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ASSESSMENT OF PATIENT KNOWLEDGE WITH COMPLIANCE WITH AVF CARE IN HEMODIALYSIS PATIENTS

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Abstract

Background: Arteriovenous fistula (AVF) is the preferred vascular access for hemodialysis due to its durability and lower complication rates. However, inadequate patient knowledge and poor compliance with AVF care can lead to infections, thrombosis, and reduced access longevity.

Objective: To assess the knowledge and compliance of hemodialysis patients regarding AVF care and to identify demographic and clinical factors influencing these outcomes.

Methods: A cross-sectional descriptive study was conducted among 60 hemodialysis patients at Meenakshi Medical College Hospital, Tamil Nadu. Data were collected using a structured, interviewer-administered questionnaire covering socio-demographics, knowledge, and compliance practices. Statistical analysis was performed using SPSS v29, applying descriptive and inferential methods with $p < 0.05$ as significant.

Results: Among the participants, 67% were male and the mean age was 51.95 ± 9.65 years. Hypertension (65%) and diabetes mellitus (22%) were the most common comorbidities. Knowledge about AVF care was observed in 67% of patients, while 82% demonstrated compliance with care practices. However, only 47% showed a positive attitude toward AVF care. Despite moderate knowledge, a notable gap between knowledge and consistent compliance was identified.

Conclusion: The study highlights that while many hemodialysis patients possess basic knowledge of AVF care, gaps in compliance and attitude persist, potentially compromising vascular access outcomes. Structured and ongoing patient education, reinforced by healthcare providers and family support, is essential to improve AVF care practices and long-term dialysis outcomes.

Keywords: Hemodialysis, Arteriovenous fistula, Patient knowledge, Compliance, Vascular access care

INTRODUCTION

Chronic kidney disease (CKD) is a growing global health concern, and for patients with end-stage renal disease (ESRD), hemodialysis remains the most commonly used renal replacement therapy. The success of hemodialysis largely depends on the availability and maintenance of reliable vascular access. Among the available options, the arteriovenous fistula (AVF) is widely recognized as the preferred method due to its superior long-term patency, lower infection rate, and reduced risk of complications compared to arteriovenous grafts or central venous catheters [1].

Despite its advantages, AVF function can be compromised by avoidable complications such as thrombosis, stenosis, and infection. These issues often arise due to improper care or a lack of awareness among patients. Studies have shown that patient education and engagement play a pivotal role in the maintenance of AVF function. Patients who are well-informed about AVF care—such as hygiene practices, recognizing signs of dysfunction, and avoiding mechanical stress on the fistula—tend to experience fewer complications and longer AVF survival [2].

However, in clinical practice, many patients demonstrate insufficient knowledge and low compliance with AVF care recommendations. Factors such as low health literacy, limited access to education, comorbidities, and age-

related cognitive decline may contribute to poor adherence [3]. Therefore, assessing the level of knowledge and compliance in patients undergoing hemodialysis is critical in identifying gaps and tailoring educational interventions to enhance self-care and outcomes.

The present study aims to evaluate the knowledge and compliance of hemodialysis patients regarding AVF care. By identifying deficiencies in patient understanding and behavior, this research seeks to inform clinical practice and support the development of targeted patient education programs that promote long-term vascular access preservation and improved quality of life.

To assess the level of knowledge and compliance regarding arteriovenous fistula (AVF) care among patients undergoing maintenance hemodialysis.

The objectives of this study are to evaluate the knowledge of hemodialysis patients regarding arteriovenous fistula (AVF) care, including their understanding of proper hygiene, recognition of complications, and adherence to necessary precautions. It also aims to assess the level of compliance with recommended AVF care practices, such as daily monitoring, limb protection, and avoidance of harmful activities. Furthermore, the study seeks to identify socio-demographic and clinical factors (including age, gender, education level, and duration of dialysis) associated with patients' knowledge and compliance, and to examine the relationship between knowledge and adherence to AVF care recommendations. Finally, based on the findings, recommendations will be provided to improve patient education and enhance AVF care practices in clinical settings.

METHODOLOGY

Study Design

This study was conducted as a descriptive, cross-sectional survey to assess the knowledge and compliance of patients undergoing hemodialysis regarding AVF care.

Study Setting and Population

The research was conducted in the dialysis unit(s) of meenakshi medical college hospital, a tertiary care center located in kanchipuram, tamilnadu. The target population consisted of patients receiving maintenance hemodialysis via a functioning AVF.

Inclusion Criteria

- Adult patients aged 18 years and above
- On maintenance hemodialysis for at least three months
- Having a functioning AVF
- Able to understand and respond to the questionnaire
- Provided informed consent

Exclusion Criteria

- Patients with temporary vascular access (e.g., central venous catheter)
- Patients with cognitive impairments or psychiatric illness affecting communication
- Critically ill patients

Sample Size

A sample size 60 was calculated using prevalence data from previous studies and a 95% confidence interval with a 5% margin of error.

Sampling Technique

A convenience sampling method was used to recruit participants who met the eligibility criteria during their scheduled dialysis sessions.

Data Collection Tool

A structured, interviewer-administered questionnaire was developed based on previous validated tools and guidelines from the National Kidney Foundation. It consisted of three sections:

- **Section A: Socio-demographic data** (age, sex, education, duration of dialysis, etc.)
- **Section B: Knowledge of AVF care** (15 multiple-choice or true/false questions)
- **Section C: Compliance with AVF care practices** (10 items rated on a Likert scale)

Each correct answer in the knowledge section was awarded 1 point; scores were classified into "poor," "moderate," or "good" knowledge levels. Compliance scores were similarly categorized.

Data Collection Procedure

Patients were approached during dialysis sessions. After informed consent, trained data collectors administered the questionnaire in the patient's preferred language.

Data Analysis

Data were analyzed using SPSS version 29. Descriptive statistics (mean, standard deviation, frequency, and percentage) were used to summarize demographic data and responses. The Chi-square test and Pearson correlation were used to examine associations between knowledge/compliance and demographic factors. A p-value < 0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was obtained from the Institutional Review Board (IRB) of Meenakshi Medical College Hospital and Research Institute (MMCHRI). Participation was voluntary, and confidentiality was strictly maintained

RESULT

DEMOGRAPHIC DATA:

GENDER DISTRIBUTION

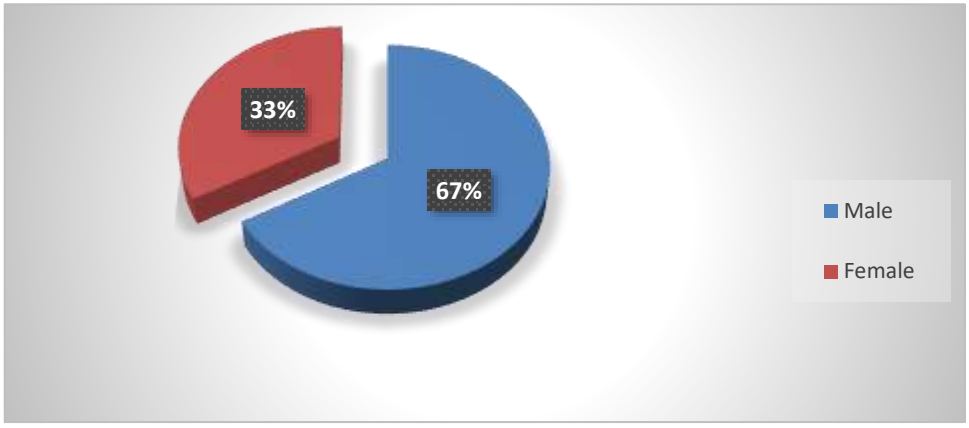

FIGURE: 5.1

GENDER	NO OF PATIENTS	PERCENTAGE
MALE	40	67%
FEMALE	20	33%
TOTAL	60	100%

AGE DISTRIBUTION

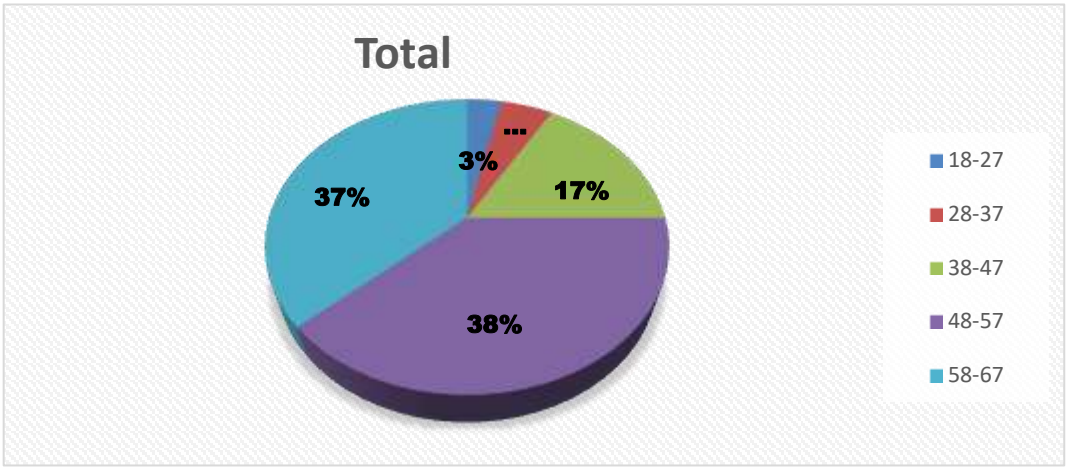

FIGURE:5.2AGEDISTRIBUTION
TABLE: 5.2 AGE DISTRIBUTION

AGE	NOOF PATIENTS	PERCENTAGE %
18-27	2	3%
28-37	3	5%
38-47	10	17%
48-57	23	38%
58-67	22	37%
TOTAL	60	100%
TOTALMEAN AND STANDARD DEVIATION	51.95 ± 9.65	

VINTAGEDISTRIBUTION

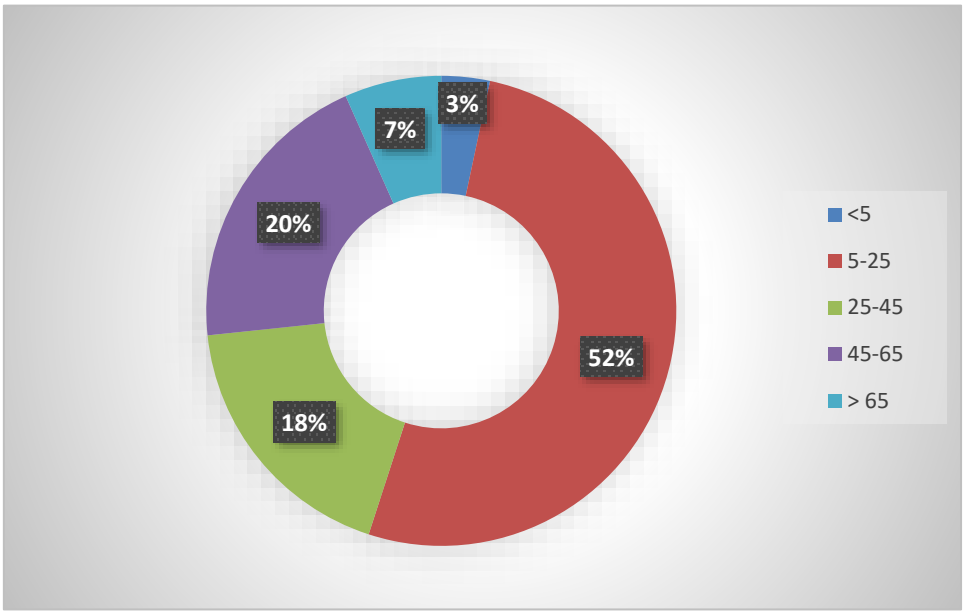

FIGURE:5.3VINTAGE DISTRIBUTION

TABLE:5.3VINTAGEDISTRIBUTIONAMONGTHEPATIENTS

VINTAGE	NO OF PATIENTS	PERCENTAGE%

<5 MONTHS	2	3%
5-25 MONTHS	31	52%
25-45 MONTHS	11	18%
45-65 MONTHS	12	20%
>65 MONTHS	4	7%
TOTAL	60	100%
TOTALMEANSAND STANDARD DEVIATION	30.75 ± 2285	

COMORBIDITYDISTRIBUTION

COMORBIDITYDISTRIBUTION AMONG THE PATIENTS

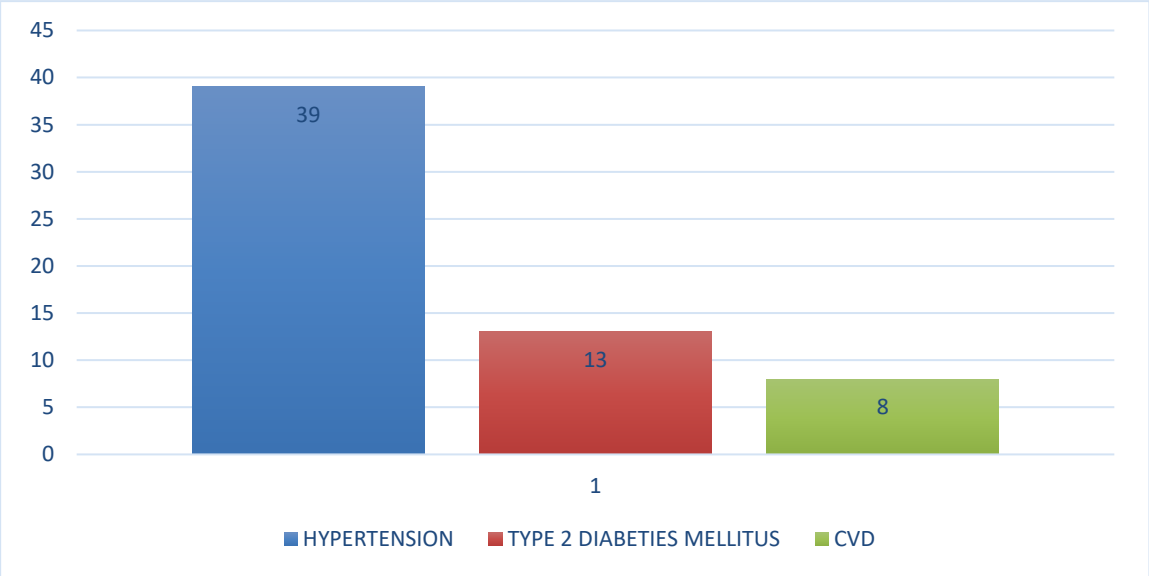

FIGURE:5.4 COMORBIDITYAMONGTHEPATIENTS

TABLE:5.4COMORBIDITYAMONGTHEPATIENTS

COMORBIDITY	**NO OF PATIENTS**	**PERCENTAGE%**
HYPERTENSION	39	65%
TYPE2DIABETIES MELLITUS	13	22%
CVD	8	13%

TOTAL	60	100%

SEROLOGY DISTRIBUTION

SEROLOGYDISTRIBUTION AMONG THE PATIENTS

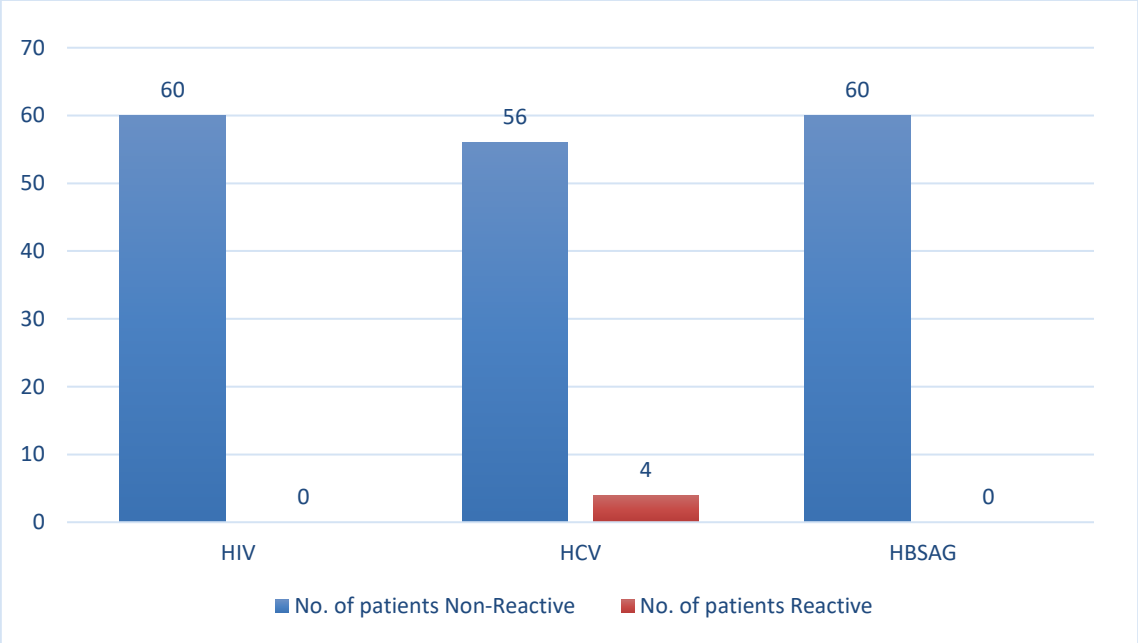

FIGURE:5.5SEROLOGYDISTRIBUTION

TABLE: 5.5 SEROLOGYDISTRIBUTION

SEROLOGY	NO. OF PATIENTS		TOTAL
	NON-REACTIVE	REACTIVE	
HIV	60	0	60
HCV	56	4	60
HBSAG	60	0	60

ACCESS RELATED INFECTIONDISTRIBUTION

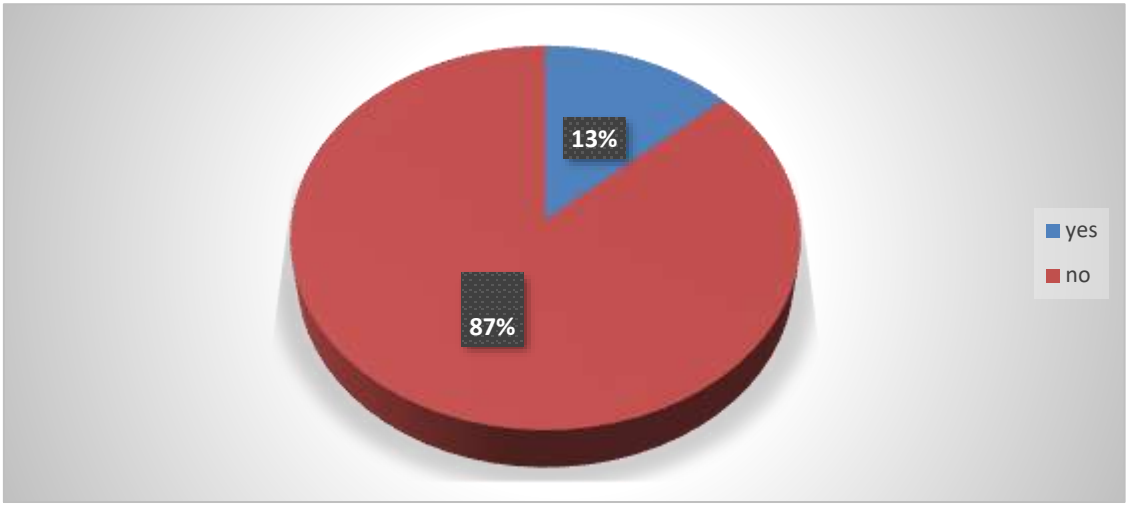

FIGURE:5.6ACCESS RELATED INFECTION DISTRIBUTION

TABLE: 5.6 ACCESS RELATED INFECTIONDISTRIBUTION

ACCESS RELATED INFECTION	NO.OF PATIENTS	TOTALIN PERCENTAGE
YES	8	13%
NO	52	87%
TOTAL	60	100 %

KNOWLEDGE ABOUT AVF CARE DISTRIBUTION

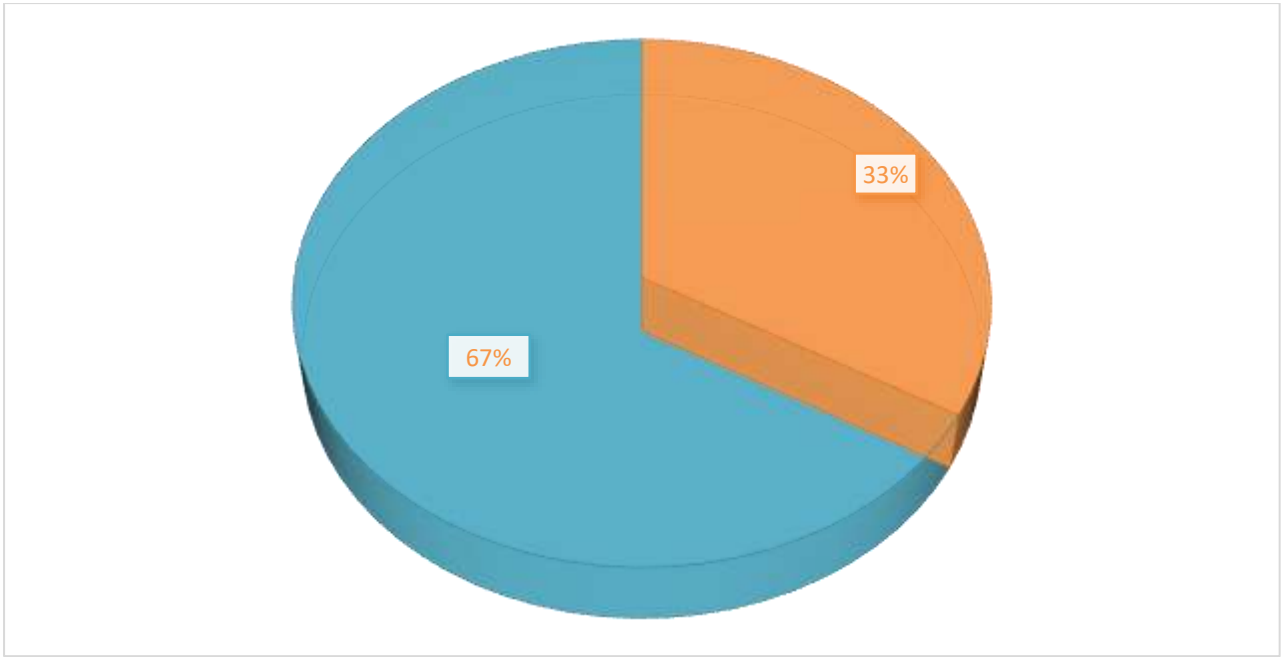

FIGURE:5.7 KNOWLEDGE ABOUT AVF CARE DISTRIBUTION

TABLE: 5.7 KNOWLEDGE ABOUT AVF CARE DISTRIBUTION

KNOWLEDGE ABOUT AVF CARE DISTRIBUTION	NO.OF PATIENTS	TOTALIN PERCENTAGE
YES	40	67%
NO	20	33%
TOTAL	60	100%

ACCESS CARE PRACTICE DISTRIBUTION

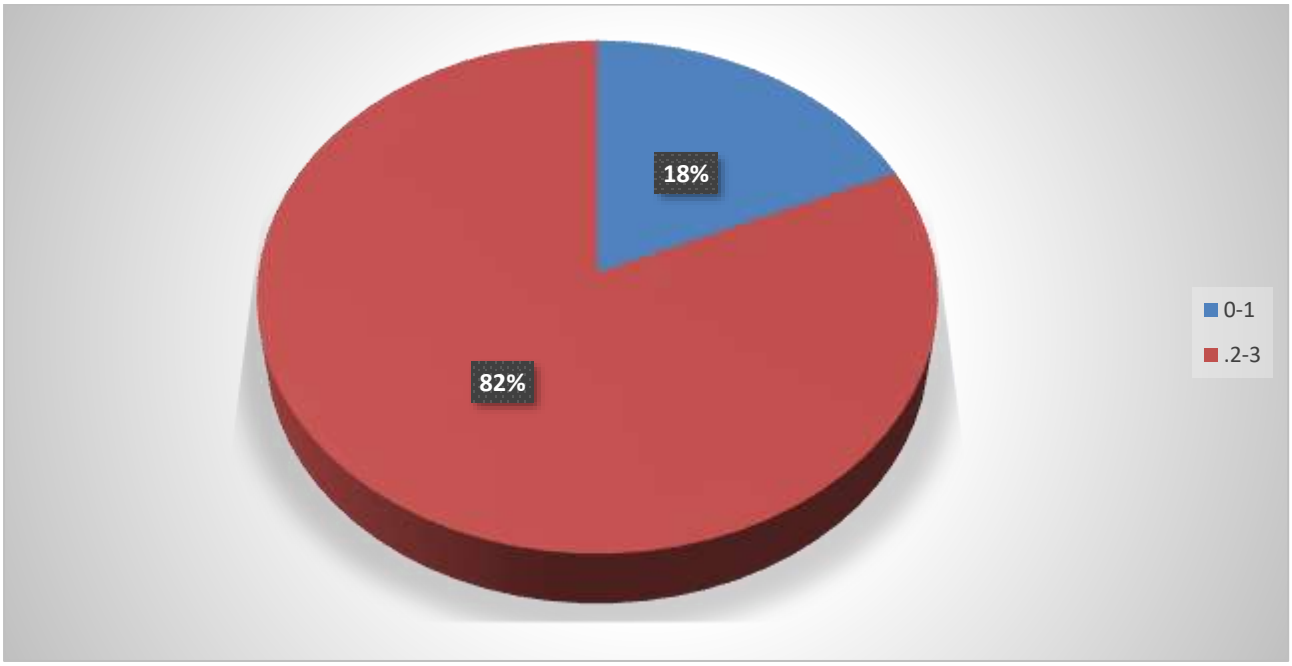

FIGURE: 5.8 ACCESS CARE PRACTICE DISTRIBUTION

TABLE: 5.8 ACCESS CARE PRACTICE DISTRIBUTION

ACCESS CARE PRACTICE DISTRIBUTION	NO.OF PATIENTS	TOTALIN PERCENTAGE
YES	49	82%
NO	11	18%
TOTAL	60	100%

ACCESS CARE ATTITUDE DISTRIBUTION

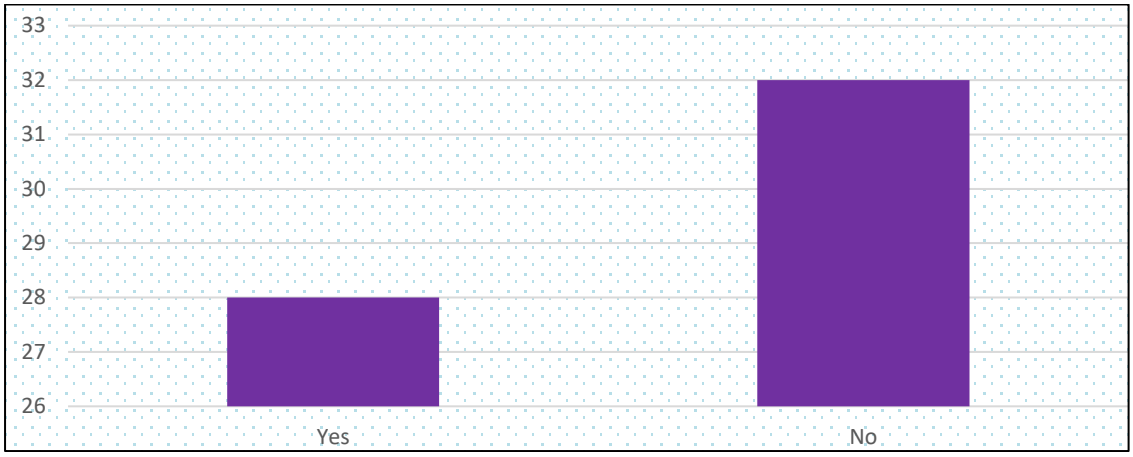

FIGURE: 5.9 ACCESS CARE ATTITUDE DISTRIBUTION

TABLE: 5.9 ACCESS CARE ATTITUDE DISTRIBUTION

ACCESS CARE ATTITUDE DISTRIBUTION	NO.OF PATIENTS	TOTALIN PERCENTAGE
YES	28	47%
NO	32	53%
TOTAL	60	100%

FREQUENCY OF AVF AWARENESS AMONG HD PATIENTS

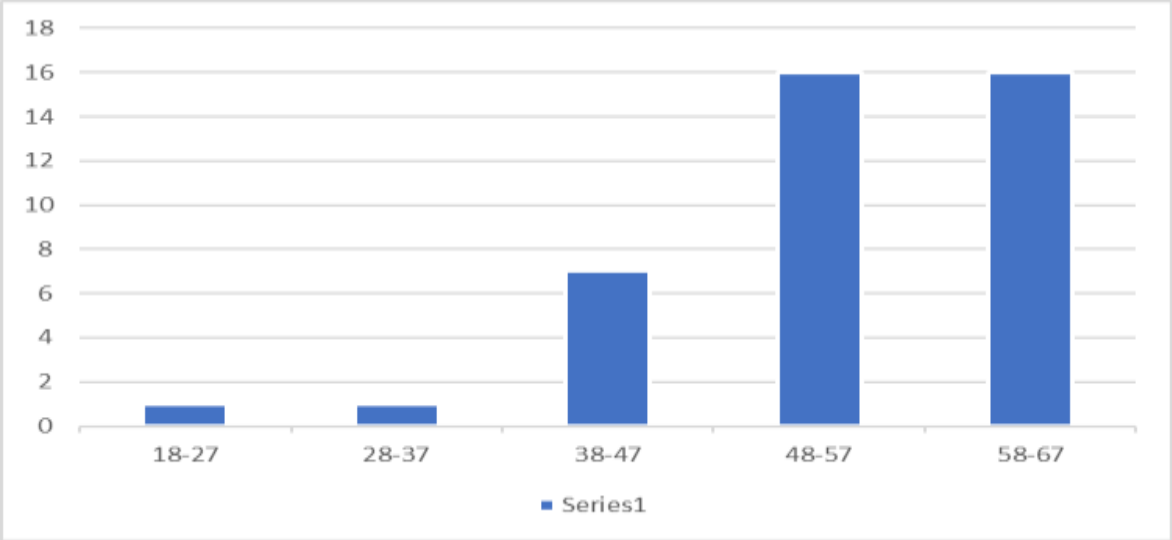

FIGURE:5.10FREQUENCY OF AVF AWARENESS AMONG HD PATIENTS

TABLE:5.10 FREQUENCY OF AVF AWARENESS AMONG HD PATIENTS

FREQUENCY OF AVF AWARENESS AMONG HD PATIENTS	NO.OF PATIENTS	TOTALIN PERCENTAGE
18-27	1	2.5%
28-37	1	2.5%
38-47	7	17%
48-57	16	39%
58-67	16	39%
TOTAL	41	100 %

DISCUSSION

From above table, it is observed that 67% of patients are Male, and 33% of patients are patients. It is observed from the above table that 37% of patients at age 58 to 67 years, 38% of patients at age between 48 to 57 years, 17% of patients at age between 38 to 47 years, 5% of patients at age between 28 to 37 years, and 3% of patient at age 18 to 27 years.

From above table, it is observed that 3% of patients are in below months, 52% of patients are 5-25 months, 18% of patients are 25-45 months, and 20% of patients are 45-65 months, 7% of patients above 65 months. It is noted from the above table that 65% of patients are hypertension, 22% of patients are type 2 diabetes mellitus, and 13% of patients are cardiovascular disease. From above table it is observed that 0%o f HIV patients, 4% of HCV patients, and 0% of HBSAG patients from abovetable, it is observedthat13% of the patients are having access related infection, 87% of the patients are not having access related infection.

From above table, it is observed that 67% of the patients have knowledge about proper AVF care, 33% of patients still lack this essential knowledge.Fromabovetable,itisobservedthat82%ofthepatients are have practice about proper AVF care,18% of the patients are not having practice about proper AVF care. From above table, it is observed that 47% of the patients are not having attitude about proper AVF care,53% of the patients are having attitude about proper AVF care.

From the above table, it is observed that the majority of patients who are aware of AVF (Arteriovenous Fistula) fall within the age groups of 48–57 and 58–67 years, each accounting for 39% of the respondents. Awareness is significantly lower among younger age groups, with only 2.5% each in the 18–27 and 28–37 age brackets.

CONCLUSION

Knowledge compliance gap

Despite moderate knowledge levels, a substantial number of patients failed to consistently follow AVF care guidelines. This gap suggests that knowledge alone may not be sufficient to ensure compliance. Behavioral factors, health beliefs, fatigue, and caregiver support may also play important roles.

Clinical Implications

These findings highlight the urgent need for **structured, ongoing educational programs** within dialysis units. Education should be personalized, practical, and regularly reinforced. Incorporating **visual aids, demonstrations, and family involvement** may also improve retention and behavior.

Additionally, staff training to ensure consistent messaging across providers, and periodic audits of patient understanding, can enhance overall outcomes.

LIMITATIONS

- The use of self-reported compliance data may introduce social desirability bias.
- The sample was from a single center, which may limit generalizability.

- Cross-sectional design prevents assessment of causality or behavior over time.

RECOMMENDATIONS FOR IMPROVEMENT

Enhanced Patient Education
Use visual aids, demonstrations, and teach-back methods.
Provide written instructions in the patient's native language.
Regular Reinforcement
Dialysis nurses should review AVF care during each session.
Encourage family/caregiver involvement in care.
Behavioral Interventions
Motivational interviewing to address non-compliance.
Peer support groups for shared learning.
Multidisciplinary Approach
Nephrologists, nurses, and social workers should collaborate to address barriers.

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