Original Article

Effect of self-instructional module on knowledge regarding care of arteriovenous fistula among hemodialysis patients in selected hospitals, Guwahati, Assam

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Abstract:

BACKGROUND: Chronic kidney disease is a major public health problem. Arteriovenous fistulas (AV fistulas) are considered the gold standard for hemodialysis vascular access based on their superior patency, low complication rates, improved adequacy, lower cost to the healthcare system, and decreased risk of patient mortality. A failing AV fistula places the patient at risk for inadequate dialysis, which can lead to numerous complications and increased morbidity and mortality. Patient education support patients to live the best possible quality of life. It instills patient self-confidence to help them carry out behavior necessary to reach the desired goal.

OBJECTIVE: The purpose of the study is to determine the effect of self-instructional module by comparing the pretest and posttest knowledge scores regarding care of AV fistula among hemodialysis patients.

MATERIALS AND METHODS: With a quantitative approach, preexperimental one-group pretest-posttest design was adopted for the study. In this study, 64 hemodialysis patients with AV fistula were selected by using nonprobability convenient sampling technique. The tools used for the study were demographic variables, self-structured knowledge questionnaire and self-instructional module.

RESULTS: The study revealed that the mean posttest knowledge score (12) was significantly higher than the mean pretest knowledge score (7.32) as evidenced by $t = 5.65$ ($P = 0.05$) and $P = 0.0001$ which shows that self-instructional module was effective on care of AV fistula. It also revealed that there was significant association between pretest knowledge score and selected demographic variables of educational status and previous exposure to information.

CONCLUSION: A similar study can be taken on large scale for better generalization. On the basis of the findings, the researcher concluded that self-instructional module on care of AV fistula was effective among hemodialysis patients.

Keywords:
Arteriovenous fistula, effect, hemodialysis, knowledge, self-instructional module

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Introduction

Chronic diseases present a significant challenge to 21st century global health policy. In developing nations, the growing prevalence of chronic diseases such as chronic kidney disease has severe implications on health and economic output. The rapid rise of common risk factors such as diabetes, hypertension, and obesity, especially among the poor, will result in even greater and more profound burdens that developing nations are not equipped to handle. Attention to chronic diseases,

chronic kidney disease in particular, has been lacking, largely due to the global health community's focus on infectious diseases and lack of awareness.[1] According to the National Kidney Foundation, Chronic Kidney Disease includes conditions that impair the kidneys and diminish their ability to keep healthy. Chronic renal failure is a progressive irreversible deterioration in renal function in which the body's power to maintain metabolic, fluid, and electrolyte balance fails, resulting in uremia which contributes the patient to depend on hemodialysis for the maintenance of the internal milieu and to avoid uremia.[2] Dialysis is the preferred way to treat end-stage renal disease and remove accumulated toxins from the body. It is an artificial replacement of kidney functioning, especially in renal failure cases. Dialysis cannot completely perform lost kidney function, but, to some extent, manages its activities by means of diffusion and ultrafiltration.[3]

Objectives of the study

1. To assess the pretest knowledge score of hemodialysis patients on care of arteriovenous (AV) fistula
2. To assess the posttest knowledge score of hemodialysis patients on care of AV fistula
3. To determine the effect of self-instructional module by comparing the pretest and posttest knowledge scores regarding care of AV fistula among hemodialysis patients
4. To find out the association between the knowledge score of hemodialysis patients regarding care of AV fistula with the selected demographic variables as age, sex, educational status, occupation, annual income, previous exposure to information, and frequency of dialysis per month.

Materials and Methods

Research approach
This was quantitative research approach.

Research design
Preexperimental one group pretest posttest design.

Sampling technique
Nonprobability convenient sampling technique.

Study setting
Apollo Hospital and Health city hospital, Guwahati, Assam.

Sample size
Sixty-four.

Sample selection criteria
Inclusion criteria: Hemodialysis patient with AV fistula undergoing dialysis at Apollo and Health city hospital and who are willing to participate in the study. Exclusion criteria: patients who are not willing and patients who are very sick.

Data collection
Ethical clearance certificate and formal permission were taken from the concerned authorities to conduct the research study. The Ethical Clearance was obtained from Ethics committee, Assam down town University, Guwahati with memo no.: Adtu/Ethics/stdnt-lett/2020/004 dated 2/3/2020. The sample size was calculated using the Cochran formula. The tools used for the study were demographic pro forma and self-structured knowledge questionnaire. On the 1st day, the purpose of the study was explained and informed consent was taken from the patients. Samples were selected based on nonprobability convenient sampling technique. A pretest was conducted using self-structured knowledge questionnaire on care of AV fistula. After the pretest, self-instructional module was administered. Posttest was conducted by using the same self-structured knowledge questionnaire after 7th day of administering self-instructional module. The data obtained were analyzed in terms of objectives of the study by using descriptive and inferential statistics.

Results

The data obtained were analyzed in terms of the objectives of the study by using descriptive and inferential statistics. With reference to the sample characteristics presented in [Table 1], out of 64 hemodialysis patients, the majority of the patients i.e., 28 (43.75%) were in the age group of 46–55 years, 38 (59.38%) were female patients, maximum of the sample i.e., 24 (37.5%) were completed their education till primary, majority of them, i.e., 25 (39.06%) were service, maximum of the sample, i.e., 26 (40.6%) had annual income ≤ Rs. 200,000. In previous exposure to information, 32 (50%) of the sample had previous exposure to information and 32 (50%) do not have previous exposure to information and maximum of the sample, i.e., 30 (46.88%) had 6–10 times of frequency of dialysis per month.

With reference to the assessment of pretest and posttest knowledge score on care of AV fistula presented in Figure 1, the result indicates that in pretest 29 (45.31%) patients have inadequate knowledge, 35 (54.69%) patients have moderate knowledge and none of them have adequate knowledge. Whereas in the posttest, 1 (1.56%) patients have inadequate knowledge, 37 (57.81%) have moderate knowledge, and 26 (40.63%) have adequate knowledge. Hence, posttest score remains higher than the pretest knowledge score.

With reference to the effect of self-instructional module presented in Table 2, the result shows that the mean

posttest knowledge score (12) was higher than the mean pretest knowledge score (7.42) and difference between the pretest and posttest score was 4.58. The calculated t-value was 5.65 and $P = 0.0001$ at 0.05 level of significance. Hence, null hypothesis (H_{01}) was rejected and the research hypothesis (H_1) was accepted, i.e., there was a significant difference between the pretest and the posttest knowledge score on care of AV fistula. This indicates that the self-instructional module was effective in improving the knowledge of hemodialysis patients.

With reference to the association of pretest knowledge score with selected demographic variables presented in Table 3, the findings shows that there was significant association between pretest knowledge with the selected demographic variables, i.e., educational status and previous exposure to information at 0.05 level of significance. Thus, null hypothesis (H_{02}) was rejected and research hypothesis (H_2) was accepted. The data also shows that the Chi-square value computed in pretest knowledge with selected demographic variable was found to be significant at <0.05. It is therefore concluded that knowledge on care of AV fistula is dependent on educational status and previous exposure to information.

Discussion

Characteristics of the demographic variables of hemodialysis patients

In the present study, with regards to age, the majority of the patients 28 (43.75%) were in the age group of 46–55 years. In relation to sex, maximum 38 (59.38%) of them were female. In relation to educational status, majority 24 (37.5%) of the patients complete their education till primary. With regards to occupation, majority 25 (39.06%) were service. In annual income, majority of them have income ≤200,000, i.e., 26 (40.6%). In previous exposure to information, 32 (50%) of the sample were expose while 32 (50%) were not expose. In relation to frequency of dialysis, majority 30 (46.88%) of them did dialysis for 6–10 times a month.

Table 1: Frequency and percentage distribution of hemodialysis patients according to their demographic variables (n=64)

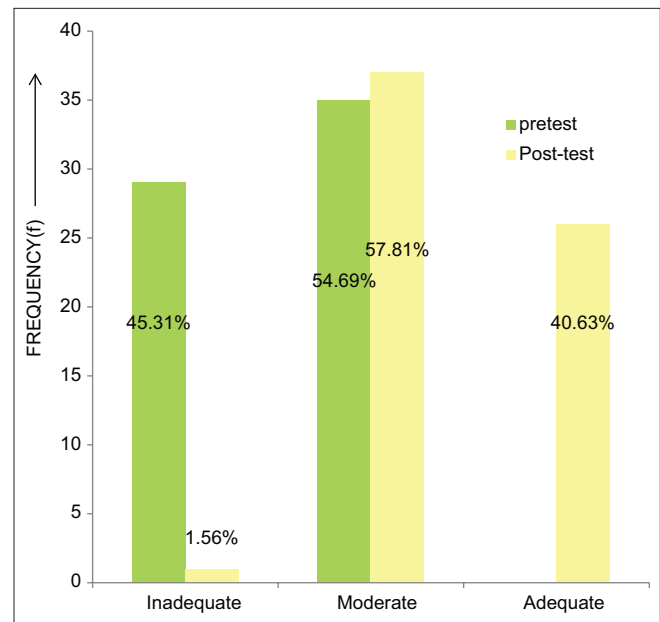| Demographic proforma	Frequency (f) (%)
Age (years)	
26-35	13 (20.32)
36-45	16 (25)
46-55	28 (43.75)
>55	7 (10.93)
Sex	
Male	26 (40.62)
Female	38 (59.38)
Transgender	-
Educational status	
Primary education	24 (37.5)
High school	15 (23.44)
Higher secondary	17 (26.56)
Graduate and above	8 (12.5)
Occupation	
Service	25 (39.06)
Business/self employed	22 (34.38)
Retired	5 (7.81)
Housewife/homemaker	12 (18.75)
Annual income	
≤ Rs 200,000	26 (40.6)
Rs 200,001-400,000	17 (20.56)
Rs 400,001-600,001	18 (28.13)
≥ Rs 600,001	3 (4.69)
Previous exposure to information	
Yes	32 (50)
No	32 (50)
Frequency of dialysis per month	
≤5 times	17 (26.56)
6-10 times	30 (46.88)
11-15 times	17 (26.56)
≥16 times	-

Figure 1: Bar graph showing frequency and percentage distribution of pre-test and posttest knowledge scores of hemodialysis patient on care of Arterio-Venous fistula

Table 2: Comparison between pre- and post-test knowledge score on care of arterio-venous fistula (n=64)

Knowledge score	Mean±SD	Mean difference	Calculated t	df	P	Inference
Pretest	7.42±2.57	4.56	5.65	63	0.0001	S**
Posttest	12±2.98					

**S: Highly significant at $P<0.01$. NS: Not significant, SD: Standard deviation

Table 3: Chi-square values computed between pretest knowledge score and selected demographic variables (*n*=64)

Demographic variables	Knowledge			χ^2	df	P	Inference
	Inadequate	Moderate	Adequate				
Age (years)							
26-35	10	3	-	8.34	6	0.21	NS
36-45	7	9	-				
46-55	7	21	-				
>55	5	2	-				
Sex							
Male	14	12	-	1.27	4	0.87	NS
Female	15	23	-				
Transgender	-	-	-				
Educational status							
Primary	18	6	-	18.38	6	0.005	S**
High school	7	8	-				
Higher secondary	4	13	-				
Graduate and above	-	8	-				
Occupation							
Service	8	17	-	5.06	6	0.54	NS
Business/self employed	10	12	-				
Retired	4	1	-				
Housewife/homemaker	7	5	-				
Annual income							
≤Rs 200,000	17	9	-	8.42	6	0.21	NS
Rs 200,001-400,000	6	11	-				
Rs 400,001-600,000	6	12	-				
≥Rs 600,001	-	3	-				
Previous exposure to information							
Yes	2	30	-	39.38	2	0.00001	S**
No	27	5	-				
Frequency of dialysis per month							
≤5 times	12	5	-	7.10	6	0.31	NS
6-10 times	9	21	-				
11-15 times	8	9	-				
≥16 times	-	0	-				

**S: Highly significant at *P*>0.01, *S: Significant, NS at *P*>0.05. NS: Not significant

Assessing of pretest and posttest knowledge score on care of arteriovenous fistula

The findings of the present study reveal that in pretest, 29 (45.31%) patients had inadequate knowledge; 35 (54.69%) patients had moderate knowledge. Where in the posttest, one (1.56%) patient had inadequate knowledge, 37 (57.81%) had moderate knowledge and twenty six (40.63%) had adequate knowledge. Hence, the posttest score remains higher than the pretest knowledge score.

The present study was supported by an experimental study conducted by Salman *et al*. regarding the effectiveness of instructional module on self-care practices of AV fistula among hemodialysis patients at Hail region, Saudi Arabia. Results showed an increase in mean score on general instructions from 1.78 ± 0.33 in pretest to 2.78 ± 0.22 in posttest and also the mean score of knowledge about look for infection

from 2.04 ± 0.51 in pretest to 2.33 ± 0.31 in posttest has observed.[4]

Determining the effect of self-instructional module on care of arteriovenous fistula

The findings of the present study revealed that the mean posttest knowledge score (12) was higher than the mean pretest knowledge score (7.42) and the mean difference between the pretest and posttest knowledge score was 4.58.The calculated *t*-value was 5.65 and the tabulated value of df (63) for 0.05 level of significance was 1.669. Thus, the calculated value is greater than the tabulated value and hence, the self-instructional module was effective in improving the knowledge on care of AV fistula among hemodialysis patients.

The findings are supported by the study conducted by Usha Rani *et al*. to assess the knowledge of patients about home care management of AV Fistula among

Dialysis patients. The pretest knowledge was assessed and information booklet was given to the participants after pretest knowledge assessment. Results shows that among 30 patients, a level of knowledge on home care management of AV Fistula, 60% were have moderate knowledge, 30% were have adequate knowledge and 10% were have inadequate knowledge. The study concludes that information booklet is very effective in improving knowledge of the patients on home care management of AV fistula.[5]

The association between the pretest knowledge score with the selected demographic variables

The findings of the present study revealed that there is a significant association between pretest knowledge score with selected demographic variables such as educational status and previous exposure to information. Thus the null hypothesis is rejected and research hypothesis is accepted.

Therefore, the present study was supported by a study conducted by Kasthuri *et al*. to assess the self-care practice on AV fistula among patients undergoing hemodialysis in selected tertiary hospital at Kelambakkam, Kanchipuram. Dist, Tamil Nadu, India. The study showed that there is significant association between self-care practice on AV Fistula with the selected demographic variables of patients with undergoing hemodialysis such as age, sex, education status, occupation, monthly income, dietary habits, frequency of dialysis, and sources.[6]

Conclusion

The findings of the study revealed that the total posttest knowledge score is significantly higher than the pretest knowledge score. Thus, the self-instructional module on care of AV fistula planned was effective in improving the knowledge of the hemodialysis patients.

Limitations

The investigator faced difficulty in assessing the sample because of the present pandemic.

Recommendation

A similar study can be undertaken on a large scale or by using different teaching methods. This would provide invaluable evidence in the area of nursing practice.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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