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Research Article

A Study to Evaluate the Effectiveness of Structured Teaching Program Regarding Knowledge on Home Care of Dialysis Client Among Caregivers at Selected Hospitals, Bengaluru

Smita Dhakal[1], Reena George[2]

[1]Department of Medical Surgical Nursing, Hayat Institute of Nursing Education, Guwahati, Assam, India,
[2]Department of Medical Surgical Nursing, Florence College of Nursing, Bengaluru, Karnataka, India

Abstract

Aim: The aim of this study was to evaluate the effectiveness of SIM on home care of hemodialysis patients among caregivers of dialysis patients in selected hospitals, Bengaluru. **Objectives:** The objectives of the study were to: Assess the pre-test level of knowledge of caregivers regarding home care of dialysis client. Determine the difference and association between the mean pre-test knowledge levels of caregivers regarding home care of dialysis client with selected sociodemographic variables. **Methods:** The research approach adopted for the study was one-group pretest-posttest research approach. The research design selected for the study was quasi-experimental research design. Simple random sampling technique was used for the study. Fifty caregivers were selected for this study. The tool used for the data collection was structured knowledge questionnaire, which has two sections. Section-A provides about sociodemographic data and Section-B deals with knowledge on home care of hemodialysis patients. **Results:** It was observed that the mean pre-test score was 21.57 whereas the mean post-test score was 36.19. The obtained *t*-value was 26.79, which was higher than the table value 2.7 so it is highly significant at $P < 0.01$ level. This indicates that the STP was effective in improving the knowledge of caregivers regarding home care of hemodialysis patients. The obtained Chi-square value for type of family, educational status, occupational status, and source of information regarding home care of hemodialysis patients was higher when compared to the table value at $P < 0.05$ level of significance. This indicates that there was an association between pre-test level of knowledge of caregivers and their selected sociodemographic variables. **Conclusion:** The findings of the study concluded that the STP was found to be effective in improving the knowledge of caregivers regarding home care of hemodialysis patients.

Key words: Caregivers, effectiveness, evaluate, hemodialysis, home care, socio-demographic variables, structured teaching programme

Address for correspondence: Mrs. Reena George, Department of Medical Surgical Nursing, Florence College of Nursing, Bengaluru, Karnataka, India. E-mail: reenageorgec1@gmail.com

Introduction

The human body is made up of several organ systems that all work together as a unit to make sure the body keeps functioning. Urinary system is one of the important systems of human body which is mainly concerned with filtering out fluid and other substances from the bloodstream. Renal failure (also kidney failure or renal insufficiency) is a medical condition in which the kidneys fail to adequately filter waste products from the blood. The two main forms are acute kidney injury, which is often reversible with adequate treatment, and chronic kidney disease, which is often irreversible. In renal failure, there may be problems with increased fluid in the body (leading to swelling), increased acid levels, raised levels of potassium, decreased levels of calcium, increased levels of phosphate, and in later stages anemia.[1]

For both acute and chronic kidney diseases, the main treatment is dialysis ("dialusis" meaning dissolution, "dia," meaning through, and "lysis," meaning loosening or splitting). Dialysis is a process for removing waste and excess water from the

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blood, and is used primarily as an artificial replacement for lost kidney function in people with renal failure. Dialysis may be used for those with an acute disturbance in kidney function or progressive and also in chronically worsening kidney function. In chronic cases, dialysis is regarded as a "holding measure" until a renal transplant can be performed, or sometimes as the only supportive measure in those for whom a transplant would be inappropriate.[2]

Dialysis is a process of cleansing the blood of accumulated waste products. It is used for clients with end-stage renal failure or for acutely ill clients who require short-term dialysis. Dialysis refers to the diffusion of solute molecules through a semipermeable membrane, passing from a side of higher concentration to that of lower concentration. The purpose of dialysis is to maintain the life and well-being of the client until kidney function is restored. It is a substitute for some kidney excretory functions but does not replace endocrine and metabolic functions.[3]

Home care or domiciliary care is supportive care provided at home for a kidney failure client during the period of hemodialysis where caregivers take care of various needs of the client such as nutritional needs, psychological needs, self-care practice, fluid and diet therapy, medication, caring of catheter site, and control of other disease to facilitate renal rehabilitation, appropriate follow-up, and monitoring by the members which is a high priority to resolve problems as early as possible.[3]

Need for Study

The various studies showed that lack of knowledge of caregivers regarding fluid and diet therapy, medication, caring of catheter site, etc., in dialysis client has increased the burden by worsening the situation resulting in increased rate of incidence of complications among them. Therefore, the need for the study clearly shows that the caregivers should be well educated about their lifestyle practice and care of renal client to promote healthy living.[4]

Objectives

The objectives of the study are to:

- Assess the existing level of knowledge of caregivers regarding home care of dialysis client
- Find out the difference between pre-test and post-test knowledge score of caregivers regarding home care of dialysis clients
- Determine the association between the mean pre-test knowledge levels of caregivers regarding home care of dialysis client with selected sociodemographic variables.

Research hypothesis

H_1: There will be a significant difference between the mean pre-test and post-test knowledge scores of caregivers regarding home care of dialysis client.

H_2: There will be a significant association between mean pre-test knowledge level of caregivers regarding home care of dialysis client with selected sociodemographic variables.

Data Collection Procedure

The data were collected from caregivers of selected hospital, Bengaluru. Written permission was sought and obtained from the authorities concerned. The period of data collection was 6 weeks. Fifty caregivers were selected as per the above-mentioned criteria with prior informed

Table 1: Classification of sample by sociodemographic characteristics *n*=50

Characteristics	Category	Respondents	
		n	%
Age in year	Below 25	2	4.0
	25–35 years	6	12.0
	35–45 years	10	20.0
	45–55 years	27	54.0
	Above 55	5	10.0
Sex	Male	12	24.0
	Female	38	76.0
Religion	Hindu	29	58.0
	Muslim	8	16.0
	Christian	13	26.0
	Others	0	0.0
Residence	Urban	36	72.0
	Semi-urban	3	6.0
	Rural	11	22.0
Type of family	Nuclear	41	82.0
	Joint	7	14.0
	Extended	2	4.0
Educational status	Primary education	8	16.0
	Secondary education	15	30.0
	Undergraduate	24	48.0
	Postgraduate and above	3	6.0
Occupational status	Private employee	22	44.0
	Government employee	11	22.0
	Business	5	10.0
	Dailey wages	8	16.0
	Nil	4	8.0
Source of information	Mass media	11	22.0
	Health personnel	29	58.0
	Friends and relatives	8	16.0
	Nil	2	4.0

Table 2: Classification of pre-test knowledge scores on home care of hemodialysis client among caregivers *n*=50

Level of knowledge	Score (%)	No. of respondents (%)	
		No	%
Inadequate	<50	41	82.0
Moderate	51–80	9	18.0
Adequate	>81	0	0.0
Total		50	100

Table 3: Aspect wise pre-test mean knowledge scores of caregivers on home care of hemodialysis client *n*=50

Aspects wise knowledge	Max. statement	Max. score	Range	Mean	SD
General aspects of hemodialysis	19	19	3–9	7.43	3.17
Home care of hemodialysis clients	27	27	6–19	13.76	2.79
Overall	46	46	10–29	21.57	2.41

verbal consent to participate in the study. Initially, good rapport was maintained with the caregivers and the purpose of the study was explained to them. Caregivers were made comfortable and the privacy was provided. Instructions to answer the questionnaire were given. Pre-test was conducted through structured questionnaire to assess the caregivers' knowledge on home care of hemodialysis clients. Then, the teaching session was conducted to the caregivers. After 7 days of pre-test, post-test was conducted for the caregivers with the same questionnaire to assess their knowledge. All the subjects were very cooperative and investigator expressed her gratitude for their cooperation.

Plan for Data Analysis

The data analysis is the systematic organization and synthesis of research data and testing hypothesis.[18]It involves the translation of information in the interpretable and managing form. The data obtained were analyzed using both descriptive and inferential statistics on the basis of objectives and hypothesis of the study.

- Sociodemographic data containing sample characteristics will be analyzed using frequencies and percentage
- The knowledge scores before and after the administration of the STP will be calculated using mean and standard deviation
- The significant difference between the mean pre-test and post-test score would be analyzed by paired *t*-test
- Associations between pre-test knowledge levels with selected sociodemographic variables would be analyzed using Chi-square test
- The level of significance will be set at $P \leq 0.01$ levels for paired *t*-test and $P \leq 0.05$ for Chi-square test.

Results

Table 1 shows that among 50 caregivers, 54% of them were 45–55 years of age group, majority 76% were female, 58% of caregivers were Hindus, and 72% of them were from urban area. In concern to type of family, 82% of them belong to nuclear family, higher percentage of caregivers 48% were undergraduate. In relation to occupational status of caregivers, 44% of them were private employees. The sociodemographic history of source of information shows that among 50 caregivers, 58% (29) of them got information from health personals, 16% (8) accessed information from friends and relatives, 22% (11) of them got information from mass media, and 4% (2) of caregivers did not get any information regarding home care of hemodialysis clients.

Table 4: Classification of post-test level of knowledge on home care of hemodialysis clients among caregivers *n*=50

Level of knowledge	Score (%)	No. of respondents (%)	
		No	%
Inadequate	<50	0	0.00
Moderate	51–80	17	34.0
Adequate	>81	33	66.0
Total		50	100

Overall and aspects wise knowledge scores on home care of hemodialysis client among caregivers

Table 2 shows the classification of caregivers on pre-test level of knowledge on home care of hemodialysis clients. Among 50 caregivers, majority 82% of them had inadequate level of knowledge and 18% of them had moderate level of knowledge regarding home care of hemodialysis client and none of them had adequate level of knowledge.

Table 3 shows aspect wise pre-test mean knowledge scores of caregivers on home care of hemodialysis client. In general aspects of hemodialysis, the mean knowledge score was 7.43 ± 3.17. In the area of knowledge on home care of hemodialysis clients, the mean knowledge score was 13.76 ± 2.79. The total mean score in pre-test was 21.57 ± 2.41.

Table 4 shows that among 50 caregivers, 66% of them had adequate level of knowledge and 34% of them had moderate level of knowledge and none of them had adequate knowledge regarding home care of hemodialysis client.

Table 5 shows that the mean knowledge score in general aspects was 16.26 ± 1.75, and in area of knowledge on home care of hemodialysis clients, the mean knowledge score was 19.67 ± 2.13. The total mean score in pre-test was 36.19 ± 1.83.

Comparison of mean pre-test and post-test knowledge scores to evaluate the effectiveness of structured teaching program.

Table 6 shows that the mean post-test knowledge scores were significantly higher than the mean pre-test knowledge scores at $P \leq 0.05$ level of significance. Hence, the research hypothesis H_1 is accepted.

Table 7 shows the aspect wise mean pre-test and post-test knowledge scores on home care of hemodialysis client

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Table 5: Aspect wise post-test mean knowledge scores of caregivers on home care of hemodialysis clients *n*=50

Aspects wise knowledge	Max. statement	Max. score	Range	Mean	SD
General aspects of hemodialysis	19	19	10–18	16.26	1.75
Home care of hemodialysis clients	27	27	14–25	19.67	2.13
Overall	46	46	26–43	36.19	1.83

among caregivers. Regarding knowledge on general aspects of hemodialysis, the mean scores in pre-test and post-test were 7.43 and 16.26, respectively, obtained *t*-value was 11.47. In area of home care of hemodialysis clients, mean scores in pre-test was 13.76, in post-test was 19.67 and obtained *t*-value was 9.23. The overall *t*-value was 26.79 which was above the table value 2.7 at $P \leq 0.05$ level of significance.

Table 8 depicts the association of pre-test level of knowledge of caregivers with their selected sociodemographic variables. The obtained Chi-square value for type of family, educational status, occupational status, and source of information regarding home care of hemodialysis client was higher values (12.469, 9.517, 10.572, and 14.433, respectively) when compared to the table value at $P \leq 0.05$ level of significance.

Inference

In this study, the obtained Chi-square value for year of type of family, educational status, occupational status, and source of information was to be significant regarding home care of hemodialysis client was higher when compared to the table value at $P \leq 0.05$ level of significance; hence, the research hypothesis H_2 is accepted.

Discussion

Sociodemographic characteristics of samples

The study finding demonstrated that, among 50 caregivers, 27 (54%) of them were 45–55 years of age group, majority 76% were female. With regard to the religion, 58% of caregivers were Hindus, majority 72% of them from urban area, and 82% of them belong to nuclear family. It was recorded that, in educational status, higher percentage of caregivers 48% were undergraduate and in relation to occupational status, 44% of them were private employees. The sociodemographic history of source of information shows that 58% of them got information from health personals, 16% accessed information from friends and relatives, 22% of them got information from mass media, and 4% of caregivers did not get any information regarding home care of hemodialysis clients.

Overall and aspects wise knowledge scores on home care of hemodialysis client during postnatal period among caregivers

Majority 82% of them had inadequate level of knowledge and 18% of them had moderate level of knowledge regarding home care of hemodialysis clients, whereas in post-test,

Table 6: Overall mean pre-test and post-test knowledge on home care of hemodialysis client among caregivers *n*=50

Aspect	Maximum score	Knowledge of respondents		Paired *t*-test
		Mean	SD	
Pre-test	46	21.57	2.41	26.79***
Post-test	46	36.19	1.83	

**Significant at P<0.01 level, df 49, table value 2.7

among 50 caregivers, majority 66% of them had adequate level of knowledge and 34% of them had moderate level of knowledge regarding home care of hemodialysis clients.

Above finding of the present study was supported by a study conducted to assess knowledge of caregivers regarding home care of dialysis clients. In this cross-sectional study, measures of home care management and knowledge were administered to 372 caregivers of hemodialysis clients from 17 dialysis facilities. This study concluded that caregivers had inadequate knowledge regarding home care management and investigator suggested that educational program is needed for the caregivers to improve their knowledge.[5]

Comparison of pre-test and post-test mean knowledge score of caregivers to evaluate the effectiveness of STP on home care of hemodialysis client

It was observed that, regarding knowledge on general aspects of hemodialysis, the mean scores in pre-test and post-test were 7.43 and 16.26, respectively. The obtained *t*-value was 11.47. In area of home care of hemodialysis clients, mean scores in pre-test were 13.76, in post-test, it was 19.67 and obtained *t*-value was 9.23. The overall *t*-value was 26.79 which was above the table value 2.7 at $P \leq 0.05$ level of significance. From this, it was evident that STP was effective in enhancing the knowledge of caregivers in all aspects of home care of hemodialysis client. Hence, the research hypothesis H_1 is accepted. Above finding of the present study was supported by a study conducted to find out the effectiveness of STP regarding knowledge of home care management provided to caregivers of clients undergoing hemodialysis. An evaluative research approach using non-probability convenient sampling technique, 30 samples were selected. The major finding of the study showed that the overall knowledge score obtained by the caregivers in the pre-test was 50.35 and 86.26 in the post-test. The overall improvement in the mean score was 35-89 with *t*-value 13.4. The findings of the study concluded that the knowledge of the caregivers had increased with the use of booklet.[6]

Table 7: Aspect wise mean pre-test and post-test knowledge scores on home care of hemodialysis clients among caregivers *n*=50

S. No.	Aspect wise knowledge	Knowledge of respondents				Paired *t*-test
		Pre-test		Post-test		
		Mean	SD	Mean	SD	
I	General aspects of hemodialysis	7.43	3.17	16.26	1.75	11.47***
II	Home care of hemodialysis clients	13.76	2.79	19.67	2.13	9.23**
	Overall	21.57	2.41	36.19	1.83	26.79***

**Significant at P<0.05 level, df 49, table value 2.7

Table 8: Association between pre-test level of knowledge of caregivers and their selected sociodemographic variables *n*=500

Characteristics	Category	*n*	Level of knowledge		Chi-square
			Inadequate knowledge	Moderate knowledge	
Age in year	Below 25	2	2	0	χ^2=3.308 df 4 NS
	25–35 years	6	4	2	
	35–45 years	10	7	3	
	45–55 years	27	13	14	
	Above 55	5	3	2	
Sex	Male	12	7	5	χ^2=0.035 df 1 NS
	Female	38	21	17	
Religion	Hindu	29	16	13	χ^2=0.17 df 2 NS
	Muslim	8	5	3	
	Christian	13	7	6	
	Others	0	0	0	
Residence	Urban	36	21	15	χ^2=2.075 df 2 NS
	Semi-urban	3	1	2	
	Rural	11	4	7	
Type of family	Nuclear	41	32	9	χ^2=12.469 df 2 S**
	Joint	7	1	6	
	Extended	2	2	0	
Educational status	Primary education	8	5	3	χ^2=9.517 df 3 S**
	Secondary education	15	4	11	
	Undergraduate	24	18	6	
	Postgraduate and above	3	1	2	
Occupational status	Private employee	22	14	7	χ^2=10.572 df 4 S**
	Government employee	11	2	9	
	Business	5	4	1	
	Dailey wages	8	2	6	
	Nil	4	2	2	
Source of information	Mass media	11	3	8	χ^2=14.433 df 3 S**
	Health personnel	29	24	5	
	Friends and relatives	8	3	5	
	Nil	2	2	0	

**Significant at *P*<0.05 level, S: Significant, NS: Non-significant

Association between mean pre-test level of knowledge of caregivers and their sociodemographic variables

In this study, the obtained Chi-square value for type of family, educational status, occupational status, and source of information regarding home care of hemodialysis clients (12.469, 9.517, 10.572, and 14.433, respectively) which was higher when compared to the table value at $P \leq 0.05$ level of significance. Hence, the research hypothesis H_2 is accepted.

Above finding of the present study was supported by a study to examine caregivers on knowledge on dietary restriction

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and the consequence of noncompliance with medicine by client on hemodialysis. Knowledge of 82 caregivers was assessed by a questionnaire. Results revealed that more than one-third of the clients were non-compliant with at least one dietary restriction. About 53% of caregivers were not aware of phosphorus dietary restrictions but only 34% were on potassium. Caregivers knowledge of medical compliance was poorer than knowledge of renal dietary restriction (mean score 29.4%; 74.7%) also the knowledge of caregivers has positive association with their education, age, and socioeconomic status. Thus, the study concluded that better knowledge about medical complication help to reduce the non-compliance rate.[3]

Conclusion

Nurses have great responsibility for giving information regarding home care of hemodialysis client to caregivers for maintaining health of the dialysis clients. This study will encourage nurse administrators to arrange for conference and seminars related to home care of hemodialysis clients to the caregivers in nephrology department.

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