EFFECTIVENESS OF SELF INSTRUCTIONAL MODULE ON KNOWLEDGE AND
PRACTICES AMONG CAREGIVERS ON HOMECARE MANAGEMENT OF
PATIENTS ON HEMODIALYSIS

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Research Article

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ABSTRACT

Background: Caring for a hemodialysis patient at home is indeed challenging. Unfortunately, the laxity and lack of knowledge as well as practices can be ahindrance to the caregiver during provision of care. A huge challenge arises when complications occur due to unsatisfactory care to these hemodialysis patients. Written information about the homecare management of patient on hemodialysis would surpass these challenges. **AIM**: To assess the effectiveness of a self-instructional module on homecare management of patients on hemodialysis among caregivers to improve their existing knowledge and practice. **Methods**: A pre experimental approach was adopted to conduct this study on 60 samples who met the inclusion criteria. A structured questionnaire on knowledge and self-reported practices on homecare management of hemodialysis patients, was used. A pre-test was done followed by the distribution of self-instructional module and finally a post-test. Pilot study was done to obtain the reliability of the tool which was found to be 0.87 using split half method. Furthermore, main study was conducted. Analysis was done using descriptive and inferential statistics. **Findings**: 50% of the samples had good knowledge 45% had average knowledge and 5% had a poor score and 78.3% had good practice 21.7% had average practice in the pre-test. Following the administration of the self-instructional module the post-test revealed that the knowledge and practice improved to 100%.

INTRODUCTION

The kidney is one of the major vital organ. Proper functioning of the urinary system is essential. Disorders related to the kidney are currently the leading cause of death throughout the country (Smeltzer C.S *et al, 2009*).

Chronic renal failure is a progressive irreversible deterioration in renal function in which the body's ability to maintain metabolic, fluid and electrolyte balance fails, resulting in uremia which render the patient to depend up on hemodialysis for the maintenance of the internal milieu and to avoid uremia. In the early stage of renal impairment, symptoms may be minimized through hemodialysis and regulation of diet, control of fluid intake, and use of medication, as renal function worsen, these treatments become insufficient (S.K. Agarwal *et al, 2009*).

Hemodialysis is the treatment procedure that is done to assist the failing kidney. Homecare is the supportive care provided at home for clients who are recovering after a hospital or facility stay, or need additional support to remain safely at home and avoid unnecessary hospitalization. Home care management involves the complete care activities that are tailored to the individual patient when at home. The chronic kidney disease was ranked 27th in the list of causes of total number of deaths worldwide in 1990, but rose to 18th in 2010.Over 2 million people are being kept alive by renal replacement therapy worldwide, the majority of whom are treated in only five countries (US, Japan, Germany, Brazil, and Italy) that constitute only 12% of world population. Only 20% are treated in about 100 developing countries that make up over 50% of world population (The National Kidney Foundation. 2015).

There are only three population based studies in India commenting on the magnitude of chronic kidney disease. In a prevention program started at community level in Chennai, the reported prevalence was 0.86% in the project population and 1.39% in the control region. The second study is based on Delhi involving 4972 urban patients. The prevalence of chronic renal failure (defined as serum creatinine more than 1.8 mg/dl) to be 0.79 *%* or 7852 per million/population. The third study perhaps the only longitudinal study to identify the incidence of end stage renal disease is based on 5,72,029 subjects residing in

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city of Bhopal suggests that the average crude and age adjusted incidence rates of end stage renal disease were 151 and 232 per million populations respectively. Thus it is crucial that prevention of chronic kidney disease has to be the goal of medical fraternity, government of India and the general public (Ram Prabahar M *et al,* 2008).

A systematic review was conducted to evaluate the effectiveness of interventions aimed at providing support to caregivers of people with chronic renal disease. Three studies were identified that evaluated an intervention for caregivers of chronic renal disease patients. All three only assessed the effect of educational material on caregivers' knowledge. Two, evaluated information provided to caregivers of dialysis patients using a pre-test and post-test study design. The other study used participatory action research methods to develop and evaluate an information handbook for transplant patients and their caregivers (Tong A *et al,* 2008).Studies consistently found that the provision of information improved caregiver's knowledge that may lead to improved outcomes of patients.

An evaluative approach study was conducted in Vijaya Dialysis unit, Chennai with 30 samples selected through non-probability sampling technique to find the effectiveness of information booklet provided to the caregivers of patients undergoing hemodialysis on knowledge on home care management. The major findings showed the overall improvement in the mean score (35.89) with the 't' value 13.4 which was highly significant at <0.0001 level which showed a significant improvement in caregiver's knowledge after understanding the information given in the booklet (Fatima L,2004).

Objectives

- To assess the existing knowledge of caregivers on home care management of hemodialysis patients.
- To assess the existing practices of caregivers on home care management of hemodialysis patients.
- To evaluate the effectiveness of self-instructional module on knowledge and practice on homecare management among the caregivers of patients on hemodialysis.
- To find association of knowledge and practices of caregivers of hemodialysis patients with their demography

MATERIALS AND METHODS

Research Approach

Research approach used in this study was quantitative approach.

Research Design

Pre experimental design (pretest--intervention--posttest)

Setting of the Study

The present study was undertaken in different dialysis units in hospitals of Pune City.

Sample

Population for the present study were caregivers of hemodialysis patients.

Sample Size

The total sample size of this study was 60.

Sampling Technique

Non probability purposive sampling technique was adopted.

Sampling Criteria

Inclusion criteria for sampling

1. The caregivers of patients who have recently started hemodialysis up to one year.
2. The study includes both male and female caregivers
3. The caregivers who can read and write English and Marathi.
4. The caregivers who are available at the time of data collection.

Exclusion criteria for sampling

The caregivers who are not willing to participate in the study

Data Collection Tool

A self-structured questionnaire on knowledge and self-reported practices was developed to assess the knowledge and self-reported practices among the caregivers on homecare management of patients on hemodialysis. It was validated by experts and guide.

Description of the Tool

Section I: Demographic characteristics of the participants

It mainly contained all the demographic aspects for the caregivers of patient on hemodialysis covering important areas such as relationship, educational status. occupational status of the caregiver, the duration of the patient on hemodialysis, the economic status as well as the vascular access site.

Section II: Structured questionnaire to assess the knowledge on homecare management of patient on hemodialysis

The knowledge questionnaire regarding the homecare management of patient on hemodialysis included questions on the normal anatomy and physiology of kidney, the nutritional and fluid management, the vascular access care, the activities of daily living and supportive care.

Section III: Structured questionnaire to assess the self-reported practices on homecare management of patient on hemodialysis

The investigator had prepared this tool to assess the self-reported practices on homecare management of patient on hemodialysis among their respective caregivers.

Content Validity

Content validity of the tool was established by 15 experts from various fields of expertise.

Reliability

The reliability of the tool was established by using Split half technique and Correlation Coefficient. The reliability of the nursing assessment tool was found to be 0.87. Hence, the tool was found to be highly reliable.

Pilot Study

Pilot study was conducted on 8 subjects.

RESULT

Table 1 Description of samples based on their personal characteristics in terms of frequency and percentages

		N=60
Demographic variable	**Freq**	**%**
Gender		
Female	31	51.7%
Male	29	48.3%
Relationship with the client		
Daughter	7	11.7%
Husband	13	21.7%
Son	16	26.7%
Wife	24	40.0%
Educational qualification		
Graduate	31	51.7%
Secondary	29	48.3%
Duration of the patient on hemodialysis		
1 year	28	46.7%
3 months	2	3.3%
4 months	6	10.0%
5 months	4	6.7%
6 months	20	33.3%
Employment		
Employed	35	58.3%
Unemployed	25	41.7%
Type of family		
Extended	1	1.7%
Joint	5	8.3%
Nuclear	54	90.0%
Monthly family income		
<Rs. 5000	13	21.7%
Rs. 5000-10000	33	55.0%
Rs. 10000-15000	12	20.0%
>Rs. 15000	2	3.3%
Information on homecare management of patient on hemodialysis		
No	49	81.7%
Yes	11	18.3%
Frequency the client undergoes hemodialysis		
Once a week	41	68.3%
Twice a week	19	31.7%
Vascular access site present in the client		
GRAFT	60	100.0%

Table 1 depicts that the majority of the samples were females (51.7%) and they were the wife of the patient (40%). Most of them were graduates (51.7%). Majority of the patients underwent a one-year duration of hemodialysis (46.7%). It was found that most of the samples were employed (58.3%). The type of the family in which majority of the samples as well as the patient lived were a nuclear family (90%).Most of the samples (55%) had an income of Rs 5000-10,000. Regarding their information on homecare management of hemodialysis patient, most of them were not aware of it (81%).Majority of the patients (68.3%) underwent hemodialysis once a week.

Section II: Analysis of Data Related To Knowledge of Caregivers on HomeCare Management of Hemodialysis Patients.
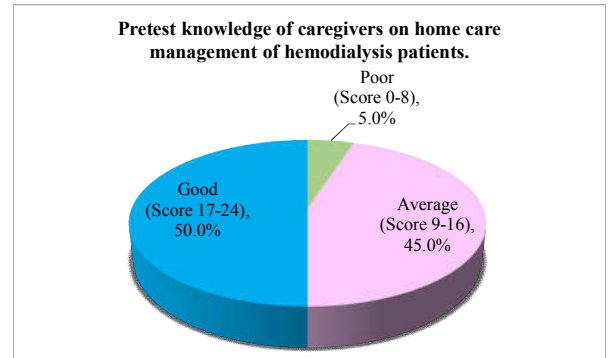

Fig 1 Distribution of the pretest -knowledge of caregivers on homecare management of hemodialysis patients.

In the pretest, 50% of the caregivers of hemodialysis patients had good knowledge, 45% of them had average knowledge and 5% of them had poor knowledge regarding home care management of hemodialysis patients.

Section III Analysis of Data Related To Practices of Caregivers on HomeCare Management of Hemodialysis Patients

Table 2 Practices of caregivers on home care management of hemodialysis patients

	N=60	
Practices	**Pretest**	
	Frequency	**%**
Poor (Score 0-3)	0	0.0%
Average (Score 4-6)	13	21.7%
Good (Score 7-10)	47	78.3%

Table 2 signifies that in pre-test, 78.3% of the caregivers of hemodialysis patients had good knowledge (score 7-10) and21.7% of them had average knowledge (score 9-16) regarding home care management of hemodialysis patients.

Section IV: Analysis of Data Related To The Effectiveness of Self-Instructional Module on Knowledge And Practice on Homecare Management Among The Caregivers of Patients on Hemodialysis

Table 3 The effectiveness of self-instructional module on knowledge on homecare management among caregivers of patient on hemodialysis

				N=60
Knowledge	**Pretest**		**Posttest**	
	Freq	**%**	**Freq**	**%**
Poor (Score 0-8)	3	5.0%	0	0.0%
Average (Score 9-16)	27	45.0%	0	0.0%
Good (Score 17-24)	30	50.0%	60	100.0%

Table 3signifies that in pretest, 50% of the caregivers of hemodialysis patients had good knowledge, 45% of them had average knowledge and 5% of them had poor knowledge regarding home care management of hemodialysis patients.

Table 4 Paired t-test for the effectiveness of self-instructional module on knowledge on homecare management among the caregivers of patients on hemodialysis

					N=60
	Mean	**SD**	**T**	**Df**	**p-value**
Pretest	17.4	3.7	11.9	59	0.000
Posttest	23.2	1.1			

In posttest, all of the caregivers of hemodialysis patients had good knowledge (score 17-24) regarding home care management of hemodialysis patients. This indicates that there is remarkable improvement in the knowledge of caregivers of patients with hemodialysis.

Table 4 denotes that the researcher applied paired t-test for comparison of pretest and posttest knowledge scores of caregivers of patients with hemodialysis. Average knowledge score in pretest was 17.4 which increased to 23.2 in posttest. T-value corresponding to this comparison was 11.9 with 59 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. Self-instructional module was found to be significantly effective in improving the knowledge of the caregivers of hemodialysis patients regarding home care management.
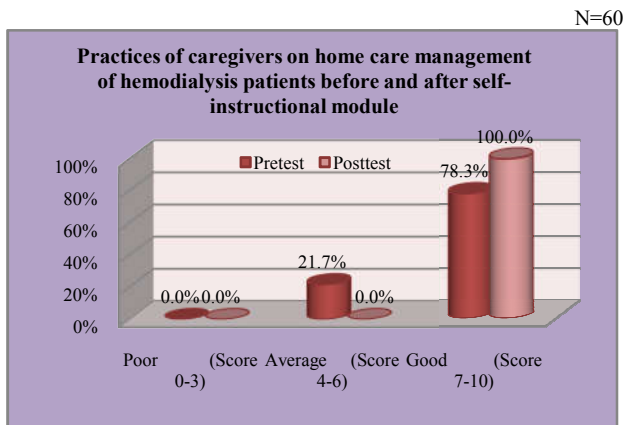
N=60

Figure 2 Description of the practices of caregivers on homecare management of hemodialysis patient before and after administration of self-instructional module.

In pretest, 78.3% of the caregivers of hemodialysis patients had good practice and 21.7% of them had average practice regarding home care management of hemodialysis patients.In posttest, all of the caregivers of hemodialysis patients had good practices regarding home care management of hemodialysis patients. This indicates that there is remarkable improvement in the practices of caregivers of patients with hemodialysis**.**

Table 6 Paired t-test for the effectiveness of self-instructional module on practices on homecare management among the caregivers of patients on hemodialysis

N=60

	Mean	SD	T	Df	p-value
Pretest	7.5	1.4	12.8	59	0.000
Posttest	9.9	0.3			

Table 6 denotes that the researcher applied paired t-test for comparison of pretest and posttest practice scores of caregivers of patients with hemodialysis. Average practice score in pretest was 7.5 which increased to 9.9 in posttest. T-value corresponding to this comparison was 12.8 with 59 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. Self-instructional module was found to be significantly effective in improving the practices of the caregivers of hemodialysis patients regarding home care management

Section V: Analysis of Data Related To Association of Knowledge and Practices of Caregivers of Hemodialysis Patients with Their Demography

Association of knowledge and practices of caregivers of hemodialysis patients with their demography was assessed using Fisher's exact test. The summary of Fisher's exact test is tabulated below:

Table 7 Fisher's exact test for association of knowledge of caregivers of hemodialysis patients with their demography.

N=60

Demographic variable		Knowledge			p-value
		Poor	Average	Good	
Gender	Female	2	12	17	0.564
	Male	1	15	13	
Relationship with the client	Daughter	0	6	1	
	Husband	1	7	5	0.072
	Son	0	8	8	
	Wife	2	6	16	
Educational qualification	Graduate	1	12	18	0.420
	Secondary	2	15	12	
Duration of the patient on haemodialysis	1 year	1	18	9	
	3 months	0	0	2	
	4 months	1	1	4	0.027
	5 months	0	3	1	
	6 months	1	5	14	
Employment	Employed	2	17	16	0.823
	Unemployed	1	10	14	
Type of family	Extended	0	1	0	
	Joint	0	3	2	0.635
	Nuclear	3	23	28	
Monthly family income	<Rs. 5000	1	6	6	
	Rs. 5000-10000	1	14	18	0.322
	Rs. 10000-15000	0	6	6	
	>Rs. 15000	1	1	0	
Information on homecare management of haemodialysis	No	2	23	24	0.532
	Yes	1	4	6	
Frequency the client undergoes haemodialysis	Once a week	3	16	22	0.233
	Twice a week	0	11	8	

Table 8 Fisher's exact test for association of practices of caregivers of hemodialysis patients with their demography

N=60

Demographic variable		Practices		p-value
		Average	Good	
Gender	Female	9	22	0.213
	Male	4	25	
Relationship with the client	Daughter	5	2	
	Husband	0	13	0.003
	Son	4	12	
	Wife	4	20	
Educational qualification	Graduate	5	26	0.355
	Secondary	8	21	
Duration of the patient on hemodialysis	1 year	7	21	
	3 months	0	2	0.973
	4 months	1	5	
	5 months	1	3	
	6 months	4	16	
Employment	Employed	5	30	0.122
	Unemployed	8	17	
Type of family	Extended	1	0	
	Joint	0	5	0.176
	Nuclear	12	42	
Monthly family income	<Rs. 5000	3	10	
	Rs. 5000-10000	6	27	0.677
	Rs. 10000-15000	4	8	
	>Rs. 15000	0	2	
Information on homecare management of hemodialysis	No	11	38	1.000
	Yes	2	9	
Frequency the client undergoes hemodialysis	Once a week	7	34	0.312
	Twice a week	6	13	

Since p-value corresponding to Duration of the patient on hemodialysis was small (less than 0.05), Duration of the patient on hemodialysis was found to have significant association with knowledge of caregivers of hemodialysis patients regarding home care management of hemodialysis patients.

Since p-value corresponding to relationship with the client was small (less than 0.05), Relationship with the client was found to have significant association with practices of caregivers of hemodialysis patients regarding home care management of hemodialyis patient.

DISCUSSION

The present study proved that administering a written instruction improved the knowledge and practices of the caregivers.

In this study the pretest knowledge on homecare management of patients on hemodialysis was 50% which was comparatively less than the posttest 100% similarly a study conducted to assess the knowledge on management of patients with Chronic Renal Insufficiency in the North-eastern United States. A total of 602 patients with CRI (creatinine $\geq$1.5 mg/dl for women and $\geq$2.0 mg/dl for men) were seen between October 1994 and September 1998 at five nephrology outpatient clinics in the Boston area. Structured interview schedule was used to assess their home care knowledge on chronic kidney failure. This study concluded that 60% of people possessed inadequate level of knowledge regarding home care management of chronic renal failure (Annamaria T *et al*, 2001).

A cross sectional study was conducted on home care management, knowledge, and functioning and well-being of patients on hemodialysis. In this study, measures of home care management and knowledge were administered to 372 patients on hemodialysis from 17 dialysis facilities. Findings suggest that the patients studied were low self-managers. The most commonly used self-management strategies were the cooperative/participatory activities of self-care during hemodialysis and shared responsibility in care. This study concluded that patients had in adequate knowledge regarding home care management and investigator suggested that educational programme is needed for the patients to improve their knowledge (Roberta Braun Curtin, 2010).

In the present study it was proved that a written instruction, that is the self-instructional module on homecare management of patients on hemodialysis improved the mean knowledge score from17.4 to 23.2 as well as the practice scores from 7.5 to 9.9 among the caregivers similarly a quasi-experimental study was conducted in Taiwan to understand the state of first-year hemodialysis patients' self-care knowledge, self-care behaviour, and powerlessness and, second, assess the effectiveness of an interactive multimedia CD educational intervention. The study concluded that the participants possessed insufficient knowledge, were incapable of completely achieving routine self-care, and were affected by powerlessness. The interactive multimedia CD intervention effectively enhanced self-care knowledge (p<.002) and self-care behaviour (p< .002) and improved powerlessness (<.002) (McLaughlin K *et al*, 2008).

A study was conducted to evaluate the effect of an educational program on the predialysis period for patients with chronic renal failure. The purpose of the study was to teach home care management of chronic renal failure during the predialysis period and mainly to retard the progression of the deterioration of renal function. One hundred and seventy-six patients who underwent dialysis initiation for chronic renal failure in our hospital between April 2009 and March 2011 were divided into two groups according to their participation or nonparticipation in an educational program. This study suggests that providing sufficient information before dialysis initiation may be effective in both physical condition at dialysis initiation, and medical economic benefits through the understanding of the dialysis (Inaguma D *et al*, 2006)

This indicated that a self-instructional module or a written instruction given to the caregivers would increase their knowledge retention and improve their practices.

CONCLUSION

Caring for a patient who undergoes hemodialysis at home is indeed a challenging and strenuous experience for their caregivers. The improvement in the knowledge and practice on homecare management was evident after the administration of the self-instructional module on the homecare management of patients on hemodialysis. Moreover, the written instruction provided to the caregivers enabled them to attain a concrete knowledge on how to manage their relation who were undergoing hemodialysis at home. Therefore, the study proved that the self-instructional module was an effective strategy that was used to overcome the barriers for the caregivers to provide appropriate and prompt care to the clients on hemodialysis at home.

Conflict of Interest

The author does not have any conflict of interest.

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