

7-1-2021

Assessment of knowledge and self-reported practices regarding self-care of arteriovenous (AV) fistula among patients undergoing hemodialysis

Deepa Muthusamy

the tamil nadu dr. MGR medical university, deepaa.harish@gmail.com

R Sudha

VHS-M A Chidambaram College of Nursing, Tamil Nadu, India, sudhanatpagam@gmail.com

Grace Pal

zyshgrace@gmail.com

Cheranmadevi P

cherandevi152@gmail.com

Follow this and additional works at: <https://impressions.manipal.edu/mjnhs>



Part of the [Nursing Commons](#)

Recommended Citation

Muthusamy, Deepa; Sudha, R; Pal, Grace; and P, Cheranmadevi (2021) "Assessment of knowledge and self-reported practices regarding self-care of arteriovenous (AV) fistula among patients undergoing hemodialysis," *Manipal Journal of Nursing and Health Sciences*: Vol. 7: Iss. 2, . Available at: <https://impressions.manipal.edu/mjnhs/vol7/iss2/5>

This Original Research is brought to you for free and open access by the MAHE Journals at Impressions@MAHE. It has been accepted for inclusion in Manipal Journal of Nursing and Health Sciences by an authorized editor of Impressions@MAHE. For more information, please contact impressions@manipal.edu.

Assessment of knowledge and self-reported practices regarding self-care of arteriovenous (AV) fistula among patients undergoing hemodialysis

Grace Pal, Deepa M*, Cheranmadevi P, Sudha R

Email: deepaa.harish@gmail.com

Abstract

Introduction: End-stage renal disease (ESRD) occurs when chronic kidney disease reaches an advanced state. Among the available treatments for ESRD, hemodialysis is the most utilized treatment. To facilitate hemodialysis, an Arteriovenous (AV) fistula is created by connecting the artery to a vein. **Aim:** The present study aimed to assess the knowledge and practice regarding self-care of AV fistula among patients undergoing hemodialysis. **Methods:** A descriptive research study was conducted among 100 patients undergoing hemodialysis in selected hospitals, Chennai by non-probability purposive sampling technique. An interview guide that consists of semi-structured items was used to collect demographic and clinical data. Structured multiple-choice items and three-point Likert scale were used to assess knowledge and practice respectively. **Results:** The study findings revealed that the mean score (SD) for moderately adequate knowledge was 11.33 (0.51) and inadequate knowledge was 6.77 (1.89). The mean score (SD) for moderate practice was 30.36 (3.35) and poor practice was 16.22 (5.03). A low negative correlation was found between knowledge and practice towards self-care of AV fistula which was not statistically significant at a 5% level of significance. **Conclusion:** The study findings gave an insight that the patients undergoing hemodialysis had inadequate knowledge and poor practice regarding self-care of AV fistula. It also helped to understand the educational needs of patients and the nurses' responsibility towards imparting knowledge to enhance better practice.

Keywords: hemodialysis, knowledge, self-reported practice, self-care of arteriovenous fistula

Introduction

The kidneys are among the most vital organs of the human body which are essential for the homeostasis of the body's extracellular fluid. Kidney diseases can be classified as acute and chronic. Acute Kidney Injury (AKI) is a sudden episode of kidney failure or kidney damage that happens within a few hours or few days.

Grace Pal¹, Deepa M², Cheranmadevi P³, Sudha R⁴

¹ VHS-MA Chidambaram College of Nursing, Chennai, Tamil Nadu, India.

² Professor, VHS-MA Chidambaram College of Nursing, Chennai, Tamil Nadu, India.

³ Lecturer, VHS-MA Chidambaram College of Nursing, Chennai, Tamil Nadu, India.

⁴ Principal, VHS-MA Chidambaram College of Nursing, Chennai, Tamil Nadu, India.

Manuscript received: 7 April 2021

Revision accepted: 10 June 2021

*Corresponding Author

Chronic Kidney Disease (CKD) is usually caused by a long-term disease, such as high blood pressure or diabetes that slowly damages the kidneys and reduces their function over time. Among the available treatments for CKD, hemodialysis is the most utilized treatment. There are three types of hemodialysis access: a fistula, a graft, and a catheter. An arteriovenous fistula (AVF) is a direct connection of an artery to a vein. Although AVF is the best access for dialysis, the fistula is susceptible to various complications such as blood hypoflow, thrombosis, aneurysms, infection, hand ischemia, hand edema, and cardiac overload. Healthcare members, as well as patients, are held responsible for maintaining the patency of AV fistula (Smeltzer, 2016).

AVF allows patients with CKD to get the treatment that is needed, serves as a lifeline to save their life. Patients must follow the self-care instructions given by the healthcare team members to maintain the patency

How to cite this article: Pal, G., Deepa, M., Cheranmadevi, P., & Sudha, R. (2021). Assessment of knowledge and self-reported practice regarding self-care of arteriovenous (AV) fistula among patients undergoing hemodialysis. *Manipal Journal of Nursing and Health Sciences*, 7 (2). 27-33.

of AVF and to protect their health. The complications associated with AVF can be prevented by keeping access clean and protected following a daily routine of self-care practices. Hence, the researcher felt the need to assess the knowledge and self-reported practices on self-care of AVF among patients undergoing hemodialysis.

Objectives

The objectives of the study were:

- To assess the knowledge and self-reported practices regarding self-care of AV fistula among patients undergoing hemodialysis.
- To correlate the knowledge scores with self-reported practice scores regarding self-care of AV fistula among patients undergoing hemodialysis.
- To associate the knowledge score and self-reported practice score with demographic and clinical variables.

Material and Methods

A quantitative research approach with the descriptive design was adopted to assess the knowledge and practice regarding self-care of AVF among patients undergoing hemodialysis in C.S.I Kalyani Multispeciality Hospital, Mylapore, and Fortis Multispeciality Hospital, Adyar, Chennai. The study population consisted of 100 patients undergoing hemodialysis through an AVF in selected settings. Patients both men and women who were aged between 40 and 60 years, undergoing hemodialysis for a period of six months to two years with AVF and could understand either Tamil or English were included in the study. Patients who were critically and mentally ill were excluded. A non-probability purposive sampling technique was used to select the samples.

The tool used for the study was a semi-structured questionnaire to elicit demographic and clinical data. Twenty structured multiple-choice items were utilized to assess the knowledge. Each item consisted of one correct answer and three distractors. Every correct answer was given a score of '1' and each wrong answer carried a '0' mark. The total score was 20. Then, the percentage was calculated and the scores were interpreted as adequate (>75%), moderately adequate

(51% to 75%), and inadequate ($\leq 50\%$). The three-point Likert scale was used to assess self-reported practices. It consisted of 25 statements including both positive (16) and negative (9) statements. The total score was 50. The scale legends were: never, sometimes, always and were scored as follows: for positive statements- Never (0), Sometimes (1), Always (2), for negative statements- Never (2), Sometimes (1), Always (0). Then, the percentage was calculated, and the scores were interpreted as: good - >75% (score of 38 - 50), moderate - 51% to 75% (score of 26 - 37) and poor $\leq 50\%$ (score of 0 - 25) practices. The tool was validated by one nephrologist and two medical surgical nursing experts. The reliability of the knowledge and practice tool was checked using the test-retest method. The reliability scores were 0.86 and 0.89 for the knowledge and practice tool respectively.

Institutional ethical committee approval was obtained. After obtaining informed consent from the patients, data were collected by the researcher. It took approximately 45 minutes to collect the data from each sample. Anonymity was maintained.

Data analysis

Frequency and percentage distribution, mean and standard deviation were used to assess the level of knowledge and practice regarding self-care of AVF among patients receiving hemodialysis. The Pearson's coefficient of correlation was used to correlate the knowledge with practice regarding self-care of AV fistula among patients receiving hemodialysis. Chi-square test was used to associate the knowledge and practice regarding self-care of AV fistula among patients receiving hemodialysis with demographic and clinical variables.

Results

The data presented in Table 1 shows that around 34% of the patients were in the age group of 46 – 50 years and 31% of them were in the age group of 51 – 55 years. The majority (57%) of the patients were males and 31% of the patients were having primary education. Maximum (47.5%) of them were self-employed and 27% of the patients were working in the private sector. Thirty-nine percent of the patients belonged to the

Table 1
Frequency and Percentage Distribution of Demographic Variables of Patients Undergoing Hemodialysis

| N = 100 | | |
|--------------------------------|-----------|----------------|
| Demographic variables | Frequency | Percentage (%) |
| Age in years | | |
| 41 – 45 | 20 | 20.0 |
| 46 – 50 | 34 | 34.0 |
| 51 – 55 | 31 | 31.0 |
| 56 – 60 | 15 | 15.0 |
| Gender | | |
| Male | 57 | 57.0 |
| Female | 43 | 43.0 |
| Educational qualification | | |
| No formal education | 28 | 28.0 |
| Primary education | 31 | 31.0 |
| Secondary education | 19 | 19.0 |
| Higher secondary education | 4 | 4 |
| Graduate | 17 | 17.0 |
| Postgraduate | 1 | 01 |
| Occupation | | |
| Employed | 59 | 59.0 |
| Unemployed | 41 | 41.0 |
| If employed (n=59) | | |
| Self employed | 28 | 47.5 |
| Government | 0 | 0 |
| Private | 16 | 27.0 |
| Retired | 0 | 0 |
| Daily wages | 15 | 25.5 |
| Family monthly income (in INR) | | |
| Less than 10,000/- | 70 | 70.0 |
| 10,001 to 15,000/- | 9 | 9 |
| 15,001 to 20,000/- | 10 | 10.0 |
| 20,001 and above | 11 | 11.0 |
| Religion | | |
| Hindu | 39 | 39.0 |
| Christian | 31 | 31.0 |
| Muslim | 30 | 30.0 |
| Area of residence | | |
| Rural | 24 | 24.0 |
| Urban | 74 | 74.0 |
| Semi-urban | 2 | 2 |
| Type of family | | |
| Nuclear family | 34 | 34.0 |
| Joint family | 46 | 46.0 |
| Extended family | 20 | 20.0 |
| Marital status | | |
| Single | 23 | 23.0 |
| Married | 74 | 74.0 |
| Divorced | 1 | 1 |
| Widower/widow | 2 | 0 |
| Dietary habits | | |
| Vegetarian | 46 | 46.0 |
| Non-vegetarian | 54 | 54.0 |

Table 2
Frequency and Percentage Distribution of Clinical Variables of Patients undergoing Hemodialysis

| N = 100 | | |
|--|-----------|----------------|
| Clinical Variables | Frequency | Percentage (%) |
| Age at diagnosis of CKD (in years) | | |
| 41– 45 | 20 | 20.0 |
| 46– 50 | 35 | 35.0 |
| 51– 55 | 31 | 31.0 |
| 56 – 60 | 14 | 14.0 |
| Presence of co-morbid disease | | |
| Diabetes mellitus | 43 | 43.0 |
| Hypertension | 43 | 43.0 |
| Cardiac disease | 14 | 14.0 |
| Duration of undergoing hemodialysis | | |
| 6 months – 1 year | 56 | 56.0 |
| 1 – 2 years | 44 | 44.0 |
| Frequency of receiving hemodialysis | | |
| 3 times per week | 40 | 40.0 |
| 2 times per week | 59 | 59.0 |
| 1 time per week | 1 | 1 |
| Location of AV fistula | | |
| Wrist | 45 | 45.0 |
| Forearm | 54 | 54.0 |
| Elbow | 1 | 1 |
| History of the failure of AV fistula | | |
| Yes | 41 | 41.0 |
| No | 59 | 59.0 |
| If yes, how many times (n = 41) Once | 41 | 100 |
| Aware of care of AV fistula | | |
| Yes | 45 | 45.0 |
| No | 55 | 55.0 |
| If yes, source of information (n = 45) | | |
| Healthcare professionals | 45 | 100 |
| Intake of prescribed medication | | |
| Antidiabetics | 43 | 43.0 |
| Antihypertensives | 43 | 43.0 |
| Diuretics | 14 | 14.0 |

Hindu religion. The monthly income of most (70%) of the patients was less than 10,000 INR and 74% of the patients were residing in an urban area. The majority (74%) of the patients were married and (46%) of the patients belonged to joint families. The majority (54%) of the patients were non-vegetarian.

Table 2 shows that most (35%) of the patients were diagnosed as CKD in the age group of 46 – 50 years and 43% of them had diabetes mellitus and hypertension and were on medications. The majority (56%) of the patients were undergoing hemodialysis for six months to one year and (59%) of the patients were receiving hemodialysis two times a week. Most (54%) of the patients had AV fistula on the forearm. Fifty-nine percent of the patients had intact AV fistula and 41% of the patients had reports of one-time failure of AV fistula. Around 45% of the patients reported that they were aware of the care of AV fistula, as they received information from the healthcare professionals.

Assessment of Knowledge

The knowledge was assessed using a knowledge questionnaire on self-care of AV fistula with a total score of 20. A score of 1 to 10 was considered as inadequate knowledge, 11 to 15 as moderately adequate knowledge, and 16 to 20 as adequate knowledge. The majority (94%) of the patients had inadequate knowledge and 6% of them had moderately adequate knowledge regarding self-care of AV fistula. None of them had adequate knowledge (Figure 1). The mean (SD) score for moderately adequate knowledge was 11.33 (0.51) and inadequate knowledge was 6.77 (1.89).

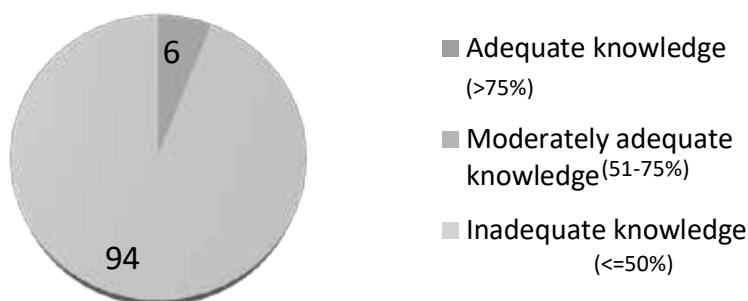


Figure 1. Percentage distribution of level of knowledge regarding self-care of AV fistula among patients undergoing hemodialysis.

Assessment of Self-reported practice

The majority (88%) of the patients had poor self-reported practice and 11% of them had moderate self-reported practice regarding self-care of AV fistula.

Only one had good self-reported practice (Figure 2). The mean (SD) score for moderate self-reported practice was 30.36 (3.35) and poor self-reported practice was 16.22 (5.03).

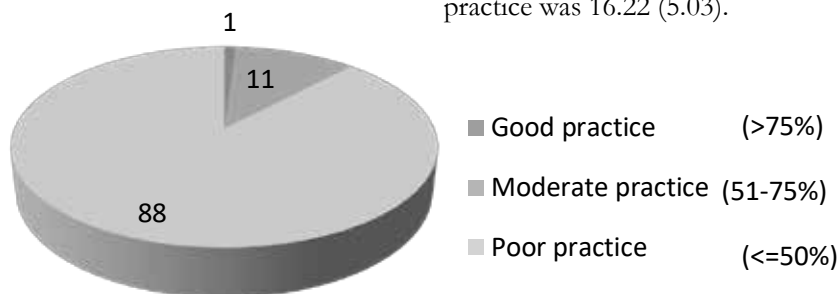


Figure 2. Pie diagram showing the percentage distribution of level of practice regarding self care of AV fistula among patients undergoing hemodialysis

Correlation of knowledge with self-reported practice

There was a low negative correlation ($r = - .079, p = .432$) between knowledge and self-reported practice towards self-care of AV fistula which was not statistically significant.

Association of knowledge with demographic and clinical variables

Table 3 shows that there was a statistically significant association between the level of knowledge towards self-care of AV fistula with demographic variables such as education and area of residence and the clinical variables such as the location of AV fistula ($p < .05$)

Table 3
Association of Level of Knowledge regarding Self-care of AV Fistula with Demographic and Clinical Variables
 N = 100

| Variables | Level of Knowledge | | Chi-Square Value | p-value |
|----------------------------|--------------------|------------|------------------|----------|
| | Moderate | Inadequate | | |
| Education | | | 18.44 | .002 S* |
| No formal education | 1 | 27 | | |
| Primary education | 2 | 29 | | |
| Secondary education | 0 | 19 | | |
| Higher secondary education | 0 | 4 | | |
| Graduate | 2 | 15 | | |
| Postgraduate | 1 | 0 | | |
| Area of residence | | | 7.59 | .02 S* |
| Rural | 2 | 22 | | |
| Urban | 3 | 71 | | |
| Semi-urban | 1 | 1 | | |
| Location of AV fistula | | | 15.87 | .001 S** |
| Wrist | 2 | 43 | | |
| Forearm | 3 | 51 | | |
| Elbow | 1 | 0 | | |

Note. S* = Significant at $p < .05$; S** = Significant at $p < .01$.

Association between self-reported practice with demographic and clinical variables

Table 4 shows that there was a statistically significant association found between the level of self-reported practice towards self-care of AVF with demographic variables of patients such as age, educational qualification, occupation, family monthly income, and religion, and with clinical variables such as age at diagnosis of chronic kidney disease, location of AV fistula and history of failure of AV fistula at $p < .05$.

Table 4
Association of Level of Self-reported Practice regarding Self-care of AV Fistula with Demographic and Clinical Variables
 N = 100

| Variables | Level of self-reported practice | | | Chi-square value | p-value |
|---|---------------------------------|----------|------|------------------|---------|
| | Good | Moderate | Poor | | |
| Age (in years) | | | | 12.4 | .05 S* |
| 41-45 | 0 | 0 | 20 | | |
| 46-50 | 0 | 4 | 30 | | |
| 51-55 | 0 | 3 | 28 | | |
| 56-60 | 1 | 4 | 10 | | |
| Educational qualification | | | | 20.85 | .02 S* |
| No formal education | 0 | 1 | 27 | | |
| Primary education | 0 | 7 | 24 | | |
| Secondary education | 1 | 0 | 18 | | |
| Higher secondary | 0 | 0 | 4 | | |
| Graduate | 0 | 2 | 15 | | |
| Postgraduate | 0 | 1 | 0 | | |
| Occupation | | | | 6.79 | .03 S* |
| Employed | 0 | 3 | 56 | | |
| Unemployed | 1 | 8 | 32 | | |
| Family monthly income (in INR) | | | | 20.26 | .002 S* |
| Less than 10,000/- | 1 | 3 | 66 | | |
| 10,001 to 15,000/- | 0 | 2 | 7 | | |
| 15,001 to 20,000/- | 0 | 5 | 5 | | |
| 20,001 and above | 0 | 1 | 10 | | |
| Religion | | | | 11.64 | .02 S* |
| Hindu | 1 | 9 | 29 | | |
| Christian | 0 | 1 | 30 | | |
| Muslim | 0 | 1 | 29 | | |
| Age at diagnosis of chronic kidney disease (in years) | | | | 13.57 | .03 S* |
| 41-45 | 0 | 0 | 20 | | |
| 46-50 | 0 | 4 | 31 | | |
| 51-55 | 0 | 3 | 28 | | |
| 56-60 | 1 | 4 | 9 | | |
| Location of AV fistula | | | | 14.41 | .006 S* |
| Wrist | 0 | 1 | 44 | | |
| Forearm | 1 | 9 | 44 | | |
| Elbow | 0 | 1 | 0 | | |
| History of the failure of AV fistula | | | | 6.04 | .04 S* |
| Yes | 0 | 1 | 40 | | |
| No | 1 | 10 | 48 | | |
| If yes, how many times | | | | 6.04 | .04 S* |
| Once | 0 | 1 | 40 | | |
| Twice | 0 | 0 | 0 | | |
| More than two times | 0 | 0 | 0 | | |

Note. S* = Significant at $p < .05$.

Discussion

The results of the study showed that the majority (94%) of the patients had inadequate knowledge and 6% of patients had moderately adequate knowledge and none of them had adequate knowledge on self-care of AV fistula. The majority (88%) of the patients had poor practice and 11% of them had moderate practice and 1% of them had a good practice. The findings of the study were supported by the study conducted by Pessoa & Linhares (2015) who reported that 97.7% of patients undergoing hemodialysis had inadequate knowledge and inadequate practice towards self-care of AVF.

The study results showed that there was a statistically significant association between the level of knowledge regarding self-care of AVF and demographic variables of patients such as education and area of residence and with clinical variables of patients such as the location of AV fistula at ($p < .05$). The present study findings are consistent with the study done by Sousa et al. (2017) who reported that there was a significant association between the level of knowledge regarding self-care behaviour of AV fistula and location of AVF ($p < .05$).

The study findings showed a statistically significant association of level of self-reported practice towards self-care of AVF with demographic variables such as age, educational qualification, occupation, family monthly income, and religion and with selected clinical variables such as age at diagnosis of chronic kidney disease, location of AV fistula, history of failure of AV fistula ($p < .05$). The results were consistent with the study findings of Kasthuri et al. (2017) who reported that there is a significant association between self-care practice of AV fistula and age, education status, occupation, monthly income ($p < .05$). This indicates that as the age of the patient increases, their level of practice also improves. It also revealed that irrespective of the educational status, the level of practice towards self-care of AV fistula was poor. Another study conducted by Mangrulle (2017) also showed a significant association between self-care practice on AV fistula and history of failure of AV fistula ($p < .05$).

The investigator did not face any difficulties during the study. The study could be replicated to a larger

population and their lived-in experiences with AVF undergoing hemodialysis can be studied. Further studies should explore the difficulties in adhering to the self-care practices among patients undergoing hemodialysis and incorporate innovative strategies to enhance the knowledge and practice of self-care of AVF among patients undergoing hemodialysis.

Conclusion

The study findings showed that most of the patients had inadequate knowledge and poor practice despite undergoing dialysis for one to two years. There was no correlation between knowledge and self-reported practice towards self-care of AVF. The study findings gave an insight to the investigator about the knowledge and practice regarding self-care of AVF among patients undergoing hemodialysis. There is a need to enhance health literacy using various innovative strategies to enrich the knowledge and practice regarding self-care of AVF among patients undergoing hemodialysis.

Source of support: None

Conflict of interest: None declared

Source of support in the form of grants: None

References

- Kasthuri, S., Nivitha, V., James, J., & Sugunakumari, S. (2017). A study to assess the self-care practice on AV fistula among patients undergoing hemodialysis in a selected hospital at Kelambakkam, Kanchipuram District, Tamilnadu, India. *Global Journal for Research Analysis*, 6(8), 60-61. https://www.worldwidejournals.com/globaljournal-for-research-analysis-GJRA/fileview/August_2017_1502788484__21.pdf
- Mangrulle, P. R. (2017). A study to identify the learning needs of patients undergoing hemodialysis and prepare and evaluate the effectiveness of self-instructional module for home management of patients. *Int. J. Nur. Edu. and Research*, 5(2), 131-135. doi: 10.5958/2454-2660.2017.00027.8
- Pessoa, N. R. C., & Linhares, F. M. P. (2015). Hemodialysis patients with arteriovenous fistula: knowledge, attitude and practice. *Escola Anna Nery Revista de Enfermagem*, 19(1), 73-79. doi: 10.5935/1414-8145.20150010

Smeltzer, S.C. (2016). *Brunner and Suddarth's Textbook of medical-surgical nursing* (15th ed). Philadelphia: Lippincott Williams & Wikins.

Sousa, C. N., Marujo, P., Teles, P., Lira, M. N., & Novais, M. E. (2017). Self-Care on Hemodialysis: Behaviors With the Arteriovenous Fistula. *Therapeutic*

apheresis and dialysis : official peer-reviewed journal of the International Society for Apheresis, the Japanese Society for Apheresis, the Japanese Society for Dialysis Therapy, 21(2), 195–199. <https://doi.org/10.1111/1744-9987.12522>.



Copyright: ©2021 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>)