

## Effectiveness of Nursing Intervention Regarding Newly Placed Arteriovenous Fistula Self-Care on Level of Knowledge, Practice, and Attitude among Hemodialysis Patients

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**Abstract: Background:** once renal dialysis is started, changes in everyday life are predictable, and patients can suffer from both psychological and physical symptoms. Therefore, to obtain the best results from renal dialysis active self-management is required. **Aims:** This study attempts to evaluate the effectiveness of nursing intervention regarding newly placed arteriovenous fistula self-care on the level of knowledge, practice, and attitude among hemodialysis patients. **Design:** Quasi-experimental design. **Setting** This study was conducted in the hemodialysis unit at Teaching and University Hospitals, Menoufia governorate, Egypt. **Study Subjects:** A purposive sample of 90 patients with end-stage renal disease undergoing hemodialysis. **Data collection** was conducted using **two tools**; interviewing questionnaire sheet for assessment of the knowledge, self-care practices sheet, and a scale of assessment of self-care behaviors with arteriovenous fistula in hemodialysis. **Results:** There is a highly statistically significant difference in knowledge about AVF, and the attitude and practice that was obviously improved after the intervention. **Conclusions:** Nursing intervention regarding newly placed arteriovenous fistula self-care has a positive effect on the level of knowledge, practice, and attitude among hemodialysis patients. **Relevance to clinical practice;** Based on the study finding, it is needed to describe clear intervention protocols to assess self-care with the AVF by patients with ESRD, in order to develop strategies for self-care for the person with an AVF.

**Keywords:** knowledge, practice, attitude, Self-care, fistula

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### I. Introduction

End-stage renal disease (ESRD) has become a worldwide health concern. In developing countries like Egypt, as About 400,000 people worldwide are suffering from chronic renal failure; more than 300,000 are under HD treatment <sup>(1)</sup>. When renal dialysis is initiated, changes in everyday life are inevitable, and patients can suffer from both psychological and physical symptoms. Hence, to obtain the best results from renal dialysis active self-management is required <sup>(2)</sup>.

Effective hemodialysis treatment is dependent on well-functioning vascular access which has good blood flow. The best access for longevity and lowest association with morbidity and mortality was arteriovenous fistula (AVF), followed by arteriovenous grafts (AVG's) <sup>(3)</sup>

An arteriovenous (AV) fistula is a type of access used for hemodialysis. The fistula is located under the skin and is used during dialysis to access the bloodstream <sup>(4)</sup>. An AV fistula must mature for several weeks or months before it can be used for hemodialysis, so after it is surgically created, need to make strengthening it. The more access arm exercises strengthen it; the sooner will be able to use fistula. Certain arm and finger exercises will strengthen the fistula and these exercises will depend on where the fistula is located. That is usually located in the forearm or upper arm <sup>(5)</sup>.

The arteriovenous fistula (AVF) is the favored vascular access for hemodialysis (HD) and is supported in The Clinical Practice Guidelines for Vascular Access of the National Kidney Foundation's Dialysis Outcomes Quality Initiative (KDOQI) that recommend the use of fistulae over grafts, as most studies have found fistulae to have fewer complications <sup>(6)</sup>. The current state of hemodialysis access in Egyptian showed most patients are using AVF <sup>(7)</sup>. inappropriately, despite much attention and effort by renal organizations many countries fail to meet evidence-based clinical goals to increase fistula rates, <sup>(8)</sup>. The cannulation skill and nurses' attitude regarding AVFs impact the patient experience with their vascular access <sup>(9)</sup> and on AVF outcomes <sup>(10)</sup>.

Patient education is a groundwork stone to improve AVF use. Both CHD patients and providers report that continuing patient education is a top priority for complete dialysis care <sup>(11)</sup>. Patient education has been

linked with improvement in patient knowledge; however, higher knowledge in dialysis patients is related with adherence to dialysis prescription and dietary recommendations <sup>(12)</sup>, little is identified about the association between patient knowledge and vascular access at the time of, and the period next, maintenance hemodialysis initiation <sup>(13)</sup>.

Essential care for the maintenance of arteriovenous fistula requires, on the part of health professionals and patient, which need to orient patients about self-care in the management of its new vascular access. When thinking in care with the arteriovenous fistula, detects a range of actions to be undertaken in the preoperative period of making of the AVF. The period of maturation, before, during and after the sessions of HD provides from this care performed greater durability to the fistula <sup>(14)</sup>.

The knowledge of the information in the maintenance of access can affect the attitude and the appropriate practice of the management of patients which include performing antisepsis with antiseptic solution before the HD. It ties the puncture in the AVF to maintain adequate distance to the arterial punctures (3 cm) and venous anastomosis (5 cm from the arterial puncture), to attach properly the needles, avoid circumferential dressings adjusted, save the state of access, avoid carrying weight, not sleeping on the arm, not to allow the checking of blood pressure (BP) and blood collection in the state, do not remove crusts formed by punctures in the region, perform daily exercises in the state in which was the AVF. It proceeds with the proper compression for hemostasis after dialysis, daily check the presence of thrill in the AVF, look for any changes at the site of the AVF, among other types of care <sup>(15)</sup>. Not performing these precautions may complicate the clinical status of patients, requiring more difficult interventions and/or hospitalizations. <sup>(16)</sup>. So; Assessment helps identify the learning needs of the patient and family members <sup>(17)</sup>.

Patient knowledge and education are great means for keeping VA functional and safe and to guarantee positive dialysis treatment. Awareness and teaching processes should start as rapidly as the patient is diagnosed with chronic kidney disease <sup>(18)</sup>. Self –management is not only an individual issue, where the family is often involved in supporting and creating a good environment that helps in maintaining everyday activities to manage CKD <sup>(19)</sup> As giving support to patients who have CKD to eat the correct food and to take their medication. This support is an important aspect of each individual's disease management <sup>(20)</sup>.

Patient education is wanted to increase patients' skills and self-assurance in managing their disease. Obviously, Education should be part of outpatient clinic consultation as a constant training process and long-term follow-up of patients that gives a better considerate of the management. Patient education includes simply appropriate materials and tailored education that involve both in providing written booklets, pictures, videos, social media and discussions of obstacles, during systematic checking of patients' knowledge. <sup>(18)</sup> Important and practical advice after VA as mentioned by Adiloğlu, 2016 <sup>(18)</sup> include for example: 'to uplift the arm slightly to prevent swelling; to use the other hand to feel VA thrill; to avoid sleeping on the fistula arm, wearing tight sleeve, carrying heavy weights, violent sports or activity that may cause a trauma to the AVF; to avoid blood pressure measurements, blood sampling and IV injections on the VA; to ask dialysis nurse to check AV patency if patient is already on dialysis via a CVC'. Nurses play a vital role in the management of all VAs. VA assessment, cannulation, and care are required skills for dialysis nurses: failure to correctly do this process may result in sever complications for the patients.

### **Significance of the study:**

The burden of chronic disease as renal failure is growing worldwide. In developing countries, there is no electronic data registry and only scare data were available about the epidemiology of dialysis patients. In Egypt, there are nearly 56,000 HD patients all over the country as recorded by the Egyptian Ministry of Health registry <sup>(21)</sup>. The estimated prevalence of patient on dialysis in Egypt is 80, 4532 of 76, 117, 42122 <sup>(22)</sup>. The prevalence rate of end-stage renal disease in Menoufia Governorate where it is considered the setting of the study was 330 patients per million populations (pmp). <sup>(23)</sup>. The prevalence of ESKD patients on regular HD in Menoufia governorate, Egypt, is steadily rising then that previously reported, <sup>(24)</sup> So it is important to perform patient education regularly because it increases the level of awareness towards illness and interventions which aid patients to better manage their conditions <sup>(25)</sup>

**Aim of the study:** To evaluate the effectiveness of nursing intervention regarding newly placed arteriovenous fistula self- care on level of knowledge, practice, and attitude among hemodialysis patients.

### **Research hypothesis:**

- 1- The study group subjects who exposed to nursing intervention exhibit improving at mean knowledge score compared to the control group subjects who do not expose.
- 2- The study group subjects who exposed to nursing intervention exhibits satisfied practice compared to the control group subjects who do not expose.

3-The study group subjects who exposed to nursing intervention exhibits more compliance/ attitude (fewer barriers) compared to the control group subjects who do not expose.

## **II. Subjects and Methods**

**Design:** to estimate the causal impact of an intervention on its target population the current study utilizes Quasi-experimental design

**Setting** This study was conducted in the hemodialysis unit at Teaching and University Hospitals, Menoufia governorate, Egypt.

**Study Subjects:** A purposive sample of **90** patients with end-stage renal disease undergoing maintenance hemodialysis who present in the hemodialysis unit were assigned randomly into two groups: study and control group (45 patients for each group). After matching the following criteria

### **Inclusion criteria**

- Hemodialysis with AV. fistula.
- adult patient  $\geq 18$  years, both sexes
- Willing to participate in the study.
- Available at the time of data collection.
- Didn't receive any educational interventions regarding AVF care

### **Exclusion criteria:**

- Extreme age
- Mental disorder
- Inability to care for self

**Tools:** after an extensive review of related literature so as to achieve the aim of the study two tools were used. Toll I: an interviewing questionnaire sheet had been developed by the investigators. **This tool included the following four parts**

**Tool 1:** an interviewing questionnaire sheet had been developed by the investigators. **It included the following parts;**

**Part 1: Section A: Demographic variables** consist of baseline information of patients regarding identification, social and economic information, and dialysis therapy, sex, age, marital status, urban or rural area, education, occupation, social status, time on dialysis treatment, and time using the AVF.

**Part2: Section B: Structured questionnaire regarding knowledge on care of AV fistula;** It was developed by researchers to assess patients' knowledge; it includes 7 items as following: a) Meaning of AV fistula, b) Purpose of AV fistula, c) After cannulation care of AV fistula, d) what precautions should be taken?, e) What actions should not be done in the arm with the fistula? f) What procedures should not be done in the arm with the fistula? And g) How hygiene should be done in the arm with the fistula?

**Scoring system:** For the knowledge items, a correct response was scored 2, the partially true answer was scored 1 and the incorrect or wrong answer scored zero. The scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a percent score, and means and standard deviations were computed. Knowledge was considered Scores less than ( $< 50\%$ ) unsatisfactory level of knowledge, - Scores from ( $50 \geq 75\%$ ) were considered the satisfactory level of knowledge. And Scores from ( $>75\%$ ) were considered a good level of knowledge.

### **Part III: Section c: Structured questionnaire regarding Practice:**

It was constructed by interviewers for assessment of care practices in relation to disease process: the aim of this part is to assess specific self-care practice related to the disease process and carried out by the patient .it has two parts as following:

**A: Self-care practice for arterio-venous shunt: contains 4 items:** a) sleep on the arm /side of the shunt, b) wear jewelry or tight slaves on the arm of the Shunt, c) Measure BP or take blood sample from the arm of the shunt, and d) Carry heavy things by the arm of the shunt.

**B: practiced care by patient for arterio-venous shunt: contains 9 items** a) Palpate and check thrill on the site of the shunt, b) Check for pulsation over shunt, c) Check for hardness or pain in the arm with the shunt, d) Check for redness or leakage, e) Check for bleeding from needle puncture site, f) Check for numbness over the arm of shunt, g) Use hot compresses for cleaning site of shunt site, h) Apply ointment over the shunt, and i) keep the site of shunt dry and clean

**Scoring system:** arranged as a Likert scale of 5 points, ranging from 1 "never develop this self-care" to 5 "always develop this self-care as following: 1=Never, 2=rarely, 3=some days, 4=most of the days, 5=all the

days; Scoring range from 13 to 65; the scores of all items were summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a percent score, and means and standard deviations were computed. The practice was considered poor, mild, moderate, good, and better.

**Tool 2: A scale of assessment of self-care behaviors with arteriovenous fistula in hemodialysis: (ASBHD-AVF) ASBHD-AVF** (<sup>26</sup>); to assess the quality of self-care behaviors/ attitude in the maintenance and preservation of AVF in HD patients: AVF consists of 16 items with a total value of Cronbach's alpha of 0.797. This is a scale composed of two subscales: management of signs and symptoms and prevention of complications. The first subscale consists of six items with a Cronbach's alpha value of 0.797 and the second subscale consists of 10 items with a Cronbach's alpha value of 0.722. The ASBHD-AVF revealed properties that allow its use to assess the self-care behaviors of patients on HD in the maintenance and upkeep of the arteriovenous fistula (SOUSA et al, 2015). These scores were transformed into a percent score, and means and standard deviations were computed. The attitude was indicated as poor, mild, moderate, good, and better.

### **III. Validity And Reliability**

Structured interview knowledge questionnaire sheet and structured practice of AVF were given to a panel of 3 experts in the field of medical-surgical nursing and 2 renal dialysis physicians to obtain the agreement with the scope of items and to examine the extent to which the items reflect the concepts under study. A scale of assessment of self-care behaviors with arteriovenous fistula in hemodialysis: (ASBHD-AVF) was taken as its reliability was done (Cronbach's Alpha. 0.62) and the reliability test used for structured practice assessment inter-rater reliability test was 100% agreement.

#### **Data collection and intervention:**

- Data was collected from June 2017 to June 2018; the researchers assessed the knowledge, self-care practice of AVF and self-care behaviors (attitude) with arteriovenous fistula in hemodialysis patients by the means of pre-test.
- Teaching plan of nursing intervention includes; all patients on dialysis and through this period determine whose patients recently (2<sup>nd</sup> or 3<sup>rd</sup> time) started dialysis. Then patients were divided into 18 groups; 9 groups at a teaching hospital and 9 groups at university hospital 5 patients per each group. Group per day on 4 days per week with practical hours were 12 hours per week (3 hours on 4 days).
- The researchers interviewed every group on the day of scheduled dialysis and explained the purpose of the study
- Patients were asked to fill in both tools, and then return it to the researchers immediately. It took about 30 minutes. Only patients who had answered the questionnaires entirely were included in the study sample.
- The nursing intervention about the knowledge on the care of AV fistula, self-care practice of AVF and assessment of self-care behaviors (attitude) with arteriovenous fistula in hemodialysis was given to one by one teaching (lecture, booklets, videos, demonstration, and return-demonstration). The researchers make feedback to ensure understanding. After 2 weeks of nursing intervention, the researchers assessed the knowledge, self-care practice of AVF and self-care behaviors with arteriovenous fistula in hemodialysis by means of post-test. And repeated this measurement after 4 weeks.
- The information of knowledge was collected by interview techniques and skill was done by observational checklist. The data was collected on the first day as a pre-test and 2<sup>nd</sup> post-test for the same data was collected after two weeks, and after four weeks telephone number was available for patients to respond to any request. For control group measurement was taken three times (on the first day of meeting, after two weeks, and after four weeks) without any intervention.

#### **Pilot study:**

A pilot study was conducted on 10% (9) patients who were diagnosed with renal failure and fulfilled the inclusion criteria, was done to evaluate the content and test clarity, relevance, feasibility, objectivity, and applicability of the study tool. The pilot study was also done for estimating the time needed for performing the interview for data collection with each subject.

#### **Administrative and Ethical consideration:**

- An official letter from the ethical committee and the faculty of nursing was carried to the accountable authorities of hospitals to take their agreement to conduct this study. It was obtained after clarifying the purpose of the study.
- Patient's formal agreement to participate in the study was obtained after explanation of the study purpose. Each patient was reassured that secrecy and privacy will be maintained and his or her right to take away at any time.

- The investigator emphasized each interview that participation in the study is totally voluntary; obscurity and secrecy were assured through coding of data. Written consent was obtained from each participant after a complete description of the purpose, nature, and benefits of the study in order to obtain their acceptance as well as to gain their cooperation. Also for the application of secrecy the patients were informed that the collected data from all of them will not be used except for the purpose of research.

**Statistical and data analysis:**

Data gained from the study tools were categorized, tabulated, analyzed and data entry was performed using the SPSS software (statistical package for social sciences version20.0). Descriptive statistics were applied (e.g. mean, standard deviation, frequency, and percentage). A significant level value was considered when  $p < 0.05$ .

**IV. Results**

**Table (I):** Distribution of Socio-demographic data among the studied group

Socio-demographic characteristics	Study group (No=90)	
	No.	%
Age (years): Mean $\pm$ SD	46.4222 $\pm$ 9.16880	
<b>Sex</b>		
Male	41	45.6
Female	49	54.4
<b>Marital status:</b>		
Single	2	2.2
Married	58	64.4
Widow	18	20
Divorced	12	13.3
<b>Educational Levels</b>		
Illiterate	22	24.4
Read & write	2	2.2
Basic	4	4.4
Secondary education	38	42.2
High education	24	26.7
<b>Occupation</b>		
Manual work	20	22.2
Administration work	32	35.6
Not work	8	8.9
Housewife	30	33.3
<b>Residence</b>		
Urban	24	26.7
Rural	66	73.3

**Table (I): Distribution of Socio-demographic data among the studied group:** this table revealed that the mean age of the study group was (46.4222 $\pm$  9.16880) years; nearly half of the participants in the study group were female (54.4) and two-thirds were married (64.4). Regarding the education level, it was observed that 42.2 of the study group had secondary education. It was also observed that most of the patients lived in rural areas (73.3). One-third of the studied sample has administrative work (35.6%) and 33.3% represent housewife. Baseline characteristics were: median age 78 years (range 42 - 90); male (n=12); CKD stages 4 (n=4) and 5 (n=15).

**Table (II):** Percentage distribution of History and Medical data of Studied groups (N=90).

History and Medical data	Study group (No=90)	
	No.	%
<b>Smoking</b>		
Yes	30	33.3
No	60	66.7
<b>Chronic disease:</b>		
Yes	60	66.7
No	30	33.3
<b>If yes</b>		
Hypertension	50	55.6
Diabetes	10	11.1
No	30	33.3
<b>Duration of hemodialysis</b>		
Less than 30 day	74	82.2
30 – 60 day	16	17.8
<b>Duration of fistula</b>		
Less than 30 day	70	77.8
30 – 60 day	20	22.2

<b>Site of fistula</b>		
Arm	80	88.9
Thigh	10	11.1
other	0	0

**Table (II): Percentage distribution of History and Medical data of studied groups;** this table showed that one-third of the studied sample was a smoker and more than half of the study sample (66.7) has chronic diseases, like hypertension (55.6%). Regarding the duration of hemodialysis and fistula, most of the studied sample has started hemodialysis less than 30 day of intervention and arm (88.9%) is the main site for fistula.

**Table (III):** Comparison regarding knowledge between before, after, and at follow-up intervention among the studied group

Knowledge	Pre-intervention		Post-intervention		Follow up		X <sup>2</sup> P
	No	%	No	%	No	%	
<b>Definition of AVF</b>							
Don't know	74	82.2	13	14.3	1	1.2	1.97
Incomplete	11	12.4	43	47.6	14	15.5	.000
Complete	5	5.4	34	38.1	75	83.3	
<b>Benefits of AVF:</b>							
DNK	70	77.8	6	6.5	0	.0.0	2.005
Incomplete	14	15.5	33	37.2	8	8.9	.000
Complete	6	6.7	51	56.3	82	91.1	
<b>Warning signs of AVF:</b>							
DNK	70	77.8	6	6.5	4	.4.6	1.77
Incomplete	16	17.6	25	27.8	8	8.9	.000
Complete	4	4.6	59	65.7	78	86.5	
<b>Action shouldn't be done in the arm with fistula:</b>							
DNK	52	57.5	5	5.4	1	1.2	1.868
Incomplete	36	40.3	11	12.4	6	6.5	.000
Complete	2	2.2	74	82.2	83	92.3	
<b>After creation what precaution:</b>							
DNK	54	60	8	8.9	6	6.5	1.203
Incomplete	24	26.7	33	37.2	10	11.3	.000
Complete	12	13.3	49	53.9	74	82.2	
<b>The procedure shouldn't be done in the arm with fistula:</b>							
DNK	50	55.8	5	5.4	0	0.0	1.254
Incomplete	18	20	12	13.3	6	6.5	.000
Complete	22	24.2	73	81.3	84	93.5	
<b>How done hygiene in the arm with fistula:</b>							
DNK	50	55.6	14	15.5	3	3.2	1.069
Incomplete	30	33.1	18	20	14	15.5	.000
Complete	10	11.3	58	64.5	73	81.3	
<b>What should be done to reduce the loss of weight during treatment:</b>							
DNK	57	63.4	6	6.5	2	2.2	1.368
Incomplete	21	23.3	18	20	11	12.4	.000
Complete	12	13.3	66	73.5	77	85.4	
<b>Training about fistula care :</b>							
Yes	32	35.5	80	88.7	85	94.6	96.461
No	58	64.5	10	11.3	5	5.4	.000
<b>A long period of training</b>							
One time	32	35.5	11	12.4	0	0.0	

Two time	58	64.5	7	7.6	0	0.0	2.183
Three-time	0	0	60	66.7	64	71.4	.000
four-time	0	0	12	13.3	26	28.6	

\*DNK: don't know knowledge

**Table (III): Comparison regarding knowledge between before, after, and at follow-up intervention among studied group;** this table illustrated that there was a highly significant difference to all variables which include regarding knowledge about AVF, Benefits of AVF, Warning signs of AVF, Action, precaution, Procedure shouldn't be done in the arm with fistula, hygiene and loss of weight during treatment and training about fistula ( $P < 0.000$ ).

**Table (IV) Percentage Distribution Regarding Knowledge of Subject Before, After, and at Follow-Up Intervention**

Knowledge	Pre-intervention		Post-intervention		Follow up		X2 P
	No	%	No	%	No	%	
Unsatisfactory	81	90.0	9	10	0	0.0	2.045 000
Satisfactory	5	5.4	21	23.3	12	13.3	
Good	4	4.6	60	66.7	78	86.7	
Mean ±SD	3.4889±1.6641		13.9556±1.5354		14.5111±1.4002		t1=-43.852. t2=-48.079 t3=-2.536

t1, between pre-intervention and post-intervention; t2, pre-intervention, and follow-up; t3 , post-intervention and follow-up.

**Table (IV) Percentage Distribution Regarding Knowledge of Subject before, after, and at Follow-Up Intervention;** the table showed a highly statistically significant difference regarding the mean knowledge score in the study group that improved gradually from (3.4889±1.66419) before intervention to (13.9556±1.5354) after the intervention and then (14.5111±1.4002 ) at follow-up intervention.

**Table (V) number and percentage distribution of Body mass index of the studied sample before, after and at follow-up intervention**

Body mass index	Pre-intervention		Post-intervention		Follow up		X2 P
	No	%	No	%	No	%	
Under weigh	14						21.835 .000
Ideal weight	36	15.5	8	8.9	7	7.5	
Overweight	26	40.3	56	62.4	63	70.3	
Obese	14	28.7	21	23.3	17	19.0	
		15.5	5	5.4	3	13.2	
Mean ±SD	23.04±4.89		22.42±3.99		21.98±3.82		t1=-.934. t2=-1.613 t3=-.743

t1, between pre-intervention and post-intervention; t2, pre-intervention, and follow-up; t3, post-intervention, and follow-up.

**Table (V) number and percentage distribution of Body mass index of the studied sample before, after and at follow-up intervention;** the table showed a statistically significant difference regarding the Body mass index pre, after and at follow-up intervention.

**Table (VI)** number and percentage distribution of Attitude of the studied sample before, after and at follow-up intervention

Attitude	Pre intervention		Post intervention		Follow up intervention		X <sup>2</sup> P
	No	%	No	%	No	%	
• Poor self-care	43	47.6	21	23.3	2	2.2	1.128 .000
• Mild self-care	23	25.8	27	29.2	4	4.6	
• Moderate self-care	17	19.0	28	32.0	29	32.2	
• Good self-care	5	5.4	12	13.3	39	43.4	
• Better self-care	2	2.2	2	2.2	16	17.6	
<b>Mean ±SD</b>	32.87±14.77		[ 40.70±16.87		61.07±9.77		t1=-.330 t2=-15.10 t3=-.991

t1, between pre-intervention and post-intervention; t2, pre-intervention and follow-up; t3, post-intervention, and follow-up.

**Table (VI) number and percentage distribution of Attitude of the studied sample before, after and at follow-up intervention;** this table represented a highly statistically significant difference regarding the attitude among the studied sample that was improved from (32.87±14.77) before the intervention to (40.70±16.87) after intervention and (61.07±9.77) at follow-up intervention.

**Table (VII)** number and percentage distribution of Practice of studied sample before, after and at follow-up intervention

Practice	Pre-intervention		Post-intervention		Follow up		X <sup>2</sup> P
	No	%	No	%	No	%	
• Unsatisfactory	32	35.5	0	0.0	0	0.0	2.824 .000
• Mild	41	45.2	2	2.2	0	0.0	
• Moderate	15	17.1	47	53.6	8	8.9	
• Good	2	2.2	28	32.0	20	22.3	
• Better	0	0.0	13	12.2	62	68.8	
<b>Mean ±SD</b>	35.46±5.46		39.42±5.24		45.73±4.66		t1=-.495 t2=-.135 t3=-.853

t1, between pre-intervention and post-intervention; t2, pre-intervention and follow-up; t3, post-intervention, and follow-up.

**Table (VII) number and percentage distribution of Practice of studied sample before, after and at follow-up intervention;** this table revealed that there was a highly statistically significant difference regarding the practice of studied sample before, after and at follow-up intervention that improved from (35.46±5.469) before intervention to (39.42±5.24) after intervention and then to (45.73±4.66) at follow-up intervention.

### V. Discussion:

Today, self-care dialysis therapies, receiving major consideration including peritoneal dialysis and home hemodialysis, and adoption of these therapies as management for patients with end-stage renal disease (ESRD) is accumulative. However, recently more patients initiate treatment with these therapies than in previous years, there is still a widely believed faith that self-care dialysis opportunities are significantly underutilized. As this study carried out to initiative increases in the number of ESRD patients that hold self-care therapies, it is important to educate patients and their caregivers on these new treatments. In the current study; the mean age of the study group was (46.42± 9.16) years; half of them were female (54.4) and two-thirds were married (64.4). Regarding the education level, 42.2% of the study group had secondary education. It was also observed that most of the patients lived in rural areas (73.3). One-third of the studied sample has administrative work (35.6%) and 33.3% represent housewife. concerning these results; **El-Zorkany;** <sup>(24)</sup> reported that the mean age was 53.18±13.26 years and two-thirds of them were (61.6%) male with a mean duration of dialysis 3.78±3.37 years. Moreover; **Mahmoud & Selim, Raouf;** <sup>(27)</sup> study revealed that higher than one-third of the



studied sample aged between (20-35 years) with a mean ( $40.83 \pm 14.17$ ) years, and most of them were female. Nearly half of the studied group had secondary school education. **Pessoa & Linhares** <sup>(16)</sup>; during their study, the result showed most of the participants as being male (56.7%), with a mean age of 55.4 years. More than half had incomplete primary education; the majority of them did not work and received some caring for social security benefit.

**Regarding History and Medical data;** the present study showed that one-third of the studied sample were smokers and more than half has chronic diseases, like hypertension. Regarding the duration of hemodialysis and fistula, most of the studied sample has started hemodialysis less than 30 day of intervention and arm is the main site for fistula. According to **El-Zorkany** <sup>(24)</sup> around one-third of the studies sample reported that the chief cause of ESKD is hypertension, followed by diabetic nephropathy. Which is the same that reported in several studies **Elminshay et al** <sup>(28)</sup>, [**Ghoney et al** <sup>(6)</sup>], That the most likely reported in the majority of governorates in Egypt; as in Cairo, Canal governorates Minia, the El-Sharkia governorate. The researcher explained that this similarity due to the higher prevalence of hypertension as the most common cause in surveyed patients may be due to the high prevalence of hypertension in Egyptian population <sup>(29)</sup>.

**Regarding patients' knowledge:** The current study illustrated that there was a highly statistically significant difference to knowledge variables as about AVF, Benefits of AVF, Warning signs of AVF, Action, precaution, Procedure shouldn't be done in the arm with fistula, hygiene. Mean knowledge score in the study group had improved gradually from ( $3.48 \pm 1.66$ ) before intervention to ( $13.95 \pm 1.53$ ) after the intervention and then ( $14.51 \pm 1.40$ ) at follow-up intervention. Supporting these results; **Pessoa & Linhares** <sup>(16)</sup>; who studied the evaluation of patients' knowledge that used AVF; the study showed that the majority of the studied sample had inadequate knowledge. While insufficiencies concerning the care of AVF during the curative period; as mentioned by the patients were: reduction of water intake, and washing with soap and water before hemodialysis. Furthermore, also were mentioned by the majority of subjects to avoid: measurement of blood pressure (66.7%), blood collections (60%), and administration of medicines (70%), on the member that has the AVF. On the other hand, only 33.3% of patients knew what to do in case of hematoma formation on the member with the AVF and only 16.7% associated with the interdialytic weight gain to excessive sodium intake.

Some studies showed that educational intervention has a positive effect on knowledge about the disease. **Brown**, <sup>(30)</sup> & **Jakovenko**; <sup>(31)</sup> emphasized that patients suffering from chronic diseases may benefit from educational programs. Similar results were found by **Wells**, <sup>(32)</sup> and **Ebrahimi** <sup>(33)</sup> who has revealed the significant positive impact of an educational session at patients' knowledge levels. Also; **Havas, Douglas, & Bonner** <sup>(34)</sup>; deep-rooted that improvement in knowledge level about kidney disease is essential to self-care practice as sufficient understanding of the Disease process is needed to take appropriate action to self-care. On the same line; **Clementino et al.**, <sup>(15)</sup> when evaluating patients' understanding about the care with the AVF, he showed that more than two thirds of the studied sample scored correct responses and majority of patients knew the importance of washing the arm before the beginning of the HD, the need for conducting manual compression exercises with the ball, the importance of keeping the weight controlled and the protection of the AVF against traumas.

**Concerning Attitude of the studied sample;** there was a highly statistically significant difference regarding the attitude that was improved from ( $32.87 \pm 14.77$ ) before intervention to ( $40.70 \pm 16.87$ ) after intervention and ( $61.07 \pm 9.77$ ) at follow-up intervention. Supporting this result; **Pessoa & Linhares** <sup>(16)</sup>; when considering the attitude, the necessity for self-care with AVF was emphasized by majority of patients as an acceptable attitude; thus, it was recognized that all patients accepted that the self-care affords benefits to the AVF. Moreover; nearly all of the patients felt encouraged performing the self-care and they were ready to carry on those measures. **Silva et al** <sup>(35)</sup> observed a positive attitude towards attaining new knowledge, particularly those that have a direct effect on the disease process as care of the fistula, prevention of complication. From researchers point of view; newly patients in dialysis still have hope and survive to live as they can.

**Regarding patients' self-care practice;** the present study revealed that there was a highly statistically significant difference concerning practice after the intervention that improved from ( $35.46 \pm 5.46$ ) before the intervention to ( $39.42 \pm 5.24$ ) after intervention and then to ( $45.73 \pm 4.66$ ) at follow-up intervention. Supporting these results; **Clementino et al.** <sup>(15)</sup>; emphasized that 'the practice of self-care needed to be encouraged by the nursing staff through support, supply and explanation of guidelines along with chronic renal patients about their disease, clinical manifestations, lifestyle, treatment and care with the AVF'. **Kim** <sup>(2)</sup>; revealed that there was a statistically significant difference regarding self-care score between study and control group after intervention and follow-up.

In accordance; **Mahmoud, Selim & Raouf**; <sup>(27)</sup> reported that the majority of the studied sample achieved their activities of self-care practice independently. **Mahmoud, Selim & Raouf** <sup>(27)</sup> study regarding the care practiced for arterio-venous shunt; the majority of the subjects had good shunt care as 'more than three-quarters of the subjects used to check the thrill over shunt site all the days; as well as check for pulsation. Check for pain or hardness in the arm with the shunt; checking for redness, swelling, or leaking from the shunt site all the days, and checking for bleeding from needle puncture site all the days. About use of hot compress over the shunt more than two-thirds of the studied subjects were most of the days and some of the days'. **Feddersen and Roger** <sup>(36)</sup> since the AVF remains the vascular access of choice in hemodialysis patients that indicate patients should be motivated and stimulated for maintaining and knowing self-care practices for shunt size, to keep it in good working position and avoiding any infection. Similar studies connecting the provision of a self-care improvement program <sup>(38)</sup> and an interactive multimedia **Wang & Chiou** <sup>(39)</sup> for patients receiving maintenance renal dialysis found that, as a consequence, self-care improved while feelings of weakness were improved or constant, confirming that self-care abilities should be developed through the provision of education concerning diet, complications, and preventive measures.

**Ghadam, Poorgholami, Jahromi, Parandavar, Kalani, Rahmanian** <sup>(40)</sup>; mentioned that self-care educational programs were critical for helping patients with renal dialysis. Furthermore, training of HD patients regarding health education had a positive effect on reducing dependency in daily living and function. Awareness of educational programs and counseling of HD patients leads to a clinically and significant improvement. These programs will improve social function, emotional, physical function, general health, (**Bakarman, Felimban, Atta, & Butt** <sup>(41)</sup>).

Hemodialysis patients experience many concerns to self-care behavior. Various self-care intervention programs for hemodialysis patients have been advanced and used, including an educational program **Griva et al.**, <sup>(42)</sup>; **Lin, Liu, Hsu, & Tsai**, <sup>(43)</sup>. Patients require to control of management to improve the self-care. Educational intervention change can be effective in self-care behavior as patients who have a higher knowledge level can help in better recognition of their self-care needs. **Ramezani, Sharifirad, Rajati, Rajati, Mohebi**. <sup>(44)</sup>

## VI. Conclusion

It is essential for the achievement of self-care with the fistula, to keep it functioning for a long time to provide patients with knowledge. However, it also demonstrated gaps in knowledge about the care of patients with the AVF, being required a greater exchange of appropriate guidelines for the care by health professionals, with the aim of patients become independent in their care. Our results highlight the importance of providing self-care on the level of knowledge, practice, and attitude among hemodialysis patients regularly to improve maintenance of HD patients.

## VII. Recommendations

Based on the study findings, the following recommendations are required to be implemented:

- There is a need for continuity of educational program: To increase the level of self-care among dialysis patients, and to be available in all units and provided to newly admitted patients, A family member and caregivers need to attend the educational program sessions to help dialysis patients in case of need. To support patients to perform their activities related to dialysis concerning individual capability.
- To conduct further studies about home self-care of patients undergoing hemodialysis.

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