

# Application of Self-Care Behaviour Scale for Arterio Venous Fistula Among Hemodialysis Patients

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## ABSTRACT

**Objectives:** To evaluate self-care behavior for Arterio Venous Fistula among Hemodialysis Patients

**Methods:** Descriptive research was carried out using a scale to assess the self-care habits of dialysis patients with CKD. The study was conducted on (5) teaching hospitals in Baghdad City from the Artificial Kidney Centers divided into three Health Directorate:

**Results:** Result show that the highest evaluation rate for Item(No.3) I do compression of puncture sites with the fingers (hemostasis). in the rate of RS%(70.72)rated fair self-care behaviors" While the lowest evaluation rate for item No. 25 (I shave the hairs on the fistula arm( in the rate of RS% (31.44)rated Poor self-care behavior. Majority of patients in this study experienced with a fair level of knowledge regarding self-care behaviors of AV fistula 425 (85.0%).

**Conclusions:** Majority of patients in this study experienced with a fair level of knowledge regarding self-care behaviors of AV fistula.

**Keyword:** Self-Care, Behavior Scale, Arteriovenous Fistula

## INTRODUCTION

Chronic kidney disease is a chronic disorder marked by functional impairments in the kidney caused by a variety of factors. Chronic renal disease is defined as a loss of kidney function with less than 60 mL/min per 1.73 m<sup>2</sup> estimated glomerular filtration rate (eGFR)<sup>(1)</sup>, or Albuminuria, hematuria, or abnormalities discovered via laboratory tests or imaging and present for at least 3 months are indications of kidney impairment<sup>(2)</sup>.

The global burden of chronic kidney disease is considerable and growing: chronic kidney disease affects roughly 10% of people globally, resulting in 1.2 million deaths and 28.0 million years of life lost each year<sup>(3)(1)</sup>.

By 2040, Chronic renal disease is expected to overtake cancer as the world's fifth highest cause of death, with one of the most significant anticipated rises of any major cause of death<sup>(5)</sup>.

By connecting the vascular access point to a dialyzer machine, which serves as a pump to circulate and filter blood before returning it to the patient, toxins and waste materials are removed from the bloodstream. Vascular access is required for hemodialysis, which can be achieved by an arteriovenous fistula, graft, or central venous catheter. An arteriovenous fistula connects an artery and a vein in the forearm or upper arm. An arteriovenous fistula increases the pressure in the vein and allows more blood to flow into it, causing it to grow large and robust. The bigger vein allows for simple and consistent access to blood vessels [National Kidney and Urologic Diseases Information Clearing house]<sup>(6)</sup>.

Vascular access is considered the lifeblood of patients on maintenance HD and is required to achieve high levels of dialysis efficiency. The optimum vascular access should have a number of features, the most essential of which are: easy insertion; enough blood flow for efficient dialysis; high primary patency rates; minimal rates of problems and adverse effects; long-term viability; and cheap economic expenses<sup>(6)</sup>.

Autologous arteriovenous fistulas (AVFs), prosthetic grafts (AVGs), and central venous catheters are now the three most often utilized vascular accesses for extracorporeal hemodialysis (CVCs). According to main standards, the AVF is the best vascular access for HD<sup>(7)</sup>. This is due to the fact that, when compared to both grafts and CVCs, they have lower rates of morbidity and death. However, the utilization of various vascular accesses varies a lot depending on where you live<sup>(8)</sup>.

## METHODOLOGY

**Design of the study:** Descriptive research was carried out using a scale to assess the self-care habits of dialysis patients with CKD.

**Ethical Consideration:** One of the basic principles for protecting the participant's beliefs and dignity before gathering data is ethical

considerations. The Ethical Committee of the Nursing College at the University of Baghdad gave its formal permission .

The researcher undertakes to keep the study subjects' personal information private and to utilize the data collected in a way that is not harmful to them. The study instrument was developed to ensure that the subjects' right to privacy and data confidentiality was protected. The subjects' involvement was entirely voluntary. Subjects were given the opportunity to read the research questionnaire and study procedures to ensure that they were aware of all pertinent information.

**The setting of the study:** The study was conducted on (5) teaching hospitals in Baghdad City from the Artificial Kidney Centers divided into three Health Directorate:

Medical City Directorate: Baghdad Teaching Hospital Rusafa Health Directorate: Al-Kindy Teaching Hospital. Karkh Health Directorate: Al-Yarmook Teaching Hospital, Imamain Kadhmemain Medical City, and Al-Karama Teaching Hospital\Al-Hayat Center for hemodialysis.

**The purposive sampling method was used in the current study:** Purposive sampling is a non-probability sample that is chosen depending on demographic characteristics and the study's goal. Selective or subjective sampling is another name for it. It is a sampling strategy in which the researcher chooses people of the population to participate in the study based on judging criteria. The selection of this kind was made in accordance with the study's present design.

After obtaining the official approvals from all the aforementioned parties including The College of the Nursing, the University of Baghdad; the Rusafa Health Directorate, the Karkh Health Directorate, and the Medical City Directorate. The researcher started by conducting the pilot study.

The researcher began collecting samples from February 1st, 2022 to 17th May 2022 from the Medical City Directorate: Baghdad Teaching Hospital Rusafa Health Directorate: Al-Kindy Teaching Hospital Karkh Health Directorate: Al- Yarmook Teaching Hospital, Imamain Kadhmemain Medical City, and Al-Karama Teaching Hospital\Al-Hayat Center for Hemodialysis after coordination with officials of the dialysis wards to facilitate the necessary processes in collecting the samples. The researcher wore Personal Protective Equipment (PPE): gloves, surgical mask and over shoes cover.

The researcher interviewed patients with hemodialysis and the patients responded first by signing the informed consent form.

**Inclusion Criteria:** The study sample included adult patients of both gender, native Arabic speakers, who were diagnosed with CKD. Regarding vascular access, patients who are included in this study should have arteriovenous fistula at least one year or more.

**Exclusion Criteria:** The study sample will exclude:

- 1 Patients who do not have arteriovenous fistula as vascular access for hemodialysis.
- 2 Patients who have arteriovenous fistula for less than one year.
- 3 Patients who do not read and write.
- 4 Patients who refuse to participate in the study.

**Reliability of instrument and pilot study:** In order to determine the questionnaire's dependability. A pilot research was done on 31 patients, or 6% of the overall study population, who visit hospitals and artificial kidney facilities. These patients were omitted from the original study group because certain adjustments were made to improve the tool. Who are chosen from the Iraqi Center for Hemodialysis at the Baghdad Teaching Hospital in the Medical City? The pilot research was conducted from January 21st through January 28th, 2022, using the original sample.

## RESULTS

Table 1: Study Sample Demographic Data

Demographic Data	Rating and Intervals	Frequency	Percent
Age / Years	Less than 20	2	.4
	20 – less than 30	26	5.2
	30 – less than 40	90	18.0
	40 – less than 50	138	27.6
	50 or more	244	48.8

Table 2: Evaluation of Patients' Self-Care Behaviors

Items	Mean	Std. Deviation	RS%	Evaluation
1- I wash the fistula arm with soap and water before entering the hemodialysis room.	2.38	1.176	47.68	Fair
2- I inform the nurse when I have cramps during hemodialysis.	2.78	1.145	55.6	Fair
3- I do compression of puncture sites with the fingers (hemostasis).	3.54	1.255	70.72	Fair
4- I control the amount of fluid I drink at home.	2.75	1.085	55	Fair
5- I inform the nurse when I get a headache and chest pain during hemodialysis.	2.63	1.073	52.56	Fair
6- I apply ointment when hematoma occurs.	2.99	1.216	59.76	Fair
7- I apply ointment when hematoma occurs.	1.96	1.080	39.16	Poor
8- I do compression of puncture sites using tweezers.	1.94	1.172	38.72	Poor
9- I remove dressings of the puncture sites at night or the next day to hemodialysis.	2.72	1.057	54.32	Fair
10- I apply ice during the first 24 hours at the local hematoma.	2.06	1.010	41.16	Poor
11- I remove crusts from puncture sites of the fistula at home	2.19	1.105	43.8	Poor
12- I apply heat on local hematoma after the first 24 hours.	2.97	1.222	59.36	Fair
13- I feel the thrill at the site of the fistula twice a day.	3.25	1.189	64.96	Fair
14- I do compression at home at puncture site if bleeding occurs.	3.25	1.164	65.04	Fair
15- I check every day if the hand of the fistula arm cools.	2.84	1.132	56.88	Fair
16- I observe signs of redness and swelling at the puncture sites.	2.12	1.022	42.4	Poor
17- I allow blood pressure to be evaluated using the fistula arm.	1.60	.826	31.96	Poor
18- I protect the fistula arm from scratches, cuts and wounds.	3.46	1.196	69.16	Fair
19- I check every day if the color of the hand from the fistula arm changes.	2.99	.986	59.88	Fair
20- I apply ointment in local hematoma in the days of hemodialysis.	2.01	.860	40.28	Poor
21- I use tight clothes in the fistula arm.	2.63	1.017	52.68	Fair
22- I protect the fistula arm from bumps and shocks.	3.52	1.081	70.4	Fair
23- I sleep over the fistula arm	2.83	1.273	56.68	Fair
24- I allow blood sampling in the fistula arm.	2.04	.769	40.88	Poor
25- I shave the hairs on the fistula arm.	1.57	.987	31.44	Poor
26- I address the nurse if the hand of the fistula arm start to hurt.	3.48	1.151	69.64	Fair
27- I avoid getting into places with different temperatures.	2.60	1.255	52	Fair
28- I use bracelets and watches on the fistula arm	2.29	1.016	45.84	Poor
29- I carry weights using the fistula arm.	2.63	1.086	52.68	Fair
30- I immediately go to hospital or a clinic if fistula has not thrill.	2.53	1.081	50.52	Fair
31- I allow blood sampling in the fistula arm.	2.54	1.242	50.84	Fair

Poor self-care behaviors (mean of scores 1-2.33), fair self-care behaviors (mean of scores 2.34-3.67), good self-care behaviors (mean of scores 3.68 -5).

Table 2 shows that the highest evaluation rate for Item No. 3 (I do compression of puncture sites with the fingers (hemostasis). in the rate of RS%(70.72)rated fair self-care behaviors" While the lowest evaluation rate for item No. 25 (I shave the hairs on the fistula arm) in the rate of RS% (31.44)rated Poor self-care behaviors.

Poor self-care behaviors (mean of scores 1-2.33), fair self-care behaviors (mean of scores 2.34-3.67), good self-care behaviors (mean of scores 3.68 and more).

	Total	500	100.0
Gender	Male	232	46.4
	Female	268	53.6
	Total	500	100.0
Education Levels	Primary	318	63.6
	Medium	141	28.2
	Preparatory	32	6.4
	University	9	1.8
	Total	500	100.0
Marital Status	Single	24	4.8
	Married	461	92.2
	Widowed / divorced	9	1.8
	Separate	6	1.2
	Total	500	100.0
Do you know about self-care behaviors?	No	500	100.0
Monthly Income	Not enough	500	100.0

Table (1) shows that almost half 244 (48.8%) of patients age were (+51) years old, more than half 268(53.6%) were female, Majority of them 461 (92.2%) were married and most of them 318 (63.6%) were primary school as an educational level.. All of patients reported that monthly income was not enough 500 (100%).

Table 3 shows that majority of patients in this study experienced with a fair level of knowledge regarding self-care behaviors of AV fistula 425 (85.0%).

Table 3: Overall Evaluation of Self-Care Behaviors

Main studied domain	Levels	Frequency	Percent
Overall Evaluation of Patients' Self-Care Behaviors	Poor	75	15.0
	Fair	425	85.0
	Total	500	100.0
Mean (std. Dev.)	2.6 (0.28)		

## DISCUSSION

**Discusses The Characteristics of Patients:** Respondents' demographic data from the questionnaire was seen in Table (1).

According to the results of the current research, table (1) revealed that more than half of the respondents were females and less than half were males in the study. This finding is not consistent with that reported by<sup>(9)</sup> a total of 111 patients in a prospective and observational study. Those who discovered that more than half of the participants in their study participants (%66.3) were men, while %33.7 were women. Similarly, it is not consistent with the findings of Sousa et al.<sup>(10)</sup>, who found that about 65.2 percent of them were male respondents and about 34.8 percent were male.

Half of the participants were at the age of (more than 51 years old). This finding is in accordance with that reported<sup>(11)</sup>, who found that the average age of the participants was 37 years old (age range: 22–70 years old).

Regarding marital status, table (1) shows that most of them 92.2%, were married. This conclusion was consistent with a study reported by<sup>(13)</sup>, who found that about 83.3 percent of them were married patients.

Most of the study sample 63.6% were in primary school at the educational level. The study's findings did not match those of Clemente Neves<sup>(10)</sup> A study evaluating the impact of a structured intervention on the frequency of self-care behaviors in people who have an arteriovenous fistula (AVF) by hemodialysis patients discovered that 48.3 percent of patients had a junior high school education or less.

All the patients reported that their monthly income was not enough. This finding is not consistent with that reported by<sup>(13)</sup>, who discovered that half of the participants in their study participants (%51.9) reported medium income.

**Discusses of Assessment of Patients' Self-Care Behaviors:** This study has shown in Table (2), the assessment of patients' self-Care behaviors. That is the highest evaluation rate for "I do compression of puncture sites with the fingers hemostasis". While the lowest evaluation rate for item, "I shave the hairs on the fistula arm" rated Poor self-care behaviors". The reliability finding of the tool used was statistically acceptable on the level (0.74).

A research that compared the effects of two distinct hand workouts on vascular maturation and hand strength in arteriovenous fistula surgery patients<sup>(14)</sup>. The results showed that GD Grip hand squeezing exercise was more effective in increasing tip and palmar pinch strength than softball hand squeezing exercise, which is consistent with the current study. In the metric analysis of a previous study conducted by Stavropoulou et al.,<sup>(15)</sup> Two items ("I wash the fistula arm with soap and water before hemodialysis" and "I administer heat to a local hematoma after the first 24 hours") were shown to have a poor total score association. Subscale management of signs and symptoms refers to a series of self-care acts that the patient recognizes or feels as variations in the functioning of the AVF. In the subscale avoidance of complications, items related to self-care methods to avoid or recognize AVF issues, such as infection, thrombosis, and steal syndrome, are grouped together.

The organized study by<sup>(16)</sup> that is in agreement with the present study, The Scale of Assessment of Self-Care Behaviors for Arteriovenous Fistula in Hemodialysis in Brazil has high psychometric properties for measuring self-care behaviors in patients with AVF in that country. The overall scale, the Self-care in the Management of Signs and Symptoms subscale, and the Self-care in the Prevention of Complications subscale all had internal consistency ratings of 0.920, 0.810, and 0.884, respectively. This metric is crucial for determining which AVF patients engage in self-care activities.

However,<sup>(17)</sup> found in a cross-sectional study conducted on 110 patients undergoing hemodialysis in Isfahan Ali-Asghar hospital for 9 months, there was a significant association between some nursing techniques such as cannulation technique, being aware of the pump speed at the patients' self-care techniques such as doing fistula exercising and not sleeping on the limb with fistula, and the dimensions of the aneurysm.

Table (3) shows that the majority of patients in this study experienced with a fair (%85) level of knowledge regarding self-care behaviors of AV fistula.

According to Clemente Neves<sup>(18)</sup> that found, that agreed with the current study, Patients engaged in self-care activities with AVF at a rate of 71.0 percent, which is lower than predicted and below an acceptable level. Furthermore, only a small percentage of patients conducted all self-care actions, and none of the patients engaged in all of the self-care activities and when compared to the scale validation research, patients in the current sample showed greater self-care behaviors with AVF. Another study found that 97.7% of 30 hemodialysis patients with End-Stage Renal Disease (ESRD) had insufficient self-care habits with AVF<sup>(19)</sup>. There are great variations in behaviors of self-care between both study findings.

Consistent with Vincent et al.,<sup>(21)</sup> medical experts believe that CKD patients often have a wide variety of responses. Furthermore, due to a variety of challenges, as well as physical and psychological issues, which agreed with the current study.

Their study, which looked into the knowledge of (n=31) patients with chronic renal disease on self-care with AVF, discovered that the score of correct answers for the 24 questions ranged from 15 (62.5%) to 24 (100%), with 81.2 percent of the patients having a score greater than or equal to 20 correct answers, implying that the patients had knowledge of the actions required for self-care, although there are gaps in knowledge about these, that approved with the current study.

## CONCLUSION

Most of the patients more than 51 years old. More than half of them were female. The Majority of them were married. , All of the study subjects did not have knowledge about self-care AVF.

The Majority of patients in this study experienced with a fair level regarding AVF self-care behaviors.

**Recommendation:** Updating and supporting nurses' knowledge and practices by promoting and stimulating them to contribute in private training programs on self-care behaviors of AVF, to improve their patient-education performance, which can positively affect patients' behaviors. Hemodialysis units must have educational posters that contribute to raising the patient's awareness of self-care behaviors of AVF. Conducting more extensive and comprehensive studies, as it covers in other governorates of Iraq, and also covers a larger number of patients.

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