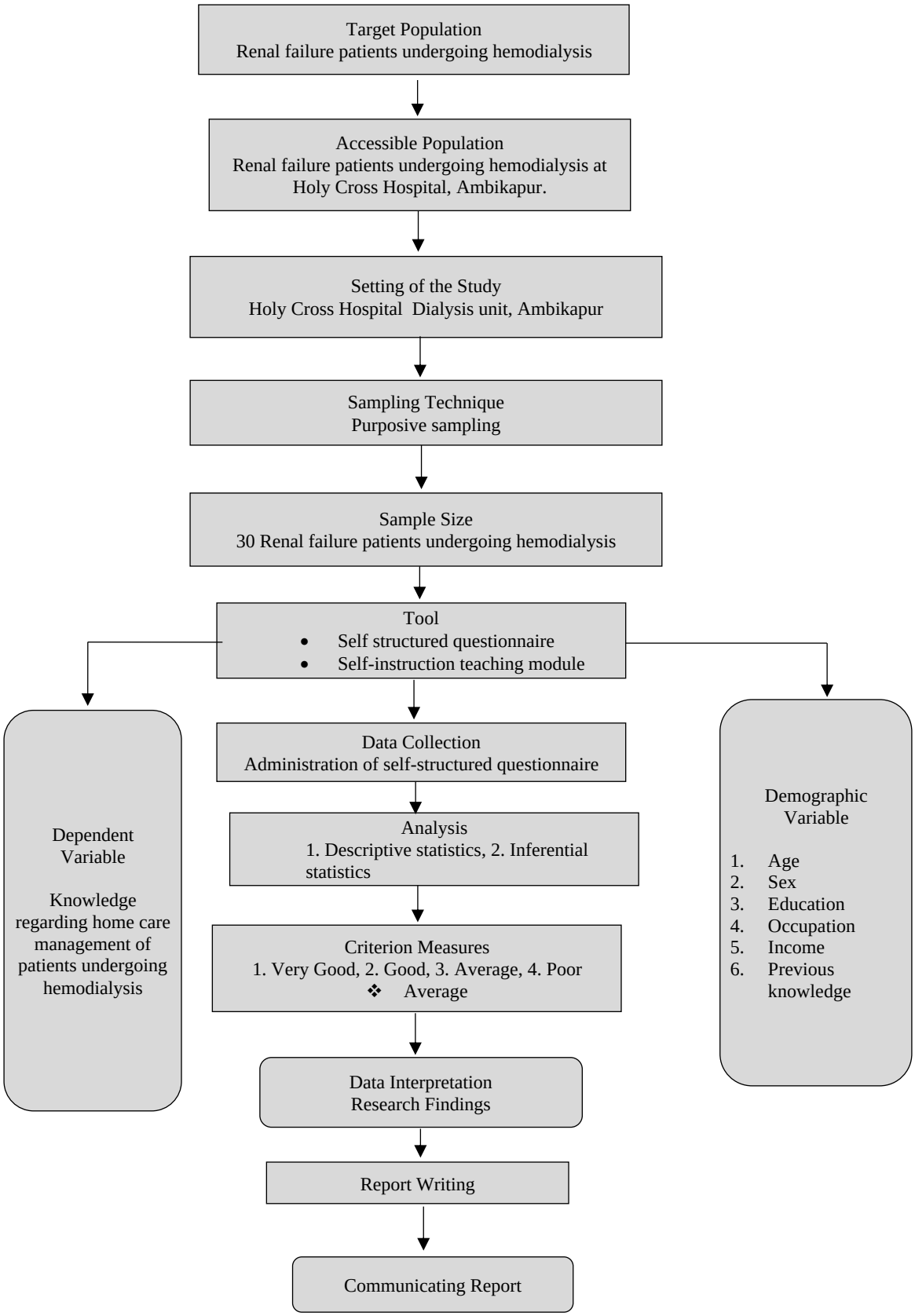

Figure 1. Schematic representation of research design.

Analysis and Interpretation

Frequency and percentage distribution of subjects according to socio-demographic variables are analyzed in Table 1.

Table 1. Frequency and percentage distribution of subjects according to socio-demographic variables (N=30).

Demographic variables	Frequency (f)	Percentage (%)
Age:		
20–40 years	12	40
41–60 years	0 8	26.7
61–80 years	10	33.3
80 and above	0	0
Sex:		
Male	23	76.7
Female	07	23.3
Education:		
Uneducated	02	6.67
Primary	16	53.33
Secondary	05	16.67
Graduate	06	20
Others	01	3.33
Income (Rs.):		
Below 3000	14	46.7
3001–7000	05	16.7
7001–11000	05	16.6
11000 and above	06	20
Occupation:		
Farmer	05	16.67
Daily laborers	04	13.33
Service	09	30
Others	12	40
Previous Knowledge:		
Yes	12	40
No	18	60

Data Analysis on Pre-test and Post-test Knowledge Scores of Renal Failure Patients Undergoing Hemodialysis

Figure 2 depicts that in the pre-test, 53.3% were having good knowledge scores, 30% had average knowledge scores, 16.7% had very good knowledge and nobody had poor knowledge regarding home care management of renal failure patients undergoing hemodialysis. In the post-test, 96.7% were having very good knowledge scores and 3.3% were having good knowledge scores and none of them had average knowledge scores regarding home care management of renal failure patients undergoing hemodialysis (Table 2).

As indicated in Table 3, the pre-test knowledge revealed an average mean score of 14.4, equivalent to 57.6% when converted to percentages, with a standard deviation of 3.66. In contrast, the post-test knowledge displayed an average mean score of 21.9, corresponding to 87.6% when expressed as percentages, and a standard deviation of 1.91.

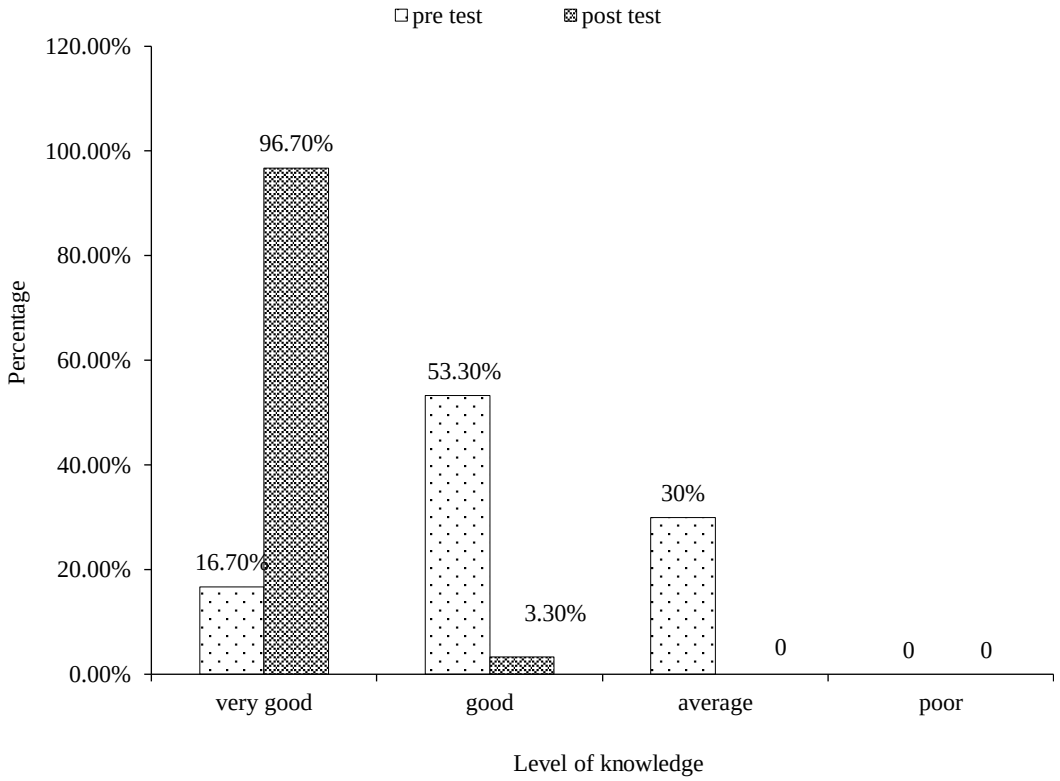

Figure 2. Bar diagram showing the percentage distribution of level of knowledge scores.

Table 2. Frequency and percentages distribution of pre-test and post-test knowledge Score of samples undergoing hemodialysis (N=30).

Level of knowledge	**Pre-test knowledge scores**		**Post-test knowledge scores**	
	Frequency	***Percentage***	***Frequency***	***Percentage***
Very Good	05	16.7%	29	96.7%
Good	16	53.3%	01	3.3%
Average	09	30%	0	0
Poor	0	0	0	0

Table 3. Overall mean, mean score percentage and standard deviation of pre-test and post-test knowledge scores of samples undergoing hemodialysis (N=30).

Knowledge score	**Maximum possible scores**	**Minimum Scores Obtained**	**Maximum Scores Obtained**	**Mean**	**Mean percentage**	**S.D**
Pre-test knowledge scores	25	08	22	14.4	57.6%	3.66%
Post-test knowledge Scores	25	16	24	21.9	87.6%	1.91%

Analysis of Effectiveness of Self-instructional Teaching Module in Terms of Gain in Knowledge Scores

Tables 4 and 5 demonstrate a notable correlation between the subjects' pre-test knowledge scores and specific demographic factors such as educational qualification. The chi-square value for educational qualification is 18.85, while for previous knowledge, it is 6.56. In both cases, the calculated value surpasses the tabulated chi-square value at a significance level of $p<0.05$. Consequently, the research hypothesis is confirmed. Age, sex, income and occupation are found to be not significant with pre-test knowledge scores [11–16].

Table 4. Overall mean, standard deviation, paired "t" test value between pre-test and post-test knowledge scores.

Aspect	Mean	Standard deviation	Mean difference	Standard error	't' value	Level of Significance
Pre-test Knowledge Scores	14.4	3.66	7.5	0.75	11.7	Significant
Post-test Knowledge Scores	21.9	1.91				

Table value 't'(29)=2.05 significant, P<0.05.

Table 5. Association between the pre-test knowledge score and selected demographic variables.

Study Variables	Very good	Good	Average	Poor	Df	Chi-square Value	Critical Value At 0.05	Inference
Education								
Uneducated	0	2	0	-				
Primary	6	6	4	-				
Secondary	2	1	2	-	8	18.85	15.51	Significant
Graduate	2	2	2	-				
Others	-	-	1	-				
Others	1	-	-	-				
Previous Knowledge								
Yes	4	4	4	-	4	6.56	5.99	Significant
No	4	8	6	-				

NURSING IMPLICATIONS

Implications drawn from the study is a vital concern to health care team including professional nurse practitioner, nurse educator, administrator and nurse researcher. The health care personnel are often described as being in 'front line' of the battle against diseases. Today's technological advances mandate that nurses provide high quality nursing care where needed and function in both additional and evolving roles. To provide high quality care we have to enrich our knowledge and skill and should be the agent of change [17].

Nursing Education

Nursing curriculum is responsible for preparing the future nurses. The nursing curriculum should give more emphasis on renal failure, its assessment and home care management of patient undergoing hemodialysis. The nurse educator should make use of self-instruction teaching module, which is prepared for use as a teaching tool. Information booklet is found to be an effective teaching learning method, which could be used in health education of illiterate patients. In dialysis unit during the clinical postings, the nursing students can teach the chronic renal failure patients various types of home care management, its importance and its uses and prevent uncertainty of future and thus help the patients to have an improved way of living and a hopeful outlook. This in turn, fosters these chronically ill patients to confront the future with progressive longing and to have a positive attitude and a promotive outlook towards life.

Nursing Practice

The present study revealed that 53.3% of renal failure patients undergoing hemodialysis had good knowledge regarding home care management. This indicates the need for education programs for the renal failure patients to improve their knowledge. As health professionals, the nurses who are in hospitals and community settings have a major responsibility in providing adequate information about home care management of renal failure patients undergoing hemodialysis. Hence the nurses can plan and prepare the self-instruction teaching module for enhancing the knowledge of renal failure patients. The information guide can be used as an educational material to aid this purpose [18].

Administration

In the event of ever changing disease manifestations, knowledge explosion, technological advances and ever growing challenges of renal diseases, the administrator has a responsibility to provide nurses with substantial continuing educational opportunities, to update the nurses' knowledge, acquire special skills in order to help the client to cope up with the various problems and demonstrate high quality care towards end stage renal disease patients. The administrator should motivate the nursing personnel to develop various educational materials such as posters, pamphlets and planned teaching programs on home care management which aids them to teach patients to practice and hence help to improve the health.

Nursing Research

Nursing research aims to establish an evolving knowledge base, recognizing the dynamic nature of the field. Nurses, who directly observe human responses, hold a pivotal role in advancing research. The research's value in the clinical domain is confirmed by its practical application, particularly in enhancing the capabilities of nurses to deliver home care management for patients with renal failure undergoing hemodialysis. There is a wider scope of conducting research study in depth using other tools in order to evaluate the effectiveness of self-instructional teaching module on home care management among renal failure patients undergoing hemodialysis. This study helps the nurse researcher to develop various methods for assessment and different teaching materials on various aspects of home care management for hemodialysis patients towards the endorsement of an optimistic view point towards life and enhancing a better quality of survival [19, 20].

Limitations

The limitations of the present study are [21, 22]:

1. The samples were chosen using a deliberate sampling strategy, which restricts the generalizability of the study's conclusions.
2. There was no control group in the study. The activities that occurred between the pre-test and post-test were outside the investigator's control.
3. The time interval between the pre-test and post-test was only 7 days. So, test memory effect is a threat to internal validity.
4. External variables were beyond the investigator's control. However, the external variable, such as information provided by other health personnel and relatives, was within the control.
5. The study results were constrained to a sample size of 30 renal failure patients receiving hemodialysis who were admitted during the data collection period.
6. The study was limited only to a particular hospital.

Recommendations

The following recommendations are made based on the present study:

1. A big sample from the same study repeated in order to reach more definitive conclusions and make generalizations.
2. A self-instruction teaching module in local languages can be prepared for educating the patients and their relatives.
3. A comparable study can be carried out on a bigger population and with a control group.
4. An identical study of this kind can be repeated on a sample using various demographic factors.
5. A high-quality study on renal failure patients' quality of life might be carried out.
6. A comparable study can be carried out utilizing various teaching techniques, such as a structured instruction program.

CONCLUSION

The nurse educator should make use of self-instruction teaching module, which is prepared for use as a teaching tool. Information booklet is found to be an effective teaching learning method, which could be used in health education of illiterate patients. In dialysis unit during the clinical postings, the nursing students can teach the chronic renal failure patients various types of home care management,

its importance and its uses and prevent uncertainty of future and thus help the patients to have an improved way of living and a hopeful outlook.

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