

Knowledge of Renal Nurses on Factors of Arteriovenous Fistula Failure in Hemodialysis Patients in Ikeja Lagos State

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Abstract

Arteriovenous fistula is a popular vascular access in patients for hemodialysis. However, it is threatened with high rate of failure. The failure of arteriovenous fistula results to high cost and wastage for the patient and the healthcare agency. This study assessed the knowledge of renal nurses on factors of arteriovenous fistula failure in hemodialysis patients in two dialysis centers in Lagos State, Nigeria. This study adopted a descriptive design using structured questionnaire for data collection. The questionnaire was administered to 62 renal nurses with 60 copies retrieved representing 97% return rate. Data obtained were analyzed by descriptive and inferential statistics using Statistical Package for Social Sciences (SPSS) version 21. Results show that 60 (100%) of the nurses have adequate knowledge of arteriovenous fistula failure in hemodialysis patients. Findings show that 56 (93.3%) of respondents use Rope Ladder Button Hole and Area Puncture needling techniques and 58 (96.7%) perform the first cannulation of the AVF within 6 – 8 weeks after its creation. Tests of hypotheses reveal a significant relationship between nurses' knowledge and arteriovenous fistula failure with ($P=0.006 < 0.05$), but there was no significant relationship between nurses' needling technique and arteriovenous fistula failure with ($P=0.086 > 0.05$). The study recommends initial and regular training of new and experienced nurses to update their knowledge and skills in the use of AVF in hemodialysis patients. Additionally, management should encourage consistent coaching and supervision of nurses to validate their knowledge and skills in the management of hemodialysis patients to prevent arteriovenous fistula failure.

Keywords: Nurses, Knowledge, Arteriovenous fistula failure, Hemodialysis, Needling technique,

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1.0 Background

Chronic kidney disease with loss of function is a wide-reaching health condition that necessitates expert nursing care. Kidney failure makes Hemodialysis (HD) pivotal in the management and care of patients needing renal replacement therapy (Yousif, Abu-Aisha, & Abboud, 2017). Suitable vascular access is indispensable for the effective use of HD. Renal nurses require relevant knowledge to facilitate the care of vascular access in order to prevent complications and precisely distinguish vascular access related difficulties. Roy-Chaudhury, El-Khatib, Campos-Naciff, et al., (2012) reports the existence of different types of access for hemodialysis such as femoral, tunneled internal jugular, arteriovenous graft (AVG) and arteriovenous fistula (AVF). Among these vascular access types, AVF is preferred for repeated vascular access for patients on maintenance hemodialysis because of its durability, patient morbidity, health care cost, patency and clearance (Smith, Gohil, Chetter, 2012).

Arteriovenous fistula (AVF) is surgically created vascular access for cannulation during hemodialysis which interfaces with the artery and vein. Once a vascular access is created, it is pertinent to maintain its patency to facilitate efficient hemodialysis that would enhance the quality of life of the patient (Yen, Tsai, Luo, Yang, Liu, Hung & Hsu, 2019). The goal of hemodialysis AVF creation is to achieve effective vascular access that can endure repeated cannulation and provide adequate flow of blood and dialysate for adequate dialysis treatment (Lauvao, 2009). Arteriovenous fistula is usually recommended for use in hemodialysis patients because of its numerous advantages over other types of vascular accesses (Roy-Chaudhury, El-Khatib, Campos-Naciff, et al., (2012). However, AVF has high failure rate.

Research shows that some factors may affect patency outcomes after AVF creation thereby resulting in failure to meet its demand (Duque, Tabbara, Martinez, Cardona, Vazquez-Padon, & Salman, 2017; Smith, et al., 2012). Factors such as old age, smoking, peripheral vascular disease, predialysis hypotension, vessel characteristics such as narrow lumen of less than 2 millimeters were mentioned as causing AVF failure (Smith, et. al., 2012). The presence of these factors suggests a reduction in flow of blood which may hinder the function of the AVF. On the other hand, Brescia, Cimino, Appel, & Hurwich (2008) contend that factors such as early referral for AVF use, experience of the surgeon, preoperative ultrasound vessel mapping and needling techniques affect AVF. Proper functioning of AVF is necessary for effective hemodialysis (Yen et al., 2018). As a routine

after the creation of AVF, it is allowed to develop appropriately over a period of 6 to 8 weeks to enable it to mature and supply adequate amount of blood (ranging from 250 to 500mls per minute) to ensure effective dialysis (Hinkle & Cheever, 2014). In consequence, an AVF that does not mature cannot function effectively to facilitate hemodialysis. Evidences suggest that risk factors such as advanced age, peripheral vascular disease, coronary artery disease, diabetes mellitus, and immune conditions may lead to delayed AVF maturation (Duque, Martinez, Mesa, et al., 2015; Lok, Allon, Moist, Oliver, Shah, & Zimmerman, 2006; Yen et al., 2018). Therefore, the nurse administering hemodialysis to the patient should have adequate knowledge of these factors that affect the maturation and function of AVF in order to do what is required to keep it functioning for effective cannulation and hemodialysis procedure.

When AVF is unable to carry out its function, it is referred to as AVF failure. Asif, Roy-Chaudhury, and Beathard (2006) report the existence of three types of AVF failure and these are: failure to mature, primary failure and late failure. Failure to mature indicates that the AVF did not develop after its creation and was not used. Primary failure occurs when the fistula fails to function within three months of use whereas late failure is described as failure after six months of use. All three types of failure could delay hemodialysis and cause unnecessary hardship to the patient when they occur. Arteriovenous fistula failure is preventable. Jindal (2008) itemized general precautions that renal nurses could take to prevent AVF failure. Therefore, renal nurses caring for hemodialysis patient should have adequate knowledge and use it to instruct and encourage patients to observe. This implies that an inexperienced nurse who is unaware of these precautions may not adhere to them nor instruct and encourage patients to do so thereby exposing the AVF to failure. Besides these precautions, proper use of the AVF is important to keep it effective.

Literature shows that AVF failure is a global issue in the nephrology specialty (NS). The National Kidney Foundation (2017) in a survey conducted in 2016 reported a wide range of AVF failure worldwide. The report identified failure rates in South Asia, Africa, North America, Europe, the Middle East, East Asia, and Latin America. The high-income nations of Saudi Arabia, Belgium, Poland, Germany, United Kingdom as well as Singapore had higher failure rates as compared to lower income countries (National Kidney Foundation [NKF], 2017). This suggests that AVF failure rate is common worldwide. Similarly, Arije, Kadiri and Akinkugbe (2000) and Yiltok, Orkar, Agaba, Agbaji, Legbo, Anteyi, & Jenrola, (2005) report that AVF failure is common among hemodialysis patients in Nigeria. According to these studies, AVF failures are not merely due to poor surgical techniques, but occur because of early use of fistulae before full maturation.

In addition to the precautions for enhancing maturation of AVF, the developed AVF requires appropriate needling technique by a skilled renal nurse before attempting any dialysis treatment. However, renal nurses without knowledge and skill in the appropriate care of hemodialysis patients may not effectively cannulate the AVF in hemodialysis patients. Therefore, one could question if the difficulty encountered by such nurses during initial needling of AVF is related to lack of knowledge and skill on the correct needling technique during cannulation. Kessels et al., (2009) reports that over 15% failure rates of AVF are attributable to inappropriate needling by new renal nurses during cannulation. Adequate knowledge of nurses working with hemodialysis patients on factors leading to AVF failure is the key to reducing the failure rate hence, this study assessed the knowledge of nurses working with hemodialysis patients and factors responsible for AVF failure in hemodialysis patients.

The study set out to answer the following research questions:

- I. What do renal nurses working with dialysis patients in Life Support Medical and Dialysis Center (LSMDC) and LASUTH Dialysis Unit know about arteriovenous fistula failure?
- II. What is the needling technique that nurses use to access arteriovenous fistula for cannulation in dialysis units of LSMDC and LASUTH?
- III. When do nurses working in dialysis units in LSMDC and LASUTH perform the first cannulation of the arteriovenous fistula?

The following hypotheses were tested at a 0.05 level of significance.

H01: There is no significant relationship between nurses' knowledge and arteriovenous fistula failure.

H02: .There is no significant relationship between nurses' needling techniques and arteriovenous fistula failure.

H03: There is no significant relationship between increasing age of patients and arteriovenous fistula failure.

H04: There is no significant relationship between smoking and arteriovenous fistula failure.

2.0 Methods

The study used a descriptive research design with survey to collect relevant data on knowledge of nurses working in dialysis units regarding factors responsible for arteriovenous fistula failure in hemodialysis patients. The study was conducted at two sites which were the Life Support Medical and Dialysis Centre, G.R.A, Ikeja Lagos State and the dialysis unit of the Lagos State University Teaching Hospital (LASUTH), Ikeja, Lagos State. The population of this study was renal nurses working in the Life Support Medical Centre and Dialysis Centre and the Lagos State University Teaching Hospital Dialysis Unit. The total of 73 nurses that make up the

population of the study was comprised of 20 nurses working in the Life Support Medical Centre and 53 nurses working in the dialysis unit of LASUTH. The sample size was calculated using the Taro Yamane's (1967) formula: $n = N / (1 + N(e)^2)$ where N is the study population which is 73, n is the sample size, e is the sampling error (0.05 which is constant). Therefore, the sample size was 62. The study used a non-probability sampling technique of convenience sampling method. Convenience sampling method is used to recruit participants according to their availability at the time of data collection (Gray, Grove, & Sutherland, 2017).

The instrument for data collection was structured questionnaire developed in relation to the objectives of the study to collect relevant data to answer the research questions. The questionnaire consists of three sections which were constructed to collect data on socio-demographic data of respondents, knowledge of nurses on the use of arteriovenous fistula and factors that enhance needling techniques and arteriovenous fistula failure. The questionnaire was scrutinized by expert nurses in academic and clinical specialty for face and content validity. The research instrument was pretested in Kidney Solution Limited, a similar population to the study population but is not part of the study. The reliability test involved administering the instrument to 10 nurses working in Kidney Solution Limited and the Cronbach's alpha coefficient of 0.63 was accepted as adequate. Data collection procedure was performed at the Life Support Medical and Dialysis Center and Lagos State University Teaching Hospital (LASUTH) Ikeja, Lagos.

Data collection procedure occurred from February 12 to March 13, 2019 and involved presenting a letter of introduction from the Dean, School of Nursing Science Babcock University to the heads of the facilities where the study was conducted. This ensured adequate cooperation by the ethical research committee of Life Support Medical and Dialysis Center and the Lagos State University Teaching Hospital (LASUTH) Ikeja, Lagos. During data collection, 62 copies of the questionnaire were administered to the nurses who were on duty. Proper explanation of the purpose of the research was done and consent obtained. Instructions on how to answer the questionnaire were given to respondents. The questionnaire was retrieved after completion on the same day. During the administration of the questionnaire, 62 copies were distributed but only 60 copies were retrieved giving a return rate of 97%. Data analysis utilized SPSS version 21 to perform descriptive statistics presented in frequency and percentages for answering the questions and inferential statistics were used in testing the hypotheses at a 0.05 level of significance. Ethical approval and clearance for this study were obtained from Babcock University Health Research Committee (BUHREC) and the Ethics Committees of the Lagos State University Teaching Hospital (LASUTH) and the Life Support Medical Center. Participants gave consent to voluntarily take part in the study and they were assured of anonymity and confidentiality. There was no conflict of interest involved in the study.

3. 0 Results

Table 1: Demographic Characteristics of Respondents

Variable	Frequency	Percentage
Gender		
Male	23	38.3%
Female	37	61.7%
Religion		
Christianity	52	86.7%
Islam	7	11.7%
Traditionalist	1	1.7%
Specialty		
Certified Renal Nurse (CRN)	39	65%
Trained Dialysis Nurse (TDN)	21	35%
Institution		
Life Support Dialysis Center	20	33.3%
LASUTH Dialysis Unit	40	66.7%
Years of Experience		
1 - 5 years	24	40%
6 – 10 years	14	23.3%
11 – 15 years	8	13.3%
16 – 20 years	1	1.7%
Above 20 years	13	21.7%

Table 1 above presents the socio-demographic data of the respondents showing that female respondents are in majority with 37(61.7%) while males are 23(38.3%). Most of the respondents are Christians 52(86.7%) while

only 1(1.7%) respondent was a traditionalist. The data also revealed that majority of the respondents 40(66.7%) are certified renal nurses and 20(33.3%) are trained dialysis nurses. Majority of the respondents 40(66.7%) work with LASUTH while 20(33.3%) respondents work in the Life Support and 24(40.0%) respondents have worked between 1-5years while only 1(1.7%) respondent has worked between 16-20years.

4.0 Answers to Research Questions

Research Question 1: What do renal nurses working with hemodialysis patients know about arteriovenous fistula failure?

Table 2. Knowledge of renal nurses working with hemodialysis patients of arteriovenous fistula failure

Variables	Frequency (N=60)	Percentage (%)
Have you heard about Arteriovenous fistula AVF before?		
Yes	60	100%
No	0	0
If yes where did you hear about AVF?		
School	27	45%
Hospital	28	46.7%
Television	2	3.3%
Textbook	3	5%
Have you used AVF before to administer hemodialysis to patients?		
Yes	59	98.3
No	1	1.7
What type of vascular access is AVF?		
Permanent	60	100%
Temporary	0	
Tunneled	0	
AVF is a surgical connection between		
Artery and Vein	57	95%
Artery and Artery	3	5%
Vein and Vein	0	
Is AVF the same as the following?		
Graft	24	40%
Tunneled	0	
Double femoral access	0	
None of the above	36	60%
Creation of AVF can be done in the following		
Forearm and Arm	60	100%
Thigh	0	
Leg	0	
Chest	0	
AVF requires an experienced renal/trained nurse to use		
Yes	60	100%
No	0	
Pulsation can be felt on palpitation of AVF		
Yes	59	98.3%
No	1	1.7%

Table 2 above shows that all the respondents 60(100%) have heard about Arteriovenous Fistula and most of them 28(46.7%) and 27(45.0%) heard it at the hospital and school respectively while only 2(3.3%) respondents heard it through the television. Almost all the respondents 59(98.3%) have used AVF except 1(1.7%). All the respondents 60(100%) knew that AVF is permanent vascular access. Majority of the respondents 57(95.0%) knew that AVF is a surgical connection between artery and vein while 3(5.0%) said AVF is a surgical connection between artery and artery. Twenty four (40.0%) respondents said AVF is the same as graft while 36(60.0%) said it was neither a graft nor tunneled nor double femoral access. All the respondents 60(100%) knew that AVF can be created in the forearm and arm and that AVF requires an experienced renal/trained nurse.

Research Question 2: What is the needling technique that renal nurses use for arteriovenous fistula cannulation in hemodialysis patients in dialysis units of LSMDC and LASUTH?

Table 3: Needling Techniques renal nurses use for AVF cannulation in hemodialysis patients in LSMDC and LASUTH dialysis unit

Variables	Frequency (N= 60)	Percentage (%)
What are the various needling techniques used in AVF cannulation?		
Rope Ladder, Button hole & Area Puncture	56	93.3%
Single needle, Button hole & Area Puncture	2	3.3%
Rope Ladder & Single needle	2	3.3%
What is the needling technique you use in AVF cannulation in your facility?		
Rope Ladder	37	61.7%
Button hole	17	28.3%
Area Puncture	6	10%

Table 3 above shows that most of the respondents 56(93.3%) use Rope Ladder Button hole and Area Puncture needling technique while only 2(3.3%) respondents use single needle, button hole and area puncture also 2(3.3%) respondents also use Rope ladder and single needle. Most of the respondents 37(61.7%) use rope ladder needling technique for AVF cannulation while 17(28.3%) use button hole and 6(10.0%) use area puncture.

Research Question 3: When do renal nurses working with hemodialysis patients perform the first cannulation of the AVF?

Table 4: Timing of First cannulation of the AVF by nurses working with hemodialysis patients in LSMDC and LASUTH dialysis units

Variables	Frequency (N = 60)	Percentages (%)
The use AVF		
Hemodialysis	57	95.0
Peritoneal dialysis	1	1.7
Ultra-filtration	1	1.7
A&D	1	1.7
The ideal time for first AVF cannulation		
6-8 weeks	58	96.7
4-7 weeks	2	3.3

Table 4 above shows that 57(95.0%) of the nurses working in renal unit perform the first cannulation of AVF for hemodialysis and 58(96.7%) of them responded that the ideal time for first AVF cannulation is 6-8 weeks.

5.0 Hypotheses Testing

H₀₁: There is no significant relationship between nurses' knowledge and arteriovenous fistula failure.

Table 5: Pearson Product Moment Correlation Coefficient of the relationship between nurses' knowledge and arteriovenous fistula failure

		Knowledge	Arteriovenous Fistula Failure
Knowledge	Pearson Correlation	1	-0.352**
	Sig. (2-tailed)		.006
	N	60	60
Arteriovenous Fistula Failure	Pearson Correlation	-0.352**	1
	Sig. (2-tailed)	.006	
	N	60	60

** Correlation is significant at 0.05 levels (2-tailed)

The table above revealed negative correlation between nurse's knowledge and arteriovenous fistula failure. Since r-value is -0.352 and p-value is 0.006, it then means increase in nurses knowledge about AVF failure would invariably bring a decrease in AVF failure. Since p-value is less than 0.005 and r-value is close to 1, the null hypothesis which states that 'there is no significant relationship between nurses' knowledge and arteriovenous fistula failure' was rejected.

H₀₂: There is no significant relationship between nurses' needling technique and arteriovenous fistula failure.

Table 6: Pearson Product Moment Correlation Coefficient of the relationship between nurses' needling techniques and arteriovenous fistula failure

		Nurses' Needling Technique	Arteriovenous Fistula Failure
Nurses' Needling Technique	Pearson Correlation	1	-0.224**
	Sig. (2-tailed)		.086
	N	60	60
Arteriovenous Fistula Failure	Pearson Correlation	-0.224**	1
	Sig. (2-tailed)	.086	
	N	60	60

** Correlation is significant at 0.05 levels (2-tailed)

Table 6 above revealed negative correlation between nurses' needling techniques and arteriovenous fistula failure, r-value is -0.224 and p-value is 0.086, which means there is no relationship between nurses' needling techniques and arteriovenous fistula failure, since p-value is greater than 0.005 and r-value is not close to 1, the null hypothesis which states that 'there is no significant relationship between nurses' needling technique and arteriovenous fistula failure' was accepted.

H₀₃: There is no significant relationship between increasing age of patients and arteriovenous fistula failure.

Table 7: Pearson Product Moment Correlation Coefficient of the relationship between increasing age of patients and arteriovenous fistula failure

		AVF failure	Increasing age of patients
AVF failure	Pearson Correlation	1	.726**
	Sig. (2-tailed)		.000
	N	60	60
Increasing age of patients	Pearson Correlation	.726**	1
	Sig. (2-tailed)	.000	
	N	60	60

** Correlation is significant at the 0.05 level (2-tailed).

The table above revealed strong positive correlation between increasing age of patients and arteriovenous fistula failure, r-value is 0.726 and p-value is 0.000, this implies a strong relationship between increasing age of patients and arteriovenous fistula failure, since p-value is less than 0.005 and r-value is close to 1, the null hypothesis which states that 'there is no significant relationship between increasing age of patients and arteriovenous fistula failure' was rejected.

H₀₄: There is no significant relationship between smoking and arteriovenous fistula failure.

Table 8: Pearson Product Moment Correlation Coefficient of the relationship between smoking and arteriovenous fistula failure

		Smoking	Arteriovenous fistula failure
Smoking	Pearson Correlation	1	.743**
	Sig. (2-tailed)		.000
	N	60	60
Arteriovenous fistula failure	Pearson Correlation	.743**	1
	Sig. (2-tailed)	.000	
	N	60	60

** Correlation is significant at a 0.005 level (2-tailed)

The table 8 above revealed positive strong correlation between smoking and arteriovenous fistula failure, R-value is 0.743 and p-value is 0.000, which means that there is strong relationship between smoking and arteriovenous fistula failure, since p-value is less than 0.005 and R-value is close to 1, the null hypothesis as stated above was rejected.

Hypothesis three revealed that there is significant relationship between increasing age of patients and arteriovenous fistula failure with R-value of 0.726 and p-value of 0.000.

Hypothesis four revealed that there is significant relationship between smoking and arteriovenous fistula failure with R-value of 0.743 and p-value of 0.000.

Implication of the findings for nursing practice

6. 0 Discussions

Discussion on renal nurses' knowledge about arteriovenous fistula failure in hemodialysis patients

In table 2 the result indicates that majority of the nurses had adequate knowledge about AVF failure in

hemodialysis patients. This finding is consistent with the study by Arije, Akinkugbe, Kadiri, (2008) which reported successful cannulation rate being credited to the knowledge and capability of nurses in the use of the most appropriate needling technique for recently developed AVF.

Needling technique the renal nurses used in arteriovenous fistula cannulation for hemodialysis patients in LSMDC and LASUTH Dialysis Unit

Findings in table 3 show that majority of the nurses used Rope Ladder, Button hole and Area puncture in AVF cannulation. This result supports the report by Van Loon (2009) who identified several techniques used in AVF cannulation. Needling is process of cannulating or introducing a needle into arteriovenous fistula. Rope Ladder was one of the techniques used in both studies.

Timing of first cannulation of AVF by nurses working with hemodialysis patients in LSMDC and LASUTH Dialysis Unit

The result in table 4 reveals that nurses working in LSMDC and LASUTH Dialysis Units perform the first AVF annulation around 6-8 weeks of AVF creation. This finding is congruent with that of Arije, Akinkugbe, Kadiri, (2008) which compared the use of AP and RL needling techniques in AVF cannulation at 6 weeks after creation of AVF. The study by Arije, Akinkugbe, Kadiri, (2008) compared the use of AP and RL needling techniques in the cannulation of new AVF after 6 weeks of creation. The authors reported 81% success rate in the use of RL for AVF cannulation and 47% success rate with the use of AP technique.

Four null hypotheses were tested using Pearson's Moment Correlation Coefficient and the first null hypothesis showed a negative but significant relationship between nurses' knowledge and arteriovenous fistula failure with r-value of -0.352 and p-value 0.006 at 5% level of significance.

Hypothesis two revealed that there is no significant relationship between nurses' needling techniques and arteriovenous fistula failure with r-value -0.224 and p-value of 0.086.

Hypothesis three revealed that there is significant relationship between increasing age of patients and arteriovenous fistula failure with r-value of 0.726 and p-value of 0.000.

Hypothesis four revealed that there is significant relationship between smoking and arteriovenous fistula failure with r-value of 0.743 and p-value of 0.000.

7. 0 Implication of the Findings to Nursing Practice

Nurses have a unique role as both educator and advocate in patient care and management. The understanding of the specialized care of hemodialysis patient demands that nurses seek and obtain accurate and detailed information about patient's medical and lifestyle history to facilitate appropriate communication in the surgical creation and management of AVF for hemodialysis. Nurses are to ensure appropriate evaluation of patients before endorsing them fit for AVF vascular access for hemodialysis. This study reports that factors contributing to AVF failure include nurses' knowledge and needling technique. Hence, nurses need to ensure that they acquire current knowledge and skills in the care and maintenance of AVF to prevent failure while caring for hemodialysis patients. Nurses should be knowledgeable about needling techniques and ensure appropriate technique as well as timing of the first cannulation to enhance efficiency of AVF in hemodialysis patients.

8. 0 Conclusion and Recommendation

This study assesses the knowledge of Renal Nurses on factors of Arteriovenous Fistula failure In Hemodialysis Patients in Ikeja Lagos State, Nigeria. The answers to the questions and hypotheses testing the variables indicate that nurses had adequate knowledge about AVF failure in hemodialysis patients. The test of hypotheses reveal that nurse's knowledge negatively correlates with AVF failure. Nursing techniques in cannulation of AVF were also appropriate. Nurses use rope ladder and buttonhole techniques for needling of AVF. Similarly nurses perform first cannulation between 6-8 weeks of AVF creation at the time it is expected to mature. In view of the forgoing, there is the need to encourage nurses to have regular in-service training to maintain their knowledge and skill in needling techniques. Government should invest more resources in technologies that would cater for patients needing Hemodialysis. There is also the need for community education on factors that could aggravate Arteriovenous Fistula failure In Hemodialysis Patients

9.0 Some Abbreviations

AVF : Arteriovenous fistula.

AVG: Arteriovenous graft.

BH : buttonhole.

ESRD : end-stage renal disease.

ESRF : end-stage renal failure.

HD : haemodialysis.

KDOQI : Kidney Disease Outcomes Quality Initiative.

LASUTH: Lagos State University Teaching Hospital

LSMDC: Life Support Medical Dialysis Centre
NKF: National Kidney Foundation.
NS: Nephrology Specialty.
RL : rope ladder.
VA : vascular access.

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10.0.2 Authors' contribution:

EEN and C.C were involved in the processing of the literature section, formulation of the research goal, and conduct of the research as well as statistical analysis. ANE and COL and EEN contributed in the writing of the manuscript. The authors read and approved the final version of the Manuscript.

10.0.3 Conflicts of Interest/Funding:

The authors declare that there is no conflict in this study. The publication of the article and the related research work did not receive any financial support whatsoever from any quarters.

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