

Self-Care Behaviors for Arteriovenous Fistula among Hemodialysis Patients at Assiut University Hospital (Suggested Nursing Brochure)

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Abstract Patients with end stage renal diseases should be educated to enhance and maintain the arteriovenous fistula (AVF) in the better condition. **Aim** to assess self-care behaviors for arteriovenous fistula in hemodialysis patients at Assiut university hospital. **Subjects and Method:** A descriptive exploratory research design was utilized in this study. The study was conducted in hemodialysis unit at Assiut University Hospital. **Sample:** 100 adult patients with the following criteria age ranged from 18 -60 years, carry HD for more than 6 months with AVF, and able to communicate. Two tools utilized for data collection: **Tool (1)** patient's interview questionnaire sheet, **Tool (2)** Assessment of self-care behaviors scale for arteriovenous fistula in hemodialysis patients (ASBHD-AVF). **Results:** findings revealed that, (78%) of patients had inadequate self-care behaviors and (22%) of them had adequate self-care behaviors. **Conclusions:** There was highly significant difference between self-care behaviors of studied sample and number of arteriovenous fistula, duration of AVF. **Recommendation:** application of self-care-behaviors nursing brochure for patients with arteriovenous fistula in hemodialysis patients.

Keywords: arteriovenous fistula, hemodialysis and self-care behaviors scale

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1. Introduction

In Egypt, the annual incidence of end stage renal disease is about 74 per million and the prevalence of patients on dialysis is 264 per million populations. Hemodialysis is the treatment most often between patients with end stage renal diseases (ESRF) [1].

The AVF provides adequate flow for dialysis and has little complications as compared to double lumen catheter. AVF access is long term and requires fewer interventions. For hemodialysis a proper vascular access is the key for effective hemodialysis. Definite access in the form of arteriovenous fistula (AVF) is recommended in chronic kidney disease patients [2].

Following a daily self-care plan can prevent several complications resulting from using arteriovenous fistula access site such as infection, thrombosis, aneurysms, hand ischemia, cardiac overload and hand edema. For this; health care team is supposed to educate them about self-care and management of AVF [3].

Accordingly patients are instructed to avoid wearing tight dressings, checking blood flow daily and doing manual compression exercises. When is being used for hemodialysis, additional care is needed like pre dialysis cleansing of AVF access site, adequate compression for

hemostasis after dialysis, not checking blood pressure and avoiding blood sampling from that hand [4].

Ensuring AVF patency is possible if the patient has adequate information about fistula care. Nurses play vital role in determining AVF related complications and ensuring AVF patency [5].

Self-care is closely related to the concept of self-efficacy and is a process that requires the individual progress towards independence and ability to perform activities of daily living as much as possible [6].

1.1. Aim of the Study

1. Assess self-care behaviors for arteriovenous fistula among hemodialysis patients
2. Design suggested nursing brochure for arteriovenous fistula care among hemodialysis patients.

1.2. Significance of the Study

In 2017 about 540 patients on hemodialysis at Assiut university hospital (hemodialysis unit). From the researcher's clinical experience was observed that the patients with hemodialysis had lack of knowledge about arteriovenous fistula care. This study will be conducted to provide patients with nursing brochure that provide information on self-care behaviors for arteriovenous fistula.

1.3. Subjects and Method

Research design: A descriptive exploratory research design was utilized to fulfill the aim of this study.

Study Setting: This study was conducted in hemodialysis unit at Assiut university hospital.

Study Sample: 100 adult patients who were on hemodialysis treatment with the following criteria: age ranged from 18 -60 years, patients on HD for more than 6 months with AVF, patients able to communicate.

1.4. Tool of the Study

Tool I: patient's interview questionnaire sheet.

This tool was developed by the researcher after passing through an extensive and relevant review of literature. This tool is divided into two parts

Part 1: Socio demographic data

This part was developed to assess patient's name, age, sex, educational level, marital status, employment, and income status.

Part 2: Medical data

It included cause of the kidney disease, dialysis duration, AVF duration (months), number of previous AVFs, and sources of information on fistula care.

Tool II: Assessment of self-care behaviors scale for arteriovenous fistula in hemodialysis patients (ASBHD-AVF)

This tool was constructed and developed by [7] with aim of allowing the evaluation of self-care behaviors of patients with AVF. This scale has 31 items in two subscales:

• Prevention of complications including:

Wash the fistula arm with soap and water before entering the hemodialysis room, doing compression of puncture sites with the fingers, removing dressings of the puncture sites at night or the next day to hemodialysis, removing crusts from puncture sites of the fistula at home, feeling the thrill at the site of the fistula twice a day, checking every day if the hand of the fistula arm cools, protect the fistula arm from scratches, cuts and wounds, checking every day if the color of the hand from the fistula arm changes, protecting the fistula arm from bumps and shocks, and avoid getting into places with different temperatures.

• Management of signs and symptoms including;

Addressing the nurse when having cramps during hemodialysis, control the amount of fluid patient drink at home, addressing the nurse when get a headache and chest pain during hemodialysis, applying ointment when hematoma occurs, removing dressings of the puncture sites at night or the next day to hemodialysis, applying ice in the first 24 hours in the local hematoma, applying heat on local hematoma after the first 24 hours, checking every day if the hand of the fistula arm cools, observing signs of redness and swelling at the puncture sites addressing the nurse if the hand of the fistula arm start to hurt & addressing nurses if the hand of the fistula arm appear with wounds. Responses to each item are based on a Likert scale [8].

Scoring system:

Scoring these variables, was on 5 point scale, which ranged from Never =1, rarely =2, sometimes =3, often =4 and always =5. The total score value was ranged between

31-155. The higher score indicate adequate self-care for AVF access, the lower score indicate inadequate self-care for AVF access.

Suggested nursing brochure for patients with arteriovenous fistula

The content of nursing brochure was developed by the researcher after passing through an extensive and relevant literature review. It aimed to providing patients with arteriovenous fistula with knowledge about management of signs and symptoms and prevention of complications.

It provide information about

- Definition of arteriovenous fistula.
- Prevention of complication that include keeping your fistula clean, Look for redness or swelling around the fistula area, If you experience any pain in the fistula area, tell your doctor immediately, If you get a fever, this can be a sign of infection, wash and pat dry your fistula arm thoroughly right before each treatment, careful not to put extra pressure on the area to decrease risk of blood clots, do not wear tight-fitting shirts, do not wear jewelry that may restrict blood flow on your access arm, use your non-fistula arm for measuring blood pressure, when sitting or sleeping, make sure that your head doesn't rest on your fistula, check the blood flow through your AV fistula daily. This is done by touch and sound. When you place your fingers over your fistula, you should be able to feel the motion of the blood flowing through it.
- Management of signs and symptoms that include calling the nurse when having cramps, headache and chest pain during hemodialysis, telling the nurse if the hand of the fistula arm start to hurt, control the amount of fluid at home, applying ointment when hematoma occurs, removing dressings of the puncture sites at night or the next day to hemodialysis, applying ice in the first 24 hours in the local hematoma, checking every day if the hand of the fistula arm cools, observing signs of redness and swelling at the puncture sites .

2. Method

- Data were conducted in hemodialysis unit at Assiut University Hospital during the period (6 months) from November 2017 to April 2018.
- Official permission was obtained from the head of hemodialysis unit to conduct the aim of this study.
- The study tools were formulated after a review of the literature.
- Oral consent was taken from patients who participated in the study after full explanation of the study.
- Content validity was conducted to determine whether the tool covers appropriate and necessary content as well as its relevance to tools aim. This stage developed by a jury of seven experts, three of them of medical staff and the other four members from medical-surgical nursing staff at Assiut University. Juries were from different academic categories (professors and assistant professors).

- Testing the reliability of the proposed tool (assessment of self-care behaviors scale for arteriovenous fistula in hemodialysis patients) was done using alpha Cronbach test and its value was as 0.73.
- Data were assured confidentiality and anonymity and were collected using the pre-mentioned study tools.

2.1. Ethical Considerations

- Research proposal was approved from Ethical Committee in the Faculty of Nursing, there was no risk for study subject during application of the research, the study followed common ethical principles in clinical research, study subject had the right to refuse to participate and or withdraw from the study without any rational at any time, study subject privacy was considered during collection of data.

2.2. Pilot Study

- A pilot study was conducted on 10% (10 patients) of the subjects to examine easiness and clarity of the tools; those patients were included in the main study as no modifications were done.

2.3. Field Work

- The study was carried out during the morning and afternoon session for hemodialysis patients.
- The researchers met the selected patients and base line data were established using tool I and assessment of self-care behaviors for patients on hemodialysis for more than 6 months with AVF was formulated using tool II. The suggested nursing brochure was given to the patients.

2.4. Statistical Analysis

The data were tested for normality using the Anderson-Darling test and for homogeneity variances prior to further statistical analysis. Categorical variables were described by number and percent (N, %), where continuous variables described by mean and standard deviation (Mean, SD). Chi-square test and fisher exact test used to compare between categorical variables where compare between continuous variables by t-test. A two-tailed p < 0.05 was considered statistically significant. All analyses were performed with the IBM SPSS 20.0 software.

3. Results

Table 1 showed that (34%) of studied patients their age ranged from 30-40 and more than 50 years. (62%) of them were male. (42%) of them had secondary education. (88%) of them were married. (78%) of them were unemployed. (86%) of studied patients had income less than expenses.

Table 2 demonstrated that more than 50% of studied patients had kidney diseases previously. 40% of them ranged from 1-5 years and more than 5 years dialysis

duration. more than 50% of studied patients had present AVFs. 42% of studied patients the source of information were from nurses.

Table 1. percentages distribution of socio demographic data for study patients (n=100)

Variables	N.	%
Sex		
• Male	62	62.0
• Female	38	38.0
Age group		
• From 20- 30 years	18	18.0
• 31-40 years	34	34.0
• 41-50 years	14	14.0
• more than 50 years	34	34.0
Mean±SD	43.24±12.06(20-60 years)	
Education level		
• Illiterate	22	22.0
• Reading and writing	30	30.0
• Secondry school	42	42.0
• University	6	6.0
Marital status		
• Married	88	88.0
• Single	12	12.0
Employment		
• Employed	16	16.0
• Unemployed	78	78.0
• Student	2	2.0
• Retired	4	4.0
Income status		
• less than expenses	86	86.0
• Equal to expenses	14	14.0

Table 2. Percentages distribution of the studied patients regarding to medical data (n=100)

Variables	N.	%
1. Cause of the kidney disease		
• systemic arterial hypertension	22	22.0
• systemic arterial hypertension-diabetes mellitus	2	2.0
• Other	22	22.0
• kidney diseases	54	54.0
2. Dialysis duration		
• <1year	20	20.0
• 1-5years	40	40.0
• >5	40	40.0
3. Number of previous AVFS		
• 1	18	18.0
• 2	22	22.0
• >3	8	8.0
• Present AVFS	52	52.0
4. Sources of information on fistula care		
• Physician	26	26.0
• Nurse	42	42.0
• Physician & nurse	22	22.0
• No	10	10.0
5. Has your family planned training in fistula care		
• No	100	100.0

Table 3. Percentages distribution of self-care behaviors scale for studied patient

Self-care Level	N.	%
Inadequate self-care	78	78.0
Adequate self-care	22	22.0
Mean±SD(range)	85.9±10.1(68.0-106.0)	

Table 3 illustrated that (78%) of studied patients had inadequate self-care behaviors and only (22%) of them had adequate self-care behaviors.

Table 4 showed that there was a highly significant difference between self-care behaviors of studied patients and their age and educational level of them. There was no significant difference between self-care behaviors of studied patients and their sex, marital status, employment and income status.

Table 5 mentioned that there was a highly significant difference between self-care behaviors of studied patients and number of arteriovenous fistula, duration of AVF and source of information on fistula care.

Table 4. Relation between socio demographic data and self-care behaviors scale

Variable	self-care behavior scale				P. value
	Inadequate self-care		Adequate self-care		
	N.	%	N.	%	
1. Sex					
• Male	48	61.5	14	63.6	0.858
• Female	30	38.5	8	36.4	
2. Age group					
• from 20- 30 years	14	17.9	4	18.2	0.001**
• 31-40 years	20	25.6	14	63.6	
• 41-50 years	10	12.8	4	18.2	
• more than 50 years	34	43.6	0	0.0	
Mean SD	45.21±12.42		36.27±7.43		0.002**
3. Education level					
• Illiterate	22	28.2	0	0.0	<0.001**
• reading and writing	26	33.3	4	18.2	
• secondary school	24	30.8	18	81.8	
• University	6	7.7	0	0.0	
4. Marital status					
• Married	66	84.6	22	100.0	0.050
• Single	12	15.4	0	0.0	
5. Employment					
• Employed	12	15.4	4	18.2	0.609
• Unemployed	60	76.9	18	81.8	
• Student	2	2.6	0	0.0	
• Retired	4	5.1	0	0.0	
6. Income status					
• less than expenses	68	87.2	18	81.8	0.522
• Equal to expenses	10	12.8	4	18.2	

Table 5. Relation between Medical data and self-care behaviors scale

Medical data	Self-care behaviors scale				P. value
	Inadequate self-care		Adequate self-care		
	N.	%	N.	%	
1.Cause of the kidney disease					
systemic arterial hypertension	12	15.4	10	45.5	0.024*
systemic arterial hypertension-diabetes mellitus	2	2.6	0	0.0	
Other	18	23.1	4	18.2	
kidney diseases	46	59.0	8	36.4	
2.Dialysis duration					
• <1year	20	25.6	0	0.0	0.025*
• 1-5years	28	35.9	12	54.5	
• >5	30	38.5	10	45.5	
3. Number of previous AVFS					
• 1	10	12.8	8	36.4	<0.001**
• 2	12	15.4	10	45.5	
• >3	8	10.3	0	0.0	
• Present AVFS	48	61.5	4	18.2	
4. Sources of information on fistula care					
Physician	18	23.1	8	36.4	0.001**
Nurse	34	43.6	8	36.4	
Physician &nurse	22	28.2	0	0.0	
Health care provider	4	5.1	6	27.3	
5. Has your family planned training in fistula care					
• No	78	100.0	22	100.0	-

4. Discussion

Hemodialysis patients ought to perform health care practices based on their needs [9]. The major cause of financial resources embattling is the vascular access. Vascular access failure account for twenty to twenty-four percent of patients who admitted to hospital on dialysis [10].

Many vascular access rules suggest that patients ought to be instructed concerning vascular access care [11]. So it is necessary to teach patients about AVF during dialysis, treatment [12]. Patients ought to maintain self-care practices with their arteriovenous fistula keeping in mind the end goal to keep up it in the optimal condition, since its state influence the viability of the dialysis treatment [13]. Few is known about the care which actually performed by patients concerning their arteriovenous fistula although self-care with AVF has gangly been recognized as vital [14].

The present study revealed that the highest percentages of studied patients their age ranged from 30-40 and more than 50 years. This results disagreed with [15] who stated that most age ranges between fifty and seventy years and few patient were below 50 years.

Regarding gender the current study showed that; more than half of the studied patients were male .This findings are in accordance with [16] who mentioned that fifty-five percent of patients on hemodialysis were male.

As regard the educational status; more than one third of the studied patients were secondary education this findings is contradicting with [17] who stated that about one third of patients were primary school graduate.

As regards distribution of the studied patients regarding to medical data results revealed that more than half of studied patients had kidney diseases.

In relation to sources of information on fistula care , the present study results revealed that more than one third of the studied patients received information from the nurse however this result disagree with [11] who reported that about two thirds of patients had received their information from the physician.

Considering dialysis duration results show that more than one third of patients had duration ranged from 1-5 years and more than 5 years dialysis duration this findings agree with [18] stated that dialysis treatment time was at the average of 31.2 months.

Regarding the self- care behaviors scale for studied patients the present study results concluded that; more than three quarters of patients had low frequency and in adequate self-care behaviors while less than one quarter of them had high frequency and adequate self-care behaviors this findings agree with [17] who mentioned that; despite most patients have favorable attitude toward the care of the fistula, their knowledge and practice were insufficient. On the other hand [7] concluded that; over eighty percent of self-care behaviors that are intended to the verification and maintenance of functionality AVF were done by patients. However, there were patients who perform these self-care behaviors in a very low percentage (21.88%) so they are requiring education.

Concerning the relation between socio demographic data and self-care behavior study findings indicated that; there were highly significant differences between self-care

behaviors of studied patients and their age and educational level this result agreed with [19] who declared that self-care decreases with increasing age of the individual. As the education level rise, learning would be easier and individual interest is greater in the preservation and promotion of health & there is a significant relationship between patient education and their self-care performance. Study findings also revealed that non-significant difference was observed between self-care behaviors of studied patients and their sex, marital status, employment and income status.

As regard the relation between medical data and self-care behaviors scale results revealed that; there was a highly significant difference between self-care behaviors of studied patients and number of arteriovenous fistula, duration of AVF and source of information on fistula care this findings are in accordance with [15] who stated that: self-care behaviors frequency of augments with the fistula period, is decreased for patients with a previous fistula and for patients who got their information from the doctor .

5. Conclusion

There was highly significant difference between self-care behaviors of studied sample and number of arteriovenous fistula, duration of AVF.

6. Recommendation

Application of self-care- behaviors nursing brochure for patients with arteriovenous fistula in hemodialysis patients.

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