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Self-Instructional Module On Av Fistula Care And Dietary Management For Patients Undergoing Hemodialysis

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Abstract:
Arteriovenous (AV) fistula care and dietary management are critical components in the effective treatment of patients undergoing hemodialysis. The primary aim of the study was to assess the effectiveness of a self-instructional module on AV fistula care and dietary management in improving patient knowledge and practices.
METHODS: A quasi-experimental design was used, involving 70 patients selected through purposive sampling. Data were collected using a structured questionnaire and validated tools to gather demographic information.
RESULTS: The results showed that before the intervention, 71.42% of patients had inadequate knowledge about AV fistula care. After the self-instructional module, 88.57% of patients gained adequate knowledge, with a significant improvement in post-test scores (M=21.6, SD=6.7, t-value=14.77, P<0.001). No significant associations were found between demographic factors and post-test knowledge levels**.**
CONCLUSION: The study concluded that self-instructional modules are effective in improving patients knowledge, potentially leading to better AV fistula care and dietary management outcomes.

Keywords: AV Fistula, Diet, Hemodialysis.

INTRODUCTION

The kidneys are essential bodily organs that are necessary to preserve equilibrium in the body. If kidney dysfunction is not well managed, it can have a deadly effect on all body systems in the patient. Chronic kidney disease is a global public health concern that is getting worse. Dialysis is used to maintain life in patients with irreversible kidney disease or to temporarily relieve the symptoms of renal failure while the patient regains kidney function. For the duration of the patient's life, dialysis is required to manage uremia and physically get the patient ready for a kidney transplant. Hemodialysis and peritoneal dialysis are the two forms of dialysis.
Vascular access in patients with AV fistulas has been demonstrated to be influenced by their knowledge, attitude, and proficiency with it. Following a thorough search and analysis of numerous studies, it was determined that a critical need existed to evaluate patients' knowledge of AV fistula self-care while receiving hemodialysis in a dialysis unit and to start an intervention to enhance that knowledge (Kawakita et al., 2015). Patients will be empowered to actively participate in the management of their vascular access through the promotion of patient self-management.

NEED FOR THE STUDY

Globally, the burden of chronic illness, including renal failure, is rising. In Egypt, the estimated prevalence of dialysis patients is 80, 4532 out of 76, 117, 42122. Compared to earlier reports, the prevalence of ESKD patients on regular HD is gradually increasing. Therefore, it is crucial to periodically conduct patient education since it raises awareness of sickness and treatments that help patients better manage their ailments.
The continuity and follow-up care that hospitalized patients receive are lacking in the home care setting. Hemodialysis treatment must be coordinated between the hospital and the patient's home in order to achieve its goals, run effectively, and preserve the health and well-being of the patient. Dialysis centers frequently engage in patient education programs; however,

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of Self- Instructional Module on AV fistula care and dietary Management among patient receiving hemodialysis on AV fistula at selected hospital settings, Panimalar Medical College and Hospital Research Institute (PMCHRI).

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OBJECTIVES OF THE STUDY

1. To assess the effectiveness of Self- Instructional module on AVfistula care and dietary management among patients

with hemodialysis at selected settings (PMCHRI).
2. To correlate the pre and post test level of knowledge on AV fistula care and dietary management among patients with hemodialysis at selected settings (PMCHRI).
3. To associate the Selected background variables and module on AV fistula care and dietary Management among patient with hemodialysis at selected settings (PMCHRI).

OPERATIONAL DEFINITION

Effectiveness: It refers to the desirable positive outcome as evidenced by improvement in knowledge on AV fistula care and dietary Management.

Self- Instructional Module: It refers to Self-instruction is a method used by the researcher to provide instructional activities that guide the learner in independently achieving the knowledge on AV fistula care and dietary Management.

AV Fistula: It refers to a connection created between an artery and a vein. Patient with end-stage kidney disease often need an AV fistula in their arm as a way to provide access for hemodialysis.

Dietary Management: It refers to the practice of providing nutritional options for individuals with diet concerns on chronic kidney disease.

Hemodialysis: It refers to the individuals who are medically diagnosed with chronic kidney disease having arteriovenous fistula and undergoing specialized therapy for removal of waste and toxins for from the blood using dialyser in selected dialysis unit.

NULL HYPOTHESIS

HO1: There will not be any significant correlation between pre test and post test level of knowledge on module on AV fistula care and dietary management among patient receiving hemodialysis at selected settings.

HO2: There will not be any significant association between associate the Selected background variables and Self-Instructional module on AV fistula care and dietary Management among patient with hemodialysis at selected settings.

Materials and methods

A quasi-experimental research study was conducted at Panimalar Medical College and Hospital Research Institute, Chennai, focusing on patients with chronic renal failure undergoing hemodialysis with an arteriovenous (AV) fistula. The primary aim of the study was to assess the effectiveness of a self-instructional module on AV fistula care and dietary management in improving patient knowledge and practices. After obtaining permission from the relevant authorities, a total of 70 patients meeting the inclusion criteria were selected through purposive sampling.

Data were collected using a structured knowledge questionnaire and a Demographic and Background Variables Questionnaire, which gathered information on age, gender, socioeconomic status, education level, and comorbid conditions. Descriptive statistics, including frequency distribution, mean, and standard deviation, were used to summarize the data. Inferential statistics, such as the chi-square test, were employed to identify relationships between variables, with the analysis conducted using SPSS software.

The study findings are expected to provide insights into how self-instructional interventions can enhance patient knowledge, potentially leading to better outcomes in AV fistula care and dietary management among hemodialysis patients.

SAMPLING CRITERIA

Inclusion Criteria

- The participant is open to taking part in the research.
- Individual in the age range of 40 to 75
- The patient needs to be having hemodialysis at a designated dialysis unit and have chronic renal disease with an arteriovenous fistula.
- The patient needs to be getting hemodialysis for at least a month and have an arteriovenous fistula.
- People can comprehend either Tamil or English

Exclusion criteria

- who are sedated, unconscious, or unstable.
- who use an internal jugular vein catheter or a central vein catheter for hemodialysis.
- who are severely deficient in hearing or vision.

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ANALYSIS:

Table 1: Frequency and percentage distribution of demographic variables among patient receiving hemodialysis at PMCHRI (n=70)

Demographic variable:	**N**	**p**
1.**Age** (in years)		
a) 30-40	12	17.14
b) 41-50	18	25.71
c) 51-60	25	35.71
d)> 60	15	21.42
2.**Gender**		
a) Male	39	55.71
b) Female	31	42.28
3.**Family type**		
a) Nuclear	30	42.85
b) Extended	32	45.71
c)Joint	8	11.42
4. **Dietary pattern**		
a) Vegetarian	20	28.57
b) non-vegetarian	50	71.42
5. **Habit of Tobacco usage**		
a) Non smoker	40	57.14
b)ex-smoker	30	42.85
c) current smoker	-	-
6. Habit of alcohol consumption		
a)Yes	38	54.28
b) No	32	45.71

The data presented in Table .1 shows that significant percentage of the patients in experimental group are in gender (55.71%,), vegetarian (71.42%) , habit of alcohol consumption (54.28%) were in demographic variables.

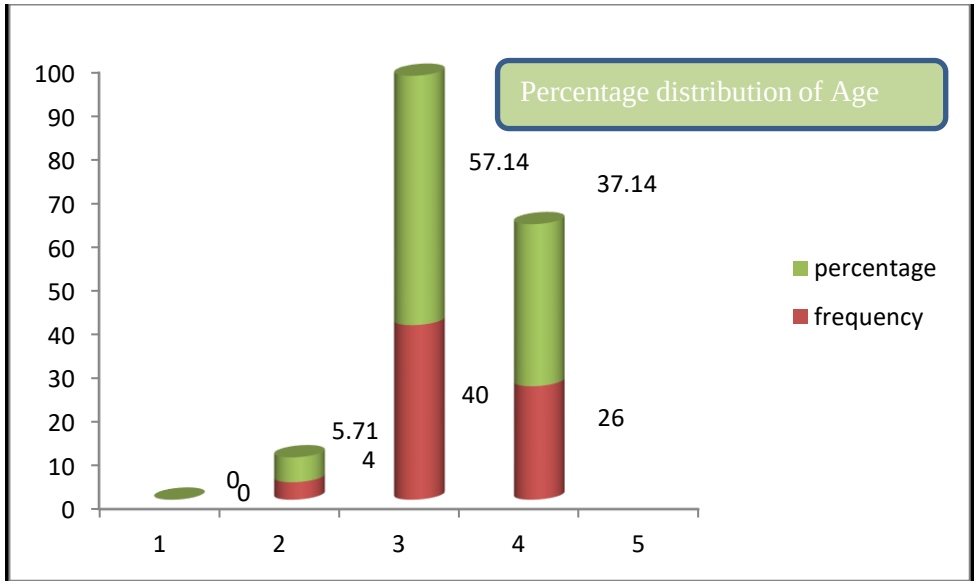

Figure 1: Percentage Distribution of Age among hemodialysis patients with AV Fistula

Fig.1 infers that significant percentage distribution of patients were in the age group of years (51-60, > 60) (35.71, 21.42) respectively.

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Table 2: Frequency and percentage distribution of clinical variables among patient receiving hemodialysis at PMCHRI. (n=70)

Clinical variables:	N	P
1.Presence of comorbid illness a) Yes b) No	 70 -	 100
2. Family history of chronic kidney disease a) Yes b) No	 42 28	 60 40
3. Previous knowledge about chronic kidney disease: a) Yes b) No	 12 58	 17.14 82.85
4. Blood pressure (mmHg) a) <120/80 b)120-139/80-89 c)140-159/90-99 d)>160/>100	- 4 40 26	- 5.71 57.14 37.14

The data in the table 2 shows significant percentage of family history of chronic kidney disease had (60%, 40%) and previous knowledge about chronic kidney disease are (17.14%,82.85%) respectively.

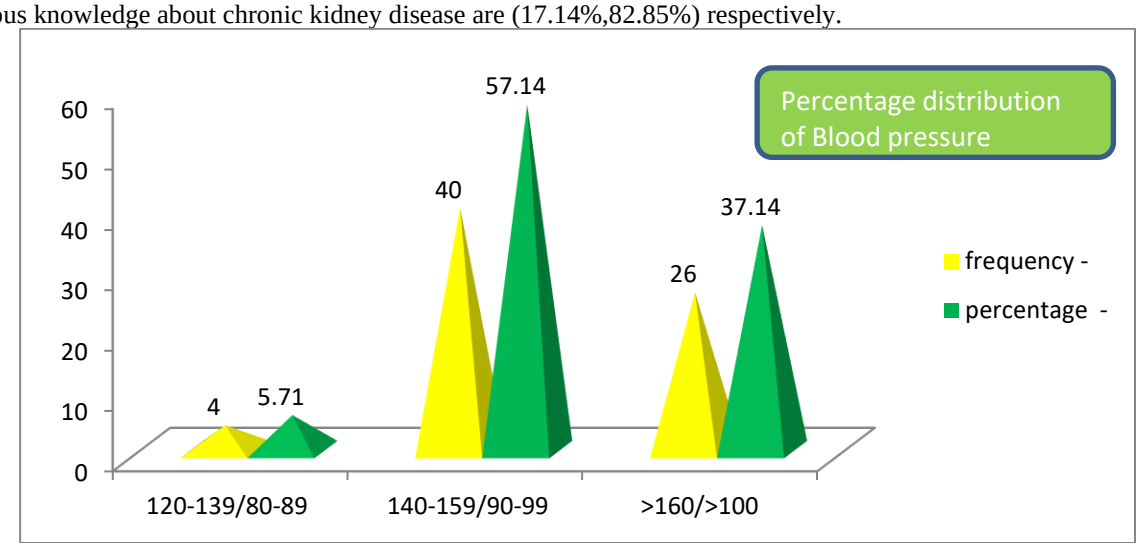

Figure 2: Percentage Distribution of blood pressure among hemodialysis patients with AV Fistula.

Fig.2 interprets that significant percentage distribution of blood pressure among hemodialysis paients with AV fisula are (57.14%, 37.14%) respectively.

Table 3: Frequency and Percentage distribution of Pre and Post Test Level of knowledge on Self- Instructional module on AVfistula care and dietary management among patients.

(n=70)

Level of knowledge	PreTest	%	Post Test	%
Adequate	-	-	62	88.57%
Moderately adequate	20	28.57%	8	11.42%
Inadequate	50	71.42%	-	-

The data in the table 3 shows significant percentage of the patients had inadequate level of knowledge in pre test (71.42%). Whereas in post test most of the patients had gained adequate level of knowledge (88.57%) after the Self- Instructional module.

Fig.3 shows that significant percentage distribution of level of knowledge among hemodialysis paients are (88.57%, 11.42%) respectively.

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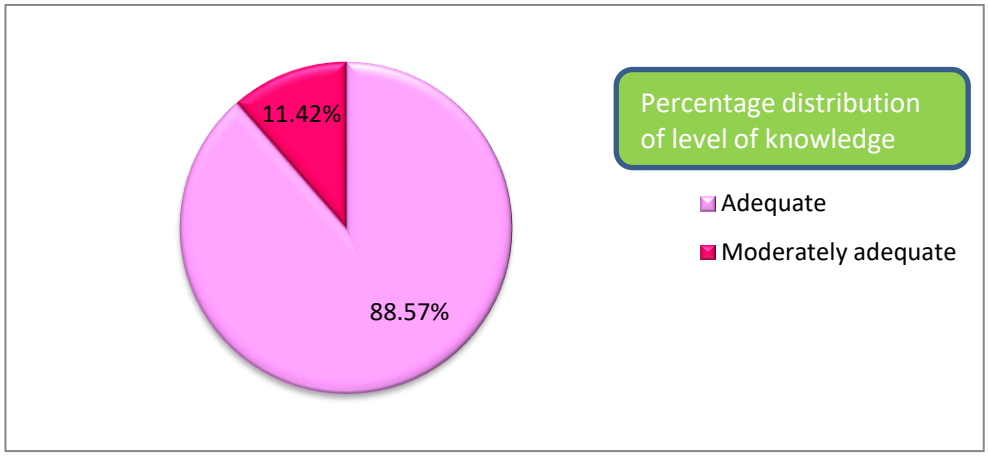

Fig.5 Percentage Distribution of level of knowledge among patient receiving hemodialysis with AV Fistula.

Table 4: Comparison of mean and standard deviation on level of knowledge regarding Self- Instructional module on AVfistula care and dietary management.

Category	Mean	SD	't'value
Pre test	11.53	4.5	13.22
Post test	21.6	6.2	14.77

*****P<0.001**

Table 4 depicts that the pre test knowledge score (M=11.53, SD=4.5) whereas in post test, after educational intervention student nurses scored higher (M= 21.6, SD=6.7) compared to the pre test. This shows the effectiveness of Self-Instructional module on AV fistula care and dietary management (with 't'value of 14.77) at P<0.001.

Table 5: Association between selected demographic variable and level of knowledge regarding Self- Instructional module on AVfistula care and dietary management among patient receiving hemodialysisat PMCHRI

Demographic variable:	Up to mean	Above mean	$\chi 2$
1.Age (in years)			
a) 30-40	15	12	
b) 41-50	20	24	3.114
c) 51-60	18	23	(df=3)
d)> 60	17	11	
2.Gender			
a) Male	32	36	0.458
b) Female	38	34	(df=2)
3.Family type			
a) Nuclear	26	36	3.18
b) Extended	13	12	(df=1)
c)Joint	31	22	
4. **Dietary pattern**			3.014
a) Vegetarian	32	22	(df=1)
b) non-vegetarian	38	48	
5. **Habit of Tobacco usage**			
a) Non smoker			
b)ex-smoker	33	36	0.256
	37	34	(df=1)
6. Habit of alcohol consumption			
a)Yes	42	35	1.414
b) No	28	35	(df=1)

**** P< 0.01**

Table 5 shows that there was no significant association between the post-test level of knowledge on AV fistula care and dietary management. As a result, the null hypothesis (Ho2), which states that "There will not be any significant association between selected background variables and the module on AV fistula care and dietary management among hemodialysis patients," was rejected. This indicates that the module had a notable impact, regardless of the background variables.

Discussion

In this study that significant percentage of the patients in experimental group are in gender (55.71%, 42.28%), vegetarian (28.57%,71.42%), habit of alcohol consumption (54.28%, 45.71%) respectively.

A study by Bhusal et al. in 2022 assessed the effectiveness of a Module (SIM) and the relationship between post-test knowledge scores and demographic factors. The study involved 30 participants each in the study and control groups. In the control group, 70% of participants had a moderate level of knowledge during the pretest. In the study group, 23.3% had insufficient knowledge during the pretest, but this improved significantly to 73.3% in the post-test after the SIM intervention, demonstrating its effectiveness in enhancing knowledge.

It was inferred that significant percentage of family history of chronic kidney disease had (60%, 40%) and previous knowledge about chronic kidney disease are (17.14%,82.85%) respectively.

A study by Mangrule et al. assessed the usefulness of modules for home management of hemodialysis patients. Using a questionnaire, the study measured the effectiveness of the module in addressing patients' learning needs. The findings revealed that only 8% of participants had a strong understanding of hemodialysis, while 73% had average knowledge. However, significant improvements were observed in post-test knowledge across areas like dialysis, fistula care, diet, complications, and coping strategies, showing a strong correlation ($P<0.001$) between the module and increased patient knowledge.

It was observed that significant percentage of the patients had inadequate level of knowledge in pre test (71.42%). Whereas in post test most of the patients had gained adequate level of knowledge (88.57%) after the Self- Instructional module.

A study by Thomas et al. (2019) evaluated the effectiveness of a module in improving home care management knowledge among hemodialysis patients at hospitals in Kollam. Before the module was introduced, 10% of patients had poor knowledge, 60% had moderate knowledge, and 30% had strong knowledge. After using the module, post-test results indicated that while patients' knowledge improved, there was no significant correlation between knowledge and certain demographic factors. The study suggests that modules can effectively enhance the knowledge of hemodialysis patients.

The findings show that the pre test knowledge score ($M=11.53$, $SD=4.5$) whereas in post test, after educational intervention student nurses scored higher ($M= 21.6$, $SD=6.7$) compared to the pre test. This shows the effectiveness of Self- Instructional module on AV fistula care and dietary management (with 't'value of 14.77) at $P<0.001$.

Similar findings was observed by Alsaqri et al. (2019) conducted a study to assess the self-care knowledge of dialysis patients with arteriovenous fistulas and the impact of an educational module on improving their self-care behaviors. The study involved 71 patients undergoing hemodialysis at King Khaled Hospital in Saudi Arabia. The results showed a significant improvement in patients' knowledge after the intervention. The mean score for general instructions increased from 1.78 ± 0.33 in the pre-test to 2.78 ± 0.22 in the post-test, and the mean score for infection awareness rose from 2.04 ± 0.51 to 2.33 ± 0.31. The written instructional module with explanations enhanced patient knowledge and promoted better self-care practices for those with AV fistulas.

It could be inferred that there is no significant association with post test level of knowledge on AV fitula care and dietary management . Hence the null hypothesis Ho2 stating, that "HO2**:** There will not be any significant association between associate the Selected background variables and Self- Instructional module on AV fistula care and dietary Management among patient with hemodialysis ". Hence the null hypothesis Ho2 was rejected**.**

A non-experimental descriptive study (**Shashikumar, 2014**) was carried out to evaluate patients' understanding and adherence to dietary guidelines related Chronic Renal Failure . Using a purposive sample technique, the researcher chose 51 patients with chronic renal failure. Out of the 29 respondents, 56.86% scored between 10 and 18 practice scores, while only 16.59% (8 subjects) had the maximum degree of knowledge. The results of the Chi-square test show that, at the 0.05 level of significance ($p>0.05$), there is no statistically significant association between knowledge and practice.

NURSING IMPLICATIONS

Nurses play a key role in educating hemodialysis patients with vascular access, such as those with AV fistulas, and their caregivers. It is important for nursing services to have policies that ensure specially trained nurses are available in dialysis units. These nurses should provide in-service education and seminars to enhance knowledge of self-care techniques. Nurse administrators must support these efforts by developing policies, budgeting for necessary resources, and encouraging participation in ongoing training. Additionally, nursing research focused on post-dialysis home care and educational programs, like the Structured Teaching Programme, can improve future practices and promote evidence-based care.

Recommendations:

Educational Modules:

Distribute AV fistula care and dietary management modules in all hospital wards, critical care units, emergency departments, and operating theatres.

Community Programs:
Conduct community-based programs to teach AV fistula maintenance and dietary management to patients and caregivers.

Digital Tools:
Implement mobile apps or online platforms for continuous education and reminders on AV fistula care and dietary management.

Monitoring Tools:
Develop tools for regular monitoring and feedback on patient adherence to AV fistula care and dietary practices.

Collaborative Approach:
Encourage collaboration among healthcare providers to integrate AV fistula care education into patient care plans.

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