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Assessment of knowledge and self-reported practices regarding self-care of arteriovenous (AV) fistula among patients undergoing hemodialysis

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Original Article

Assessment of knowledge and self-reported practices regarding self-care of arteriovenous (AV) fistula among patients undergoing hemodialysis

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Abstract

Introduction: End-stage renal disease (ESRD) occurs when chronic kidney disease reaches an advanced state. Among the available treatments for ESRD, hemodialysis is the most utilized treatment. To facilitate hemodialysis, an Arteriovenous (AV) fistula is created by connecting the artery to a vein. **Aim:** The present study aimed to assess the knowledge and practice regarding self-care of AV fistula among patients undergoing hemodialysis. **Methods:** A descriptive research study was conducted among 100 patients undergoing hemodialysis in selected hospitals, Chennai by non-probability purposive sampling technique. An interview guide that consists of semi-structured items was used to collect demographic and clinical data. Structured multiple-choice items and three-point Likert scale were used to assess knowledge and practice respectively. **Results:** The study findings revealed that the mean score (SD) for moderately adequate knowledge was 11.33 (0.51) and inadequate knowledge was 6.77 (1.89). The mean score (SD) for moderate practice was 30.36 (3.35) and poor practice was 16.22 (5.03). A low negative correlation was found between knowledge and practice towards self-care of AV fistula which was not statistically significant at a 5% level of significance. **Conclusion:** The study findings gave an insight that the patients undergoing hemodialysis had inadequate knowledge and poor practice regarding self-care of AV fistula. It also helped to understand the educational needs of patients and the nurses' responsibility towards imparting knowledge to enhance better practice.

Keywords: hemodialysis, knowledge, self-reported practice, self-care of arteriovenous fistula

Introduction

The kidneys are among the most vital organs of the human body which are essential for the homeostasis of the body's extracellular fluid. Kidney diseases can be classified as acute and chronic. Acute Kidney Injury (AKI) is a sudden episode of kidney failure or kidney damage that happens within a few hours or few days. Chronic Kidney Disease (CKD) is usually caused by a long-term disease, such as high blood pressure or diabetes that slowly damages the kidneys and reduces their function over time. Among the available treatments for CKD, hemodialysis is the most utilized treatment. There are three types of hemodialysis access: a fistula, a graft, and a catheter. An arteriovenous fistula (AVF) is a direct connection of an artery to a vein. Although AVF is the best access for dialysis, the fistula is susceptible to various complications such as blood hypoflow, thrombosis, aneurysms, infection, hand ischemia, hand edema, and cardiac overload. Healthcare members, as well as patients, are held responsible for maintaining the patency of AV fistula (Smeltzer, 2016).

AVF allows patients with CKD to get the treatment that is needed, serves as a lifeline to save their life. Patients must follow the self-care instructions given by the healthcare team members to maintain the patency

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of AVF and to protect their health. The complications associated with AVF can be prevented by keeping access clean and protected following a daily routine of self-care practices. Hence, the researcher felt the need to assess the knowledge and self-reported practices on self-care of AVF among patients undergoing hemodialysis.

Objectives

The objectives of the study were:

- To assess the knowledge and self-reported practices regarding self-care of AV fistula among patients undergoing hemodialysis.
- To correlate the knowledge scores with self-reported practice scores regarding self-care of AV fistula among patients undergoing hemodialysis.
- To associate the knowledge score and self-reported practice score with demographic and clinical variables.

Material and Methods

A quantitative research approach with the descriptive design was adopted to assess the knowledge and practice regarding self-care of AVF among patients undergoing hemodialysis in C.S.I Kalyani Multispeciality Hospital, Mylapore, and Fortis Multispeciality Hospital, Adyar, Chennai. The study population consisted of 100 patients undergoing hemodialysis through an AVF in selected settings. Patients both men and women who were aged between 40 and 60 years, undergoing hemodialysis for a period of six months to two years with AVF and could understand either Tamil or English were included in the study. Patients who were critically and mentally ill were excluded. A non-probability purposive sampling technique was used to select the samples.

The tool used for the study was a semi-structured questionnaire to elicit demographic and clinical data. Twenty structured multiple-choice items were utilized to assess the knowledge. Each item consisted of one correct answer and three distractors. Every correct answer was given a score of '1' and each wrong answer carried a '0' mark. The total score was 20. Then, the percentage was calculated and the scores were interpreted as adequate (>75%), moderately adequate (51% to 75%), and inadequate (≤50%). The three-point Likert scale was used to assess self-reported practices. It consisted of 25 statements including both positive (16) and negative (9) statements. The total score was 50. The scale legends were: never, sometimes, always and were scored as follows: for positive statements- Never (0), Sometimes (1), Always (2), for negative statements- Never (2), Sometimes (1), Always (0). Then, the percentage was calculated, and the scores were interpreted as: good - >75% (score of 38 - 50), moderate - 51% to 75% (score of 26 - 37) and poor ≤50% (score of 0 - 25) practices. The tool was validated by one nephrologist and two medical surgical nursing experts. The reliability of the knowledge and practice tool was checked using the test-retest method. The reliability scores were 0.86 and 0.89 for the knowledge and practice tool respectively.

Institutional ethical committee approval was obtained. After obtaining informed consent from the patients, data were collected by the researcher. It took approximately 45 minutes to collect the data from each sample. Anonymity was maintained.

Data analysis

Frequency and percentage distribution, mean and standard deviation were used to assess the level of knowledge and practice regarding self-care of AVF among patients receiving hemodialysis. The Pearson's coefficient of correlation was used to correlate the knowledge with practice regarding self-care of AV fistula among patients receiving hemodialysis. Chi-square test was used to associate the knowledge and practice regarding self-care of AV fistula among patients receiving hemodialysis with demographic and clinical variables.

Results

The data presented in Table 1 shows that around 34% of the patients were in the age group of 46 – 50 years and 31% of them were in the age group of 51 – 55 years. The majority (57%) of the patients were males and 31% of the patients were having primary education. Maximum (47.5%) of them were self-employed and 27% of the patients were working in the private sector. Thirty-nine percent of the patients belonged to the

Table 1
Frequency and Percentage Distribution of Demographic Variables of Patients Undergoing Hemodialysis

N = 100

Demographic variables	Frequency	Percentage *(%)*
Age in years		
41 – 45	20	20.0
46 – 50	34	34.0
51 – 55	31	31.0
56 – 60	15	15.0
Gender		
Male	57	57.0
Female	43	43.0
Educational qualification		
No formal education	28	28.0
Primary education	31	31.0
Secondary education	19	19.0
Higher secondary education	4	4
Graduate	17	17.0
Postgraduate	1	01
Occupation		
Employed	59	59.0
Unemployed	41	41.0
If employed (n=59)		
Self employed	28	47.5
Government	0	0
Private	16	27.0
Retired	0	0
Daily wages	15	25.5
Family monthly income (in INR)		
Less than 10,000/-	70	70.0
10,001 to 15,000/-	9	9
15,001 to 20,000/-	10	10.0
20,001 and above	11	11.0
Religion		
Hindu	39	39.0
Christian	31	31.0
Muslim	30	30.0
Area of residence		
Rural	24	24.0
Urban	74	74.0
Semi-urban	2	2
Type of family		
Nuclear family	34	34.0
Joint family	46	46.0
Extended family	20	20.0
Marital status		
Single	23	23.0
Married	74	74.0
Divorced	1	1
Widower/widow	2	0
Dietary habits		
Vegetarian	46	46.0
Non–vegetarian	54	54.0

Table 2
Frequency and Percentage Distribution of Clinical Variables of Patients undergoing Hemodialysis

N = 100

Clinical Variables	Frequency	Percentage *(%)*
Age at diagnosis of CKD (in years)		
41– 45	20	20.0
46– 50	35	35.0
51– 55	31	31.0
56 – 60	14	14.0
Presence of co-morbid disease		
Diabetes mellitus	43	43.0
Hypertension	43	43.0
Cardiac disease	14	14.0
Duration of undergoing hemodialysis		
6 months – 1 year	56	56.0
1 – 2 years	44	44.0
Frequency of receiving hemodialysis		
3 times per week	40	40.0
2 times per week	59	59.0
1 time per week	1	1
Location of AV fistula		
Wrist	45	45.0
Forearm	54	54.0
Elbow	1	1
History of the failure of AV fistula		
Yes	41	41.0
No	59	59.0
If yes, how many times (n = 41) Once	41	100
Aware of care of AV fistula		
Yes	45	45.0
No	55	55.0
If yes, source of information (n = 45)		
Healthcare professionals	45	100
Intake of prescribed medication		
Antidiabetics	43	43.0
Antihypertensives	43	43.0
Diuretics	14	14.0

Hindu religion. The monthly income of most (70%) of the patients was less than 10,000 INR and 74% of the patients were residing in an urban area. The majority (74%) of the patients were married and (46%) of the patients belonged to joint families. The majority (54%) of the patients were non-vegetarian.

Table 2 shows that most (35%) of the patients were diagnosed as CKD in the age group of 46 – 50 years and 43% of them had diabetes mellitus and hypertension and were on medications. The majority (56%) of the patients were undergoing hemodialysis for six months to one year and (59%) of the patients were receiving hemodialysis two times a week. Most (54%) of the patients had AV fistula on the forearm. Fifty-nine percent of the patients had intact AV fistula and 41% of the patients had reports of one-time failure of AV fistula. Around 45% of the patients reported that they were aware of the care of AV fistula, as they received information from the healthcare professionals.

Assessment of Knowledge

The knowledge was assessed using a knowledge questionnaire on self-care of AV fistula with a total score of 20. A score of 1 to 10 was considered as inadequate knowledge, 11 to 15 as moderately adequate knowledge, and 16 to 20 as adequate knowledge. The majority (94%) of the patients had inadequate knowledge and 6% of them had moderately adequate knowledge regarding self-care of AV fistula. None of them had adequate knowledge (Figure 1). The mean (SD) score for moderately adequate knowledge was 11.33 (0.51) and inadequate knowledge was 6.77 (1.89).

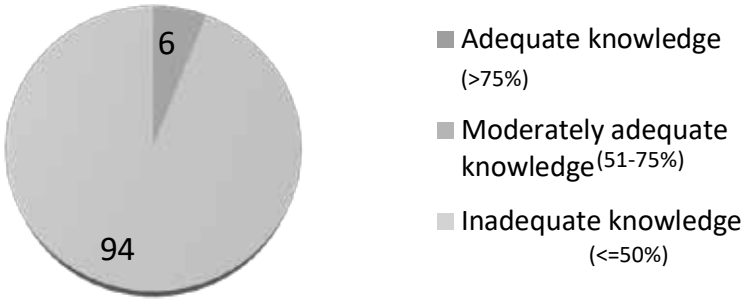

Figure 1. Percentage distribution of level of knowledge regarding self-care of AV fistula among patients undergoing hemodialysis.

Assessment of Self-reported practice

The majority (88%) of the patients had poor self-reported practice and 11% of them had moderate self-reported practice regarding self-care of AV fistula. Only one had good self-reported practice (Figure 2). The mean (SD) score for moderate self-reported practice was 30.36 (3.35) and poor self-reported practice was 16.22 (5.03).

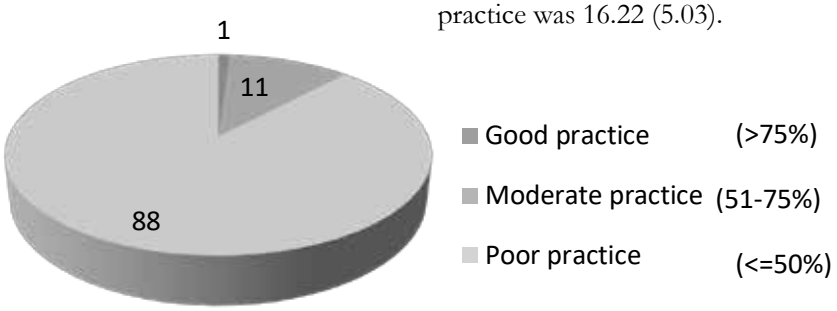

Figure 2. Pie diagram showing the percentage distribution of level of practice regarding self care of AV fistula among patients undergoing hemodialysis

Correlation of knowledge with self-reported practice

There was a low negative correlation (r = - .079, p = .432) between knowledge and self-reported practice towards self-care of AV fistula which was not statistically significant.

Association of knowledge with demographic and clinical variables

Table 3 shows that there was a statistically significant association between the level of knowledge towards self-care of AV fistula with demographic variables such as education and area of residence and the clinical variables such as the location of AV fistula ($p < .05$)

Table 3

Association of Level of Knowledge regarding Self-care of AV Fistula with Demographic and Clinical Variables

N = 100

Variables	Level of Knowledge		Chi-Square Value	*p*-value
	Moderate	Inadequate		
Education				
No formal education	1	27	18.44	.002 S*
Primary education	2	29		
Secondary education	0	19		
Higher secondary education	0	4		
Graduate	2	15		
Postgraduate	1	0		
Area of residence			7.59	.02 S*
Rural	2	22		
Urban	3	71		
Semi-urban	1	1		
Location of AV fistula			15.87	.001 S**
Wrist	2	43		
Forearm	3	51		
Elbow	1	0		

Note. S* = Significant at $p < .05$; S** = Significant at $p < .01$.

Association between self-reported practice with demographic and clinical variables

Table 4 shows that there was a statistically significant association found between the level of self-reported practice towards self-care of AVF with demographic variables of patients such as age, educational qualification, occupation, family monthly income, and religion, and with clinical variables such as age at diagnosis of chronic kidney disease, location of AV fistula and history of failure of AV fistula at $p < .05$.

Table 4

Association of Level of Self-reported Practice regarding Self-care of AV Fistula with Demographic and Clinical Variables

N = 100

Variables	Level of self-reported practice			Chi-square value	*p*-value
	Good	Moderate	Poor		
Age (in years)					
41-45	0	0	20	12.4	.05 S*
46-50	0	4	30		
51-55	0	3	28		
56-60	1	4	10		
Educational qualification					
No formal education	0	1	27	20.85	.02 S*
Primary education	0	7	24		
Secondary education	1	0	18		
Higher secondary	0	0	4		
Graduate	0	2	15		
Postgraduate	0	1	0		
Occupation					
Employed	0	3	56	6.79	.03 S*
Unemployed	1	8	32		
Family monthly income (in INR)					
Less than 10,000/-	1	3	66	20.26	.002 S*
10,001 to 15,000/-	0	2	7		
15,001 to 20,000/-	0	5	5		
20,001 and above	0	1	10		
Religion					
Hindu	1	9	29	11.64	.02 S*
Christian	0	1	30		
Muslim	0	1	29		
Age at diagnosis of chronic kidney disease (in years)					
41-45	0	0	20	13.57	.03 S*
46-50	0	4	31		
51-55	0	3	28		
56-60	1	4	9		
Location of AV fistula					
Wrist	0	1	44	14.41	.006 S*
Forearm	1	9	44		
Elbow	0	1	0		
History of the failure of AV fistula					
Yes	0	1	40	6.04	.04 S*
No	1	10	48		
If yes, how many times					
Once	0	1	40	6.04	.04 S*
Twice	0	0	0		
More than two times	0	0	0		

Note. S* = Significant at $p < .05$.

Discussion

The results of the study showed that the majority (94%) of the patients had inadequate knowledge and 6% of patients had moderately adequate knowledge and none of them had adequate knowledge on self-care of AV fistula. The majority (88%) of the patients had poor practice and 11% of them had moderate practice and 1% of them had a good practice. The findings of the study were supported by the study conducted by Pessoa & Linhares (2015) who reported that 97.7% of patients undergoing hemodialysis had inadequate knowledge and inadequate practice towards self-care of AVF.

The study results showed that there was a statistically significant association between the level of knowledge regarding self-care of AVF and demographic variables of patients such as education and area of residence and with clinical variables of patients such as the location of AV fistula at ($p < .05$). The present study findings are consistent with the study done by Sousa et al. (2017) who reported that there was a significant association between the level of knowledge regarding self-care behaviour of AV fistula and location of AVF ($p < .05$).

The study findings showed a statistically significant association of level of self-reported practice towards self-care of AVF with demographic variables such as age, educational qualification, occupation, family monthly income, and religion and with selected clinical variables such as age at diagnosis of chronic kidney disease, location of AV fistula, history of failure of AV fistula ($p < .05$). The results were consistent with the study findings of Kasthuri et al. (2017) who reported that there is a significant association between self-care practice of AV fistula and age, education status, occupation, monthly income ($p < .05$). This indicates that as the age of the patient increases, their level of practice also improves. It also revealed that irrespective of the educational status, the level of practice towards self-care of AV fistula was poor. Another study conducted by Mangrule (2017) also showed a significant association between self-care practice on AV fistula and history of failure of AV fistula ($p < .05$).

The investigator did not face any difficulties during the study. The study could be replicated to a larger population and their lived-in experiences with AVF undergoing hemodialysis can be studied. Further studies should explore the difficulties in adhering to the self-care practices among patients undergoing hemodialysis and incorporate innovative strategies to enhance the knowledge and practice of self-care of AVF among patients undergoing hemodialysis.

Conclusion

The study findings showed that most of the patients had inadequate knowledge and poor practice despite undergoing dialysis for one to two years. There was no correlation between knowledge and self-reported practice towards self-care of AVF. The study findings gave an insight to the investigator about the knowledge and practice regarding self-care of AVF among patients undergoing hemodialysis. There is a need to enhance health literacy using various innovative strategies to enrich the knowledge and practice regarding self-care of AVF among patients undergoing hemodialysis.

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