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ARTERIOVENOUS FISTULA CARE;
KNOWLEDGE, ATTITUDE AND PRACTICE IN ESRD PATIENTS ON HEMODIALYSIS

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ABSTRACT... Objectives: To determine knowledge, attitude and practice regarding AV fistula care in patients of end stage renal disease on hemodialysis. **Study Design:** Cross sectional study. **Setting:** ESRD patients in Nephrology Department of Lahore General Hospital by using self-designed questionnaire. **Period:** Six months from Jan 2017 to June 2017. **Method:** The study included about 141(consecutive sampling) patients of chronic kidney disease using AV fistula for hemodialysis. Data was collected using self designed questionnaire. Data analysis was done using SPSS version 22. **Result:** The most well- known precautionary measures to be taken for arteriovenous fistula care are to avoid taking blood pressure and intravenous line on the arm bearing AV fistula and to avoid trauma and weight lifting with that limb. The knowledge was seen to be particularly deficient about the measures to be taken in case of swelling. The attitude towards AV fistula care was observed to be positive, majority of our study population claimed to follow maximum precautionary measures most of the time, but percentage of practicing does not coincide with that (85.1% vs.74.7% respectively). The least practiced measure is elevation of limb in case of swelling, observed by only 36.9% of our study population. **Conclusion:** Knowledge regarding fistula care was adequate about most of the precautionary measures, most of the participants showed positive attitude towards practicing precautionary measures for fistula care, but number of patients actually practicing these precautions is less than the number of patients that have knowledge about them.

Key words: AV Fistula, Dialysis, ESKD, Fistula Care, Hemodialysis, Self-care in Dialysis.

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INTRODUCTION

End stage renal disease is becoming a growing health problem in Pakistan.[1] A local study conducted in 2015 revealed an incidence of 17 to 35% of end stage renal disease in Pakistan and it is increasing every year.[2] Among the available treatments, hemodialysis is the most accepted and practiced treatment worldwide. A permanent definitive vascular access is required in chronic kidney disease patients to ensure regular and effective hemodialysis over long term with fewer complications. Arteriovenous fistula is the most appropriate vascular access for dialysis patients according to KDOQI guidelines it has longer patency rate, fewer complications, is cost effective and is associated with less mortality than other vascular accesses.[3]

Although arteriovenous fistula is considered the best access for dialysis, still it is associated with various complications like stenosis, thrombosis, infection, aneurysm formation, steal phenomenon and cardiac overload. So to prevent these complications, appropriate care is needed by both health care professionals and patients themselves.

Patients knowledge, attitude and care practice plays the foremost role in preventing complications and hospitalization due to AV fistula as failure to comply with the various precautions due to lack of knowledge and practice will lead to frequent hospitalizations.[4] Several vascular access guidelines recommend that patients should be educated concerning vascular access care. Patients should maintain adequate self-care behaviors with their AV fistulas to maintain it in best condition.[5] Like in arteriovenous fistula maturation period care must be designed to provide greater fistula durability e.g. keeping the

arm elevated, performing daily manual exercises, avoiding tight compression bandages and assessing daily blood flow. Furthermore when using fistula some precautions must be taken as proper compression for hemostasis after dialysis, preventing venous infusions and assessing blood pressure. The knowledge of this information is essential since it influence the attitude and proper practice of self-care in patients with AV fistula.

This research was carried out to identify the knowledge, attitude and practice of self-care in patients with arteriovenous fistula and also to provide support for the development of future educational strategies which would be helpful in changing patient's attitude towards accomplishment of necessary care.

METHOD

A cross sectional study was carried out in End Stage Renal Disease patients in nephrology department of Lahore General Hospital about KAP (knowledge, attitude and practice) of AV fistula care. The study included about 141(consecutive sampling) patients of chronic kidney disease using AV fistula for hemodialysis. Data was collected using self designed questionnaire. Data analysis was done using SPSS version 22.

RESULTS

The study population consisted of total 141 patients, out of which 98(69.5%) were male and 43(30.5%) were females. Of the male population, 92 were employed with occupations as property dealing, driving and businessmen with incomplete primary education while all females i.e. 43 were housewives with little or no education at all.

The evaluation of patient's knowledge about fistula care showed that an average of 83.4% of the patients had adequate knowledge about different aspects of fistula care both during maturation and curative phases. However, deficiencies were observed in various aspects too as about 2.1% of studied population had no knowledge about practicing manual compression exercises during AV fistula maturation period. Similar percentage of population showed ignorance of knowledge in avoiding sleeping with fistula arm under the head

Also deficiencies were found in patient's knowledge about fistula care after maturation phase, as shown in Figure-1. About 43.3% (61) had no knowledge about avoidance of excessive compression on fistula site to maintain hemostasis. Likewise, 25.5 % patients denied knowledge regarding role of cold fomentation in prevention of hematoma formation after fistula use, 56% patient showed ignorance in importance of keeping arm elevated in preventing swelling at fistula site and almost 37% population had no information regarding the significance of washing fistula arm with soap and water before dialysis. The care most mentioned by the patients were avoiding Blood Pressure check from fistula arm (100%), avoiding cannulation at fistula arm (100%), avoiding trauma on limb with AV fistula (100%).

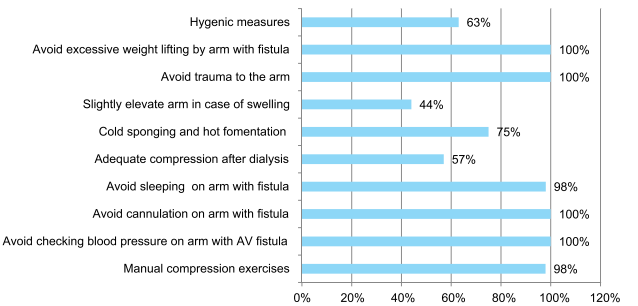

Figure-1. Knowledge of different aspects of arteriovenous fistula care in our study population

In most of our participants, attitude towards AV fistula care was found to be positive. About 44.7 % patients revealed their attempts to take care of fistula and follow all precautionary measures most of the time and 40.4% claimed to take maximum precautionary measures most of the time. Only 11.3% were not motivated enough to practice AV fistula care. The comparison of participants who had the knowledge to those who actually practiced it can be seen in Figure-2.

The self-care practiced by the most patients with AV fistula was of avoiding checking blood pressure from fistula arm and also avoiding cannulation (100%), as can be seen in Figure-2. Other practice of self-care remembered by most of the patients was to avoid sleeping with the fistula arm under the head (95.7) and avoidance of trauma to fistula (93.6%) and also washing arm

with soap and water prior to hemodialysis was practiced by 64.5% i.e. 91 patients .With regards to care provided in case of hematoma formation at AV fistula site, only 80 patients (60.3) reported practicing the application of cold fomentation in first 24 hours followed by warm compresses the next day. Also in case of limb swelling only 36.9% revealed practice of limb elevation.

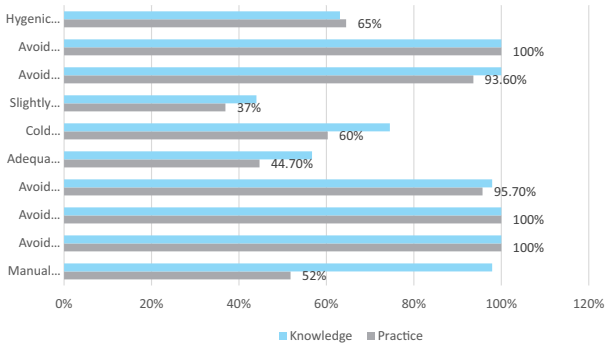

Figure-2. Comparison of knowledge and practice of different aspects of fistula care

In our study population, considerable differences were seen in knowledge, attitude and practice of fistula care in both genders and different age groups. Overall, the ratio of practicing to non-practicing individuals is more in females than in males, as can be seen in Figure-3. This difference is most pronounced in practice of cold sponging followed by hot fomentation in case of swelling after hemodialysis, where percentage of practicing females is 72% and that of males is 55%. Exception to this trend is seen in practicing limb elevation in case of swelling, where ratio of practicing males in more than females (40% vs. 28%).

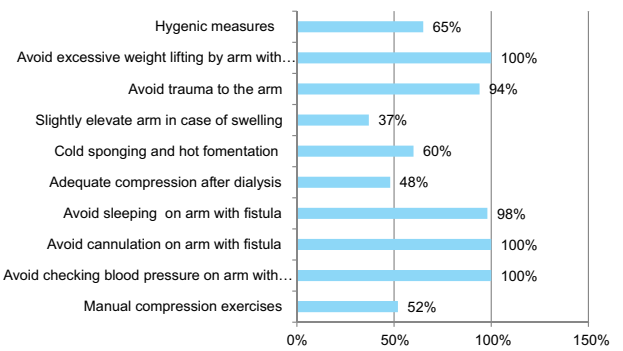

Figure-3. Practice of different aspects of arteriovenous fistula care in our study population

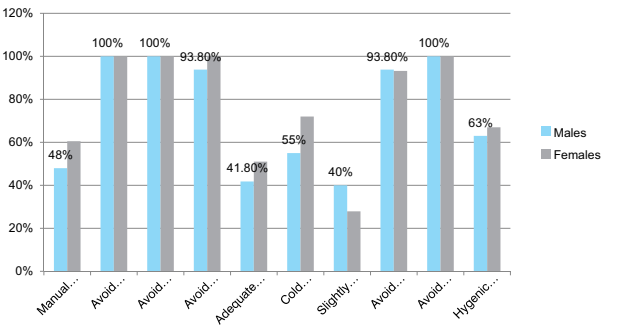

Figure-4. Comparison of practice of arteriovenous fistula care in males and females.

In our study population, the most of the individuals practicing maximum precautionary measures fell in the age range between 40-60 years, in this age group the percentage of practicing different measures averages 75.4%, compared to 74.9% for people younger than 40 year and 67.5% for people older than 60 years. The age group >60 years was lacking practice of manual compression exercise during AV fistula maturation period and afterwards, limb elevation in case of swelling and proper hygienic measures for AV fistula; none of them practiced these measures. The percentage of practicing individuals in different age groups can be seen in Figure-5.

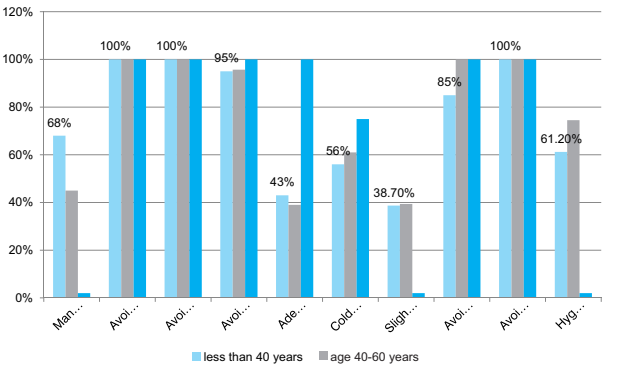

Figure-5. Comparison of practice of arteriovenous fistula care in different age groups

DISCUSSION

Hemodialysis is the most frequently used treatment option for management of ESRD. For vascular access intravenous catheter, arteriovenous fistula or arteriovenous graft can be used. The arteriovenous fistula (AVF) is the preferred vascular access for hemodialysis (HD) and is advocated in clinical practice guidelines. [6-9]

Canadian, American, and European guidelines recommend that all suitable candidates undergo an attempt at fistula creation prior to starting HD.[10-12] According to a meta-analysis, catheter use is associated with 80–134 additional deaths per 1000 person-years compared with fistula use and graft use is associated with 18–54 additional deaths for every 1000 persons each year compared with fistula use.[13] Despite of being the preferred method of arteriovenous access due to lower complication and mortality rate, AV fistula can be complicated by a number of conditions like infection, thrombosis, stenosis, aneurysm, ischemic steal syndrome and venous hypertension.[14]

A major barrier to increasing the number of AVFs is a primary failure rate of 30%–70% and a 1-year patency rate of 40%–70%. Many patients will undergo multiple surgical procedures in an attempt to establish vascular access with an AVF, which may not succeed.[14] Most of these complications can be prevented if appropriate precautionary measures are taken by healthcare professionals and patients themselves. Precautionary measures taken by the patients play the most important role in preventing complications and enabling long term patency/ functioning of the fistula. Several vascular access guidelines recommend that patients should be educated concerning vascular access care.

Patients must be educated to avoid IV cannulation, taking blood pressure, tight compression bandage, excessive weight lifting, trauma and sleeping on the arm bearing AV fistula and taking proper hygienic measures along with exercise/ manual compression and the measures to be taken in case of hematoma formation like cold compression and hot fomentation and elevation of the limb.[15] This knowledge can be imparted to the patients by proper counseling, pamphlets and educational programs before or at the time of fistula formation. Patients motivated by counseling and proper knowledge practice precautionary measure more often resulting in decreased rate of complication and increased period of patency and functioning of fistula.

We conducted cross-sectional study at nephrology department of Lahore general hospital to evaluate the knowledge, attitude and practice of patients regarding self care. Our study sample was 141 patients, randomly selected at dialysis unit, of which 69.5% were males and 30.5% were females. Furthermore, the sample population is also categorized in age groups; 44% of the sample population is under 40 years of age, 50.4% were between 40-60 years while people aged more than 60 years were only 5.7%. Considering the fact that most of our study population had incomplete primary education, surprisingly they had adequate knowledge about most of the aspects of fistula care but were lacking practice of certain measures despite having a positive attitude towards importance of self care.

All of the participants knew that taking blood pressure reading, intravenous cannulation and excessive weight lifting is to be strictly avoided on arm with arteriovenous fistula and all of them practiced this regularly rendering these the most known and most practiced measures for fistula care.

Trauma to the limb bearing arteriovenous fistula may result in hematoma formation and stenosis of the fistula. All patients should know to avoid carrying heavy items draped over the access arm, avoid wearing occlusive clothing, wear protective clothing over the exposed fistula vein if working around machinery or sharp tools.[15] All of our patients knew about this, but 93% took measures to avoid trauma to arm bearing AV fistula.

97.9% of the study population had knowledge about importance of manual compression exercises during maturation period and afterwards, but only 51.8% practiced it. The ratio of males that didn't practice manual compression exercises is 52% and that of females is 39.5%. In the age group under 40 years of age, 66% were practicing while the number reduced to 45% in age group 40-60 with fall to 0% in patients more than 60 years of age.

Similar number of people had knowledge about avoiding sleeping while exerting weight over the

limb with arteriovenous fistula and 95.7% of them practiced it as well. The ratio of this practice is greater in females (100%) than males (93.8%) but no significant practicing difference is seen in different age groups.

Repeated punctures of the veins result in scarring leading to loss of elasticity and thinning of vessel wall, which increases the risk of bleeding from vessel.[16] Inadequate or over compression after hemodialysis, may result in hematoma formation which can further lead to infection, stenosis and other complications. Knowledge results were not as satisfying regarding adequate compression of fistula after hemodialysis to maintain hemostasis. Only 56.7% patients had this knowledge and 78% of them were practicing it.

In case of hematoma formation cold sponging is suggested, to be followed by hot fomentation as well as slight elevation of the limb. Of our study population, 74.5% knew about these measures and 60.3% practiced it. Again, the ratio of practicing females is more than that of practicing males (72.1% vs. 55%).

Vascular access site infection is considered to be the most challenging complication and the major cause of morbidity and mortality among chronic hemodialysis patients.[17] It is also an important cause for AV fistula failure. Taking proper hygienic measures reduce the rate of infection in AV fistula, increases its patency and functional duration, in our study population 63.1% knows about the importance of washing AV fistula and arm before hemodialysis session and 64.5% were practicing it, regarding the age only 61.2% in age group under 40 years were practicing, the practice ratio increased up to 74.6% in age group 40 to 60 years with again fall to 0% in patients more than 60 years of age as in manual compression practice. Here the ratio of practicing females is not significantly different to that of practicing males (67% vs. 63%).

LIMITATIONS TO THE STUDY

The number of patients studied does not represent the true population size practicing fistula care. Also lack of availability of knowledge in terms of publications and on behalf of health professionals limit their practice in terms of fistula care.

CONCLUSION

Knowledge regarding most of the precautionary measures to be taken for AV fistula care is adequate in our study population. Attitude is positive for practice, majority recognize the benefits of self care but practicing ratio differ from the knowledge ratios and was different in both genders in different age groups. Overall, the ratio of practicing female is significantly more than males and the group of patients aged 40 to 60 years was practicing the most. The tendency of practice precautionary measure decreased with increasing age.

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If it doesn't challenge you,
It won't change you.

– Fred Devito –

AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Amna Shareef	Data collection, Analysis & Article writing.	
3	Aurangzeb Afzal	Article review.	
4	Sania Ashraf	Article review.	Sania Ashraf