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# A Study to Assess the Effectiveness of Education Module on Knowledge Regarding Post Dialysis Home Care Management Among Caretakers of Chronic Renal Failure Patients Undergoing Haemodialysis at Selected Dialysis Units of Bagalkot

Mr. Dongrisab Hullikeri[1*], Mr. Prafull Kumar D[2], Dr. Deelip S. Natekar[3]

[1]MSc 2nd Year Student, Department of Medical Surgical Nursing, Shri B.V.V.S Sajjalashree Institute of Nursing Sciences Navanagar, Bagalkot-58703, Karnataka, India
[2]Associate Professor, Department of Medical Surgical Nursing, Shri B.V.V.S Sajjalashree Institute of Nursing Sciences Navanagar, Bagalkot-58703, Karnataka, India
[3]Principal, Department of Community Health Nursing B.V.V.S Sajjalashree Institute of Nursing Sciences Navanagar, Bagalkot-58703, Karnataka, India

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***Corresponding author:** Mr. Dongrisab Hullikeri
MSc 2nd Year Student, Department of Medical Surgical Nursing, Shri B.V.V.S Sajjalashree Institute of Nursing Sciences Navanagar, Bagalkot-58703, Karnataka, India

**Abstract** **Original Research Article**

***Background of the Study***: 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. ***Aim:*** The aim of study was to assess the effectiveness of education module on knowledge regarding post dialysis homecare management among care takers of chronic renal failure patients. ***Methodology*:** The research design selected for this study was Quasi experimental one group pre-test and post-test design. The sample size comprises of 30 care takers of 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, the data analysis done by using descriptive and inferential statistics in terms of frequency distribution, percentage, mean, mean percentage, Standard Deviation, paired 't' test and Chi-square test. ***Result*:** The finding revealed that there is statistical significance difference found between mean pre-test and post-test scores **[t=24.17(P value=0.00001)].** A significant association was found between pre-tests scores with selected socio-demographic variables. ***Conclusion***: The study proved that administration of education module was effective in improvise the knowledge of care takers regarding homecare management of chronic renal failure patients.

**Keywords:** Assess, Effectiveness, Education module on knowledge, Post dialysis homecare management, Care takers, Chronic renal failure & haemodialysis.



## INTRODUCTION

The Urinary System is a group of organs in the body concerned with filtering out excess fluid and other substances from the bloodstream. The substances are filtered out from the body in the form of urine. Urine is a liquid produced by the kidneys, collected in the bladder and excreted through the urethra. Urine is used to extract excess minerals or vitamins as well as blood corpuscles from the body. The Urinary organs include the kidneys, ureters, bladder, and urethra. The Urinary system works with the other systems of the body to help maintain homeostasis. The kidneys are the main organs of homeostasis because they maintain the acid base balance and the water salt balance of the blood [1].

The renal system consists of the kidney, ureters, and the urethra. The overall function of the system filters approximately 200 litters of fluid a day from renal blood flow which allows for toxins, metabolic waste products, and excess ion to be excreted while keeping essential substances in the blood. The kidney regulates plasma osmolarity by modulating the amount of water, solutes, and electrolytes in the blood. It ensures long term acid-base balance and also produces erythropoietin which stimulates the production of red blood cell. It also

produces renin for blood pressure regulation and carries out the conversion of vitamin D to its active form. The renal development, the process of urine production and excretion, and the clinical significance of the renal system will be the focus of this article [2].

Kidney failure (also called renal failure) is a term used to describe when a person's kidneys stop working properly, or fail. Kidney failure can be divided into two categories: chronic renal failure, and acute renal failure. Chronic renal failure develops slowly, and there are not many noticeable symptoms at first. Chronic renal failure can be a sign of other diseases, like IgA nephritis, glomerulonephritis, chronic pyelonephritis, and urinary retention. Chronic renal failure will eventually develop into end-stage renal failure if it is left untreated. End-stage renal failure can only be treated with dialysis or a kidney transplant [3].

Acute renal failure develops in a short time, and symptoms are more noticeable. The cause of acute renal failure needs to be found quickly. Dialysis is often needed to prevent permanent damage to the body while the cause is being found [3].

Haemodialysis is a therapeutic procedure that uses the extracorporeal circulation of a patient's blood to ameliorate the azotaemia, fluid, electrolyte, and acid-base abnormalities characteristic of the uremic syndrome. Haemodialysis is principally used for the management of acute and chronic renal failure that is refractory to conventional medical therapy. Additional applications include acute intoxications (e.g., ethylene glycol poisoning) and preoperative conditioning of renal transplant recipients. Haemodialysis is a technically demanding procedure that requires an extensive array of sophisticated delivery equipment and specifically trained and dedicated staff to perform, monitor, and ensure the integrity and safety of the procedure in critically ill patients. The advent of neonatal dialysis delivery equipment has ensured that haemodialysis is a feasible, efficacious, safe, and indispensable therapy for dogs and cats with life-threatening renal failure. Increased awareness and acceptance of haemodialysis as an effective renal replacement therapy coupled with increased owner demand guarantee a bright future for haemodialysis as a viable therapeutic modality [4].

Home management is a new healthcare model that uses information technology to enhance patients' self-management of disease in a home setting. This study is designed to identify the effects of home management on patients with chronic kidney disease (CKD). Methods A comprehensive search of PubMed, MEDLINE, Embase, and the Cochrane Central Register of Controlled Trials was performed in January 2015. The reference listings of the included articles in this review were also manually examined. Randomized controlled trials (RCTs) designed to evaluate the effects of home management on patients with CKD were included. Results Eight trials were identified. The results of this study suggest that the quality of life (QOL) enabled by home management was higher than typical care in certain dimensions. However, the effects of home management on blood pressure (BP) remain inconclusive. The studies that assessed health service utilization demonstrated a significant decrease in hospital readmission, emergency room visits, and number of days in the hospital. Another favourable result of this study is that regardless of their gender, age or nationality, patients tend to comply with remote home management programs and the use of related technologies. The available data indicate that home management may be a novel and effective disease management strategy for improving CKD patients' QOL and influencing their attitudes and behaviours. And, relatively little is known about BP and cost-effectiveness, so future research should focus on these two aspects for the entire population of patients with CKD [5].

## MATERIAL AND METHODS

### Study design and participants

Present study was "Quasi-experimental one group pre-test and post-test design without control group design". Conducted between 06-06-2024 to 30-06-2024, A sampling technique adopted for this study will be Convenient Non-probability technique by using self-made questioners' method was used to select the 30 subjects for the present study. Chronic renal failure patients with level very poor, poor, average, good, very good and who were able to understand read and write Kannada or English and available at the time of data collection.

### Instruments

### SELF-MADE QUESTIONNAIRE (SMQ)

The **Self-Made Questionnaire (SMQ)** is designed to assess the level of knowledge among patients with chronic renal failure. It consists of 10 statements categorized into relevant sections. Each item is answered using a five-point scale, where: (1=Very poor, 2=Poor, 3=Average, 4=Good, 5=Very good). Items 4 and 10 are reverse-scored, meaning their responses are inverted when calculating the total score. The total score can range from 10, indicating the lowest level of knowledge, to 30, representing the highest level of knowledge. The questionnaire was translated into Kannada and then back-translated into English to ensure accuracy and consistency. To evaluate the reliability of the test, the Karl Pearson's coefficient of correlation was applied. The reliability coefficient for the knowledge assessment scale was found to be **r = 0.92**, indicating a high level of reliability.

### DATA COLLECTION PROCEDURE

The data collection was carried out from 06-06-2024 to 30-06-2024, among care takers of chronic renal failure patients who are undergoing dialysis at selected

Dialysis units of Bagalkot. Permission was obtained from the Heads of the various Hospitals. Written consent was obtained from 30 samples. Haemodialysis patients were selected on the basis of Convenient Non-probability sampling technique. Then the investigator conducted pre-test on assessment of level of knowledge regarding post dialysis homecare management among care takers of chronic renal failure patients by using self-made questionnaire. The average time taken for pre-test was 40 minutes, the education module was administered on the same day after one hour of pre-test. Then the post-test knowledge regarding post dialysis homecare management was assessed on 7$^{th}$ day all study sample have co-operated well with the investigator. The data collection on the process was terminated after thanking the respondents for their co-operation and patience.

**DATA ANALYSIS**

Data will be analysed by using descriptive and inferential statistics. Numerical data obtained from the sample was organized and summarized with the help of descriptive statistics like percentages, mean and standard deviation. Chi-square test used to find out association between post-tests level of on knowledge regarding post dialysis homecare management with their selected socio demographic variables among the care takers undergoing haemodialysis.

# RESULTS

**Description of socio-demographic characteristics of subjects**

Percentage wise distribution of lung cancer patients the Majority (20%) of the care takers of chronic renal failure patients were in the age group of 61 years old and above, 30% of Haemodialysis patients were between the age group of 51-60 years, 40% were between the age group of 41-50 years and remaining 10% of haemodialysis patients were between the age group of 30-40years. The Majority of care takers of chronic renal failure patients were males (76.67%) and remaining (23.33%) were females. The marital status of care takers of chronic renal failure patients majority were married (80%) and Unmarried were (10%) and were Divorce (6.66%) and remaining were Widow/widower (3.33%). The majority of care takers of chronic renal failure patients were (50%) had primary/secondary education, (20%) were of degree holders, (10%) are PG and above, and (20%) were of no any formal education. The occupation status of the care takers of chronic renal failure patients, (40%) were private employees, (30%) were government employees, (20%) were Self-employees, (10%) were Daily wager and (0%) were Unemployed. The type of family status of the care takers of chronic renal failure patients, were (60%) were nuclear family, (40%) were joint family. The family monthly income, where Majority of care takers of chronic renal failure patients (50%) were having the income of 10,001-20,000/-, (20%) were having income between Rs.20,001-30,000, (20%) were having Below rs.10,000/- and (10%) were having income Above rs.30,001/-.The Relationship with Patient of care takers of chronic renal failure patient majority (40%) were Children, (30%) were Siblings, (20%) were Others (Specify and (10%) were Others (Specify). The area of residence of care takers of chronic renal failure patients' rural area were (40%), urban area were (40%) and semi urban (20%). The sources of information regarding of care takers of chronic renal failure patients with Relative, Friends and Neighbours were (40%), Mass media communication with (30%) and Books were (20%), and Health care Professional were (10%).

**Assessment of pre-test and post-test knowledge regarding post dialysis homecare management among care takers of chronic renal failure patients**

**Section A:** Level of pre-test knowledge of post dialysis homecare management among care takers of chronic renal failure patients. Categorization of the care takers on the basis of level of knowledge was done as follows 1-7 very poor knowledge level, 8-14 poor knowledge level, 15-21 average knowledge level, 22-28 good knowledge level and 29-35 very good knowledge level.

**Table 5.12: Level of pre-test knowledge of care takers regarding homecare management, N=30**

| Level of knowledge | Range of scores | Number of respondents | Percentage |
|---|---|---|---|
| **Very poor** | 1-7 | 0 | - |
| **Poor** | 8-14 | 08 | 26.6% |
| **Average** | 15-21 | 12 | 40% |
| **Good** | 22-28 | 10 | 33.4% |
| **Very good** | 29-35 | 0 | - |
| **Total** | | **30** | **100** |

Assessment of level of knowledge of the care takers shows that majority (40%) of the care takers had average knowledge, (33.4%) of them had good knowledge and (26.6%) of care takers had poor knowledge and none of the care takers had very poor knowledge regarding post dialysis homecare management.

**Section B:** Area wise mean, SD and mean percentage of pre-test knowledge scores of care takers.

**Table 5.13: Area wise mean, SD and mean percentage of pre-test knowledge scores of care takers, N = 30**

| Knowledge areas | Max score | Mean | SD | Mean% |
|---|---|---|---|---|
| **General information about renal function** | 6 | 4.63 | 1.37 | 42% |
| **Information about homecare management** | 14 | 1.1 | 0.7 | 36.6% |
| **Information about CRF patient with hypertension** | 2 | 3.53 | 0.99 | 44.1% |
| **CRF patient travel and excises** | 2 | 5.66 | 1.44 | 18.86% |
| **Nutrition** | 11 | 0.93 | 0.85 | 18.6% |
| **TOTAL** | **35** | **15.85** | **5.35** | **56.2%** |

The total mean percentage of pre-test knowledge score was 56.2% with mean and SD 15.8±5.35. Area wise mean percentage of knowledge score was 42% in the area of general information about renal function with mean and SD 4.63±1.37. In the area of information of homecare management was 36.6% with mean and SD1.1±0.7. In the area of Information about CRF patient with hypertension, the mean percentage was 44.1% with mean and SD 3.53±0.99. In the area of CRF patient travel and excises, the mean percentage was 18.86% with mean and SD 5.66±1.44. In the area of nutrition, the mean percentage was 18.6% with mean and SD 0.93±0.83.

These findings show that care takers had good knowledge in the areas of general information about Renal function, information about home acre management, Information about CRF patient with hypertension, CRF patient travel and excises and had poor knowledge in Nutrition.

**Evaluation of the Effectiveness of Education module on knowledge regarding post dialysis homecare management among care takers of chronic renal failure patients undergoing haemodialysis**

**Section A:** Comparison of level of knowledge of care takers in pre-test and post-test.

**Table 5.14: Comparison of level of knowledge of care takers in pre-test and post-test**

| Level of knowledge | Pre-Test | | Post-Test | |
|---|---|---|---|---|
| | No. of Respondents | Percentage | No. of Respondents | Percentage |
| **Very poor** | - | - | - | - |
| **Poor** | - | - | - | - |
| **Average** | 12 | 40% | - | - |
| **Good** | 10 | 33.4% | 16 | 54% |
| **Very good** | 8 | 26.6% | 14 | 46% |
| **Total** | **30** | **100%** | **30** | **100%** |

Analysis related to pre-test assessment of the level of knowledge of care takers shows that (40%) of the care takers had average knowledge, (33.4%) of them had good knowledge and (26.6%) very good knowledge, there were no care takers who had poor knowledge and very poor knowledge regarding post dialysis homecare management. Where as in post-test majority (54%) of the care takers had good knowledge, (46%) of them had very good knowledge regarding post dialysis homecare management.

**Section B:** Area wise effectiveness of education module on post dialysis homecare management.

**Table 5.15: Area wise mean, SD and mean percentage of the knowledge scores in pre-test and post-test, N=30**

| Knowledge area | Max score | Pre test | | Post test | | Effectiveness | |
|---|---|---|---|---|---|---|---|
| | | Mean± SD | Mean % | Mean± SD | Mean % | Mean± SD | Mean % |
| **General information about renal function** | 6 | 4.63±1.37 | 42% | 9.06±2.28 | 82% | 4.43±0.91 | 40% |
| **Information about homecare management** | 14 | 1.1±0.7 | 36.6% | 2.43±0.91 | 81% | 1.33±0.21 | 44.4% |
| **Information about CRF patient with hypertension** | 2 | 2.53±0.99 | 44.1% | 6.6±1.01 | 76% | 3.07±0.02 | 31.9% |
| **CRF patient travel and excises** | 2 | 4.66±1.44 | 18.86% | 9.33±1.85 | 84% | 3.67±0.41 | 59.44% |
| **Nutrition** | 11 | 0.93±0.85 | 18.6% | 4.13±0.92 | 82% | 3.2±0.07 | 63.4% |
| **Total** | **35** | **13.85±5.35** | **32%** | **31.55±6.97** | **81%** | **15.7±1.62** | **48.8%** |

Findings regarding comparison of mean percentage of the knowledge scores of the pre-test and post-test shows an increase of 48.8% in the mean knowledge score care takers after implementation of education module. Comparison of area wise mean and SD of the knowledge scores in the area of general information on renal function shows that pre-test mean percentage of score was 42% with mean and SD of 4.63±1.37. Whereas Comparison of area wise mean and SD of the knowledge scores in the area of general information on renal function shows that post-test mean percentage of score was 82% with mean and SD of 9.06±2.28.

Comparison of area wise mean and SD of the knowledge scores in the area of Information on homecare management shows that pre-test mean percentage of score was 36.6% with mean and SD of 1.1±0.7. Whereas Comparison of area wise mean and SD of the knowledge scores in the area of Information on homecare management shows that post-test mean percentage of score was 81% with mean and SD of 2.43±0.91.

Comparison of area wise mean and SD of the knowledge scores in the area of Information on CRF patient with hypertension shows that pre-test mean percentage of score was 44.1% with mean and SD of 2.53±0.99. Whereas Comparison of area wise mean and SD of the knowledge scores in the area of Information on CRF patient with hypertension shows that post-test mean percentage of score was 76% with mean and SD of 6.6±1.01.

Comparison of area wise mean and SD of the knowledge scores in the area of CRF patient travel and excises shows that pre-test mean percentage of score was 18.86% with mean and SD of 4.66±1.44. Whereas Comparison of area wise mean and SD of the knowledge scores in the area of CRF patient travel and excises shows that post-test mean percentage of score was 84% with mean and SD of 9.33±1.85.

Comparison of area wise mean and SD of the knowledge scores in the area of Nutrition shows that pre-test mean percentage of score was 18.6% with mean and SD of 0.93±0.85. Whereas Comparison of area wise mean and SD of the knowledge scores in the area of Nutrition shows that post-test mean percentage of score was 82% with mean and SD of 4.13±0.92.

The overall findings shows that percentage of post-test knowledge score was more when compared to the pre-test knowledge score. Hence it indicates that education module was effective in hence in the knowledge of care takers regarding post dialysis homecare management.

**SECTION C: Testing of hypothesis**

Two evaluated the effectiveness of education module a research hypothesis was formulated.

**$H_1$:** There is a significant difference between the mean pre-test and post-test, knowledge scores of care takers of chronic renal failure patients undergoing haemodialysis. Paired 't' test was used to find out the significance of difference between pre-test and post-test knowledge scores of care takers.

| Test | Mean | SD | Mean Diff. | SD Diff. | t-value | p-value |
|---|---|---|---|---|---|---|
| **Pre-test** | 13.85 | 5.35 | 17.7 | 1.62 | 24.17 | 0.00001* |
| **Post-test** | 31.55 | 6.97 | | | | |

Findings related to the significance of the difference between pre-test and post-test scores of the care takers of haemodialysis patients shows that, difference between mean pre-test [13.85±5.35] and mean post-test [31.55±6.97] knowledge scores of care takers of chronic renal failure patients found to be statistically significant at 0.05 level of significant.

Hence it is clear that there is a statistically difference between mean post-test level of education module knowledge and mean pre-test level of knowledge regarding post dialysis homecare management among care takers of chronic renal failure patients.

**Association between post-test knowledge scores of care takers of chronic renal failure patients and selected socio-demographic variables**

**Table 5.16: Association between post-test knowledge scores of care takers of chronic renal failure patients and selected socio-demographic variables, N=30**

| Sl. No | Socio-demographic variables | Chi-square | P value | Level of Association |
|---|---|---|---|---|
| **1** | Age | 3.06 | 0.0810 | Not significant |
| **2** | Gender | 3.46 | 0.1910 | Not significant |
| **3** | Marital status | 1.27 | 0.7110 | Not Significant |
| **4** | Educational status | 3.01 | 0.6800 | Not significant |
| **5** | Occupation | 3.63 | 0.0760 | Not Significant |
| **6** | Type of family | 3.21 | 0.8110 | Not significant |
| **7** | Family monthly income | 1.85 | 0.1713 | Not significant |
| **8** | Relationship with patient | 3.23 | 0.0827 | Not Significant |

| | | | | |
|---|---|---|---|---|
| **9** | Area of residence | 1.18 | 0.6712 | Not significant |
| **10** | Sources of information | 3.13 | 0.9203 | Not significant |

Findings showed that there is no significant association between post-test knowledge scores of care takers and socio-demographic variables like age, gender, marital status, educational status, occupation, type of family, family monthly income, relationship with patients, area of residence and sources of information. Thus, $H_2$ hypothesis rejected for all the socio-demographics variables.

## DISCUSSION

This Quasi-experimental study included a sample of 30 Chronic renal failure patients admitted in HSK Hospital and Research Centre, Bagalkot. The results of the present study are supported with the study conducted by Mrs. Vipina Saji1, Mr. Nilesh Mishra, to assess the Effectiveness of self-instructional module on knowledge regarding home care management of haemodialysis among patients undergoing haemodialysis. The results showed that the socio demographic characteristics of the studied patients. As shown, the Demographic data revealed that majority (50%) of patients belonged to 41-60 years of age, (57%) were female, (60%) patients were having from joint family, (43%) had completed secondary education, (83%) had history of previous illness. Majority of patient's income (47%) was above Rs. 10,001 per month. (37%) had previous information regarding dialysis from newspaper.

The results of the present study are supported by the study conducted by Thomas Allana, sunny Ashlin, Jose Jasmin (2019), to assess A Pre-Experimental Study to Evaluate the Effectiveness of Structure Teaching Program on Home Care Management of Patient Undergoing Haemodialysis among their Care Giver in NMCH Jamuhar. The study results showed most of the population at 15 falls under Neither Aware nor Unaware category making them average, 8 were in unaware category and the rest of 7 were in aware category. Hence. This study was supported by A study was Conducted on a study to assess the effectiveness of self-instructional module on knowledge regarding home care management among patients undergoing haemodialysis in selected hospitals at Kollam. The collected data were analyses by using descriptive and inferential statistics. The result of pertest shows that 10% of haemodialysis patients had poor knowledge and 60% had average knowledge and 30% had good knowledge. After providing self-instructional module the result of post-test shows that among the samples 10% of patients attained average knowledge, 63.33% got good knowledge and 26.67% had excellent knowledge.

## RECOMMENDATIONS

- Similar study can be conducted to assess the effectiveness of Education module in enhancing the knowledge of Care takers among chronic renal failure patients, with the Multi interventional techniques.
- Similar study can be conducted by using 2 or more variables as a comparative study.

## CONCLUSION

Effectiveness of education module on knowledge regarding post dialysis homecare management among care takers of chronic renal failure patients mean score pre-test and post-test scores of the care takers of haemodialysis patients shows that, difference between mean pre-test [13.85±5.35] and mean post-test [31.55±6.97] knowledge scores of care takers of chronic renal failure patients found to be statistically significant.

**Ethical Consideration**

The study was approved by the Institutional Ethical Clearance Committee, BVVS Sajjalashree Institute of Nursing Sciences, Bagalkot.

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**Conflicts of Interest**: There are no conflicts of interest.

**Acknowledgement**: None

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