



ISSN: 3059-9733
DOI: 10.3126/jobh.v1i2.80953

Knowledge and Attitude Regarding Arteriovenous Fistula Care among Patient under Maintenance Hemodialysis at Bharatpur Hospital

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ABSTRACT

Background

End-Stage Renal Disease (ESRD), is a severe medical condition where the kidneys have permanently lost their ability to function, which requiring dialysis or a kidney transplant to survive, often requiring an arteriovenous fistula (AVF) for hemodialysis. Proper care of the AVF is crucial to prevent complications. This study aimed to assess knowledge and attitude of the patient towards the AVF care in Bharatpur hospital.

Methods

A descriptive cross-sectional study carried out among 150 Patients under Maintenance Hemodialysis at Bharatpur Hospital, Chitwan by applying purposive sampling method from June 16 to July 2, 2024 using semi-structured interview schedule to assess knowledge and Five Point Likert Scale to assess attitude. Informed written consent was obtained to ensure their rights. The data were analyzed in SPSS 16 version by using descriptive Statistical tool.

Results

Among 150 patients almost all (97.3%) of respondents good knowledge and minority 0.7% had poor knowledge regarding AVF care. About 52.7% respondents' shows negative attitude towards the AVF care where as 47.3% respondent shows the positive attitude.

Conclusions

Almost all of the respondents have good knowledge and majority of the respondents had positive attitude towards living a normal life as long as they adhere to the treatment and AVF care, and majority of the respondent's showed confidence in ability to manage AVF care by themselves.

Keywords: attitude; arteriovenous fistula (AVF); hemodialysis; knowledge.

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INTRODUCTION

Arteriovenous fistulas are surgically created connection between a native artery and vein allowing high blood flow needed for effective hemodialysis through large-bore needles.¹ Successful dialysis depends on well-functioning vascular access with adequate flow, patency, and ease of cannulation.² A prospective cross sectional study at the Nephrology Unit in Uva Province, Sri Lanka, involving 160 end-stage renal disease (ESRD) patients on hemodialysis, found that all participants recognized the importance of AVFs. Most of the (88.1%) respondents, with 97.5% displaying positive attitude towards AVF self-care.³ Another study in Rupandehi among 70 haemodialysis patients at the Universal College of Medical Sciences, revealed that all participants understood importance of AVF protection. While awareness of avoidance injuries and heavy lifting was high (95.71%), knowledge of other aspects varied, such as thrill checking and complications. Awareness was influenced by factors like sex and education.⁴ Despite good knowledge, avoidance behaviors included exercising with malleable objects, doing daily thrill checks, and avoiding blood pressure on the fistula hand. This suggests improving practice through professional-patient relationships and regular, adequate counseling.⁵

METHODS

A descriptive cross-sectional study was conducted among patients under going maintenance hemodialysis at Bharatpur Hospital Chitwan, Nepal from June 16 to July 2, 2024. Ethical approval was taken from institutional review committee (IRC) of Bharatpur Hospital (Ref. No. 080/81-028). Informed written consent was taken from all the patients before data collection. This study was conducted among 150 patients. Non probability purposive sampling technique was used for data collection. Semi-structured questionnaire were used for data collection. The validity of the research instruments was ensured through a literature review and consultation with subject experts, a statistician, and a research methodology teacher. Pretesting was

conducted on 10% of the total sample size, and necessary modifications were made based on the pre-test to ensure reliability. In order to assess the level of knowledge of patients 28 questions were asked. In each question there were 4 options in which one option was correct. Each correct option was coded with 1 while wrong for 0. In order to find the overall level of knowledge all option score was sum. From the total score percentage were calculated. Then the level of knowledge was categorized as good knowledge for >70% score, average knowledge for 50-70% and poor knowledge <50%.³ The highest possible score 28 while minimum was 0. In order to assess the attitude of patients five-point Likert scale were used.

Attitude was classified based on mean score, where positive attitude \geq mean score and negative attitude < mean score.⁶ After the collection of data, all the data was checked for completeness, consistency, and accuracy. Then the data were coded and entered into Statistical Package for the Social Sciences (SPSS) version 16. Descriptive statistical tools were used for data collection. In the descriptive statistics for categorical variables frequency and percentage were calculated while for continuous variable mean and standard deviation (SD) were calculated.

RESULTS

Among 150 respondents, the mean \pm SD age was 52 ± 13.3 years and half (50%) of respondents were between 41 and 60 years of age. Likewise, majority (66%) were male and 65 (43.3%) were Janajati. Almost all (93.3%) of the respondents were married. Regarding education level, 42.7% of respondents could read and write whereas. Majority (61.3%) of respondents was unemployed, and the lowest (7.3%) were engaged in agriculture. More than half (54.7%) of the respondents were from nuclear families. Regarding source of information, the most of the (89.9%) respondents received information from health care providers (Table 1).

Regarding duration of treatment, 42% of the respondents were 1-3 years undergoing hemodialysis treatment, while the lowest (14%) were more than 5 years. Similarly, the majority (81.3%) respondents

Table 1. Socio demographic information of respondents. (n = 150)	
Variables	Frequency (%)
Age (in year)	
≤40	24(16.0)
41 - 60	75(50.0)
>61	51(34.0)
Mean age ±SD = 52±13.3	
Sex	
Male	99(66.0)
Female	51(34.0)
Ethnicity	
Dalit	25(16.7)
Janajati	65(43.3)
Brahmin /Chhetri	56(37.3)
Madhesi and Chepang	4(2.6)
Marital status	
Married	140(93.3)
Unmarried	10(6.7)
Education status	
Illiterate	35(23.3)
Can read and write	64(42.7)
Primary level	36(24.0)
Secondary and above	15(10.0)
Occupation	
Homemaker	27(18.0)
Business and retired	20(12.2)
Agriculture	11(7.3)
Unemployment	92(61.3)
Family types	
Nuclear	82(54.7)
Joint	68(45.3)
Sources of information *	
Television and radio	88(59.1)
Newspaper	36(24.2)
Internet	116(77.9)
Health care provider	134(89.9)

*Multiple response

had two hemodialysis sessions per week, while the fewest (3.3%) respondents had three sessions per week. Forty Percent of respondents felt difficulty sometimes. In terms of the comorbid conditions, more than half (54%) of the respondents had hypertension, and the lowest (1.3%) had thyroid disorder. Almost all (98.3%) of the respondents had family support, while the lowest (14.7%) support system was friends and neighbors (Table 2).

Table 2. Utilization of services and health status of respondents. (n=150)	
Variables	Frequency (%)
Duration of Undergoing Hemodialysis Treatment	
Less than one year	36(24.0)
1-3 years	63(42.0)
3-5 years	30(20.0)
> 5 years	21(14.0)
Frequency of Hemodialysis Session Each Week	
Thrice a week	5(3.3)
Once a week	23(15.3)
Twice a week	122(81.3)
Difficulty in performing daily activities	
Never	33(22.0)
Rarely	2(1.3)
Sometimes	60(40.0)
Always	55(36.7)
Comorbid Conditions	
Diabetes	16(10.7)
Hypertension	81(54.0)
Diabetes and hypertension	36(24.0)
Thyroid disorder	2(1.3)
Diabetes, HTN and thyroid disorder	8(5.3)
Genetic disease	3(2.0)
None	4(2.7)
Supporting System *	
Family members	114(98.3)
Friends	17(14.7)
Health care provider	88(75.9)

*Multiple response

Most of the (87.3%) respondents gave the correct answer about the meaning of AVF. Almost all (95.3%) of the respondents gave right answer on the benefit of an arteriovenous fistula and reduced risk for infection. Most of the (84.7%) respondents gave correct answer on the typically wait for 6 weeks before using AVF for hemodialysis. Most of the (86%) respondent correct answered on the common signs of infections in AVF fistula. Almost all (97.3%) of the respondent answered correctly to the management if bleeding occurs from AVF (Table 3).

Cent percent respondents answered correctly on the lifestyle modification. Almost all (98%) of the respondents correctly answered to avoid blood pressure measurement, avoid drawing blood, avoid lifting heavy, and avoid wearing tight clothes or

Table 3. Knowledge on meaning, benefits, care after creation, complication and management of arteriovenous fistula (AVF). (n = 150)

Variables	Frequency (%) #
Meaning	
Connection between an artery and a vein created surgically for hemodialysis.	131(87.3)
Benefit	
Provides a reliable access point for blood flow.	136(90.7)
Comfort and reduced risk for infection.	143(95.3)
Care after creation	
Should wait for 6 weeks before the using AVF for hemodialysis.	127(84.7)
Should attend follow up appointment as recommended by the health care provider	142(94.7)
Signs of Infections	
The common signs of infections are redness, swelling, pain and warmth	129(86.0)
Potential complications	
Infection*	143(95.3)
Clotting*	137(91.3)
Aneurysm*	129(86.0)
Heart failure*	77(51.3)
Bleeding*	150(100)
Management	
Should apply pressure to the site and seek medical help immediately if AVF bleed	129(86.0)
Apply cold compress, elevation of arm and visit to health profession for swollen AVF	137(91.3)

Correct response, * Multiple Response

jewelry on the side of the AVF hand. However, 82.7% respondents answered correctly on the daily AVF thrill to check and 78.7% respondents answered AVF arm should clean daily (Table 4).

Regarding level of knowledge, almost all (97.3%) of the respondents have good knowledge and minority (0.7%) had poor knowledge. In knowledge related 24 questions, highest possible score was 28, where respondents obtained mean score was 25.43 ± 2.41 in knowledge regarding AVF care. Similarly, more than half (52.7%) had negative attitude regarding AVF care. In a attitude related 5-point Likert scale, total possible score was 50 in 10 items. Respondents obtained 38.17 ± 3.63 mean score in attitude regarding AVF care (Table 5).

Table 4. knowledge about arteriovenous fistula (AVF) daily care. (n = 150)

Variables	Frequency (%) #
Should check for thrill daily in AVF.	124(82.7)
The purpose of checking AVF thrill is to ensure it is functioning properly.	143(95.3)
Visit healthcare provider immediately if not feel thrill in AVF.	139(92.7)
The AVF arm should clean daily.	118(78.7)
It should clean with soap and water.	132(88.0)
It is important to avoid to measure blood pressure in AVF arm because it can damage the AVF.	147(98.0)
It is necessary to avoid heavy lifting because it can cause to clot or damaged AVF.	147(98.0)
Sleeping on the arm with the AVF should be avoided	141(94.0)
Drawing blood from the AVF site arm should be avoided	141(94.0)
It is advisable not to wear tight clothes or jewelry on the side of AVF hand	147(98.0)
Regular exercise, avoid smoking and eating balance diet lifestyles changes should be done	150(100.0)
The role of malleable ball in maintaining good health of AVF is to increase the good flow in the fistula	147(98.0)
It should avoid giving medicine through AVF site hand	132(88.0)
It should avoid getting injury in hand with AVF as it can damage the fistula	146(97.3)
Should reduce fluid intake	145(96.7)

Correct response

Table 5. Overall, knowledge and attitude level regarding AVF care. (n=150)

Variables	Frequency (%)
Knowledge level	
Good knowledge (>70%)	146(97.3)
Average Knowledge (50-70%)	3(2.0)
Poor knowledge (< 50%)	1(0.7)
Mean \pm SD	25.43 ± 2.41
Attitude level	
Negative	79(52.7)
Positive	71(47.3)
Mean \pm SD	38.17 ± 3.63

DISCUSSION

In this study, among 150 respondents, 75% were in the age group of 41-60 years, regarding sex, majority (66.0%) of the respondents were male which is consistent with other study, where 50.6% were in the same age group and 76.3% male respectively.³ Regarding marital status, almost all (93.3%) of the respondents were married. In terms of education, 42.7% of respondents could read and write only, which is similar to the another study, where 33.3%, could read and write⁷ and 88.2% had literate.⁸ Regarding the occupation 61.3% of respondents were unemployed, and 30% were engaged in occupation such as agriculture, business, or homemaking and 89.9% received information from health professionals, which is consistent to the another study, where 11.3% had completed secondary or higher education, 30% were engaged in occupation such as agriculture, business, or homemaking and 66.7% received information from health professionals.² Another study revealed that 45% of patients aware of the of care of AV fistula, as they received information from the health care professional.⁹ Additionally majority (69.6%) of the respondents obtained information from health care provider.¹⁰ The present study shows that 24% of respondents had been undergoing treatment for less than one year, and 42% for 1-3 years, most of the (81.3%) respondents had hemodialysis sessions twice a week, while the least (3.3%) had sessions thrice a week which is similar to the another study, where 34.4% of respondents had been undergoing treatment for less than one year and 48.8% for 1-3 years, 95% of respondents had sessions twice a week and 3.1% had sessions thrice a week.³

Regarding difficulties in performing daily activities, 40% of respondents sometimes felt difficulty, while 36.7% always felt difficulty in performing daily activities. In the present study 10.7% of respondents had diabetes, and 24% had both diabetes and hypertension, which is similar with the study conducted by Dev et al., where 17.5% of respondents had diabetes.⁵ Almost all (98.3%) of respondents had a support system from family members. Most of the (87.3%) respondents correctly answered the question

on the introduction of AVF. Almost all (90.7%), (95.3%) of the respondents correctly answered on the importance of AVF and benefits of AVF compared to other access types respectively which is similar to the study shows that 99.3% had correct response.¹¹ Most of the (84%) respondents correctly answered that one should wait at least 6 weeks to start dialysis through a newly created AVF, which is compatible with another study which found 86.9% had correct response.³

The present study shows that 82.7% of respondents correctly answered on the daily AVF thrill check which is similar to the study that shows 94.9% correct response.¹¹ The majority (78.8%) of respondents-maintained hygiene by cleaning daily and almost all (98%) of the respondents correctly answered that one should not draw blood, engage in heavy lifting, or measure BP on the hand with an AVF respectively, whereas highest rate (91.95%) of the respondents well known about arm on the side of the fistulas should not be used for blood pressure measurement, intravenous infusion, intravenous blood collection, heavy lifting, bearing pressure.¹² Furthermore, 94% of respondents correctly answered that one should avoid sleeping on the arm with an AVF, almost all (98%) of the respondents answered correctly on the role of malleable objects to increase good flow and 96.7% of respondents correctly answered to avoid physical damage to the AVF, this finding is consistent with the study which reported 98.8%, 96.6% and 98.7% had correct response respectively.⁵ Most of the (88%) respondents answered correctly to avoid cannulation and giving medicine through the AVF fistula, this finding shows less awareness of respondents than other study which reported 100% correct response.¹³ Almost all (96.7%) of the respondents answered correctly to reduce fluid intake, which is similar findings of other study, which also reported 96.7% answered correctly.¹⁴ In the present study, almost all (91%) of respondents answered correctly that cold compress and arm elevation should be done if the unusual swelling occurs, which is not compatible with findings shows 75% respondents gave correct answer.¹³ Most of the (86%) respondents correctly identified the signs of infection, which is consistent

with another study reported 92.5% had correct response. Almost all (97.3%) of the respondents correctly answered to apply pressure and visit health professionals if bleeding occurs from the AVF, which is similar findings, shows 94% gave answered correctly.³ Present study shows that, almost all (97.3%) of the respondents demonstrated good knowledge, while 2.0% had average knowledge and 0.7% had poor knowledge which is similar to another study, where 94% of participants had good knowledge.¹¹ The finding of another study is contrast with this study reported that 97.7% of participants had insufficient knowledge of AVF care. This difference could be attributed to the fact that 56.6% of participants in the Brazilian study had incomplete primary education, whereas in the current study, only 42.7% had incomplete primary education.¹⁴ Regarding positive attitude, 73.3% of respondents strongly agreed that they felt motivated to learn more about practices for maintaining AVF care, which is compatible with the study, where 78% respondents agreed on it.⁶ On the other hand, regarding negative attitudes, 75.3% of respondents strongly disagreed with the statement that they believed fistula formation would reverse end-stage renal disease, which is similar to the study, that shows 74.6% strongly disagreed with the negative statement.⁵ Despite having good knowledge, less than half (47.3%) of the respondents had a positive attitude, which is contrasts with the study, where 70%

of respondents had a positive attitude. This difference may be due to the smaller sample size of 30 patients in their study or the economic burden present in our country.¹³

Limitations

The study was confined into only one setting with limited sample size so generalization of the findings might be difficult.

CONCLUSIONS

The knowledge level was good among the hemodialysis patients about AVF care, but despite the knowledge, more than half of the respondents had a negative attitude towards AVF care. This study also highlights that majority of the respondents had positive attitude towards living a normal life as long as they adhere to the treatment and AVF care, similarly majority of the respondent's showed confidence in ability to manage AVF care by themselves.

ACKNOWLEDGEMENTS

Firstly, I would like to express my gratitude to the Bharatpur Hospital Institutional Review Committee for granting ethical clearance to conduct this study and the Bharatpur Hospital. Additionally, I would like to thank all study participants for their valuable participation.

Conflict of interest: None

Funding: None

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Citation: Bhusal MK, Nepali S, Aryal N, Regmi K, Sapkota DK. Knowledge and Attitude Regarding Arteriovenous Fistula Care among Patient under Maintenance Hemodialysis at Bharatpur Hospital. *JoBH*, Nepal. 2025; 1(2): 145-151.