International Journal of Nursing and Health Sciences

ISSN Print: 2664-9187
ISSN Online: 2664-9195
Impact Factor: RJIF 6-27
IJNHS 2025; 7(2): 161-164
www.nursingjournals.net
Received: 03-09-2025
Accepted: 07-10-2025

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Nurses in their competence to educate hemodialysis patients about tunneled catheter care

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DOI: https://www.doi.org/10.33545/26649187.2025.v7.i2c.128

Abstract
Introduction: Hemodialysis is one of the methods for treating chronic renal failure. There are two types of vascular access for its implementation - arteriovenous anastomosis and central venous catheters. Permanent or so-called tunneled catheters are the more commonly used vascular access to the extracorporeal circulation. Dialysis nurses have a number of specific competencies, one of which is training patients in the care of their tunneled catheter. It is extremely important that patients comply with the instructions given to them in order to prevent the occurrence of complications.
Material and Methods: A study was conducted among 43 nurses working in dialysis facilities in Pleven, Lovech, Cherven Bryag, Silistra, Sevlievo, Veliko Tarnovo, Vidin. The dialysis departments and centers were of different levels of competence. Sociological methods were used - a direct individual survey with 18 closed and 2 open questions; statistical methods - variance analysis of qualitative variables and graphic analysis. Statistical data processing was performed with the SPSS v.26 program.
Results: Respondents who participated in the study with over 20 years of experience in dialysis facilities were 34.9%. Nurses (90.7%) actively trained patients on how to care for the tunneled catheter, 7% relied on the patient's desire and motivation to take care of their health and answered "Yes, when asked", 2.3% or 1 respondent did not give instructions to patients.
Patients did not follow the instructions given to them, the most common reasons being low health literacy (77.4%), passive attitude (25.8%) and poor living conditions (19.4%), according to the nurses.
Conclusion: A condition for preventing infections, for conducting quality hemodialysis and a good quality of life is the training of patients by nurses and effective compliance with the instructions for care of the tunneled catheter by patients.

Keywords: Tunneled catheter, training, nurse, patient

Introduction
Chronic diseases are an increasing challenge for healthcare, which are a significant threat to the health of the population [1].
Worldwide, chronic kidney disease (CKD) affects over 10% of the population, or more than 850 million people [2].
After 1987, tunneled catheters entered medical practice as an alternative to temporary (non-tunneled) catheters. They are used for hemodialysis treatment for more than three weeks. They are placed in patients who sought medical help late and need to start hemodialysis treatment, but lack a constructed permanent vascular access (arteriovenous anastomosis). Their relative share has increased two to three times in the last two decades in European countries, and in the USA and Canada they represent over 40% of access to hemodialysis treatment, despite the recommendations for their use in up to 10% of hemodialysis patients.
Central venous catheters have the highest complication rate and are generally associated with short patient survival among the various types of vascular access [3,4,5,6].
The most commonly used vascular access for patients starting hemodialysis treatment worldwide is tunneled catheters. For example, 60-80% of patients in the United States begin their hemodialysis treatment with catheters. They should, ideally, be temporary vascular access. However, data show that in many patients these catheters are used for months and years, and numerous studies have found that, as the only vascular access, up to 40% of patients have catheters after more than 90 days from the start of their hemodialysis treatment [7].

Tunneled catheter care is of essential importance for the quality of life and the incidence of infectious complications in hemodialysis patients. The level of training of hemodialysis patients with a tunneled catheter by dialysis nurses regarding catheter care is extremely important.

Material and methods

A study was conducted among 43 nurses working in dialysis facilities in Pleven, Lovech, Cherven Bryag, Silistra, Sevlievo, Veliko Tarnovo, Vidin. The dialysis departments and centers have different levels of competence. Sociological methods were used - a direct individual survey with 18 closed and 2 open questions; statistical methods - variance analysis of qualitative variables and graphical analysis. Statistical data processing was performed with the SPSS v.26 program.

Results

The respondents who responded to the survey and have over 20 years of experience in dialysis facilities are 34.9%. This is indicative that dialysis facilities are provided with people with extensive medical experience.

Nurses (90.7%) actively trained patients on how to care for the tunneled catheter, 7% relied on the patient's desire and motivation to take care of their health and answered "Yes, when asked", 2.3% or 1 respondent did not give instructions to patients. Fig.1

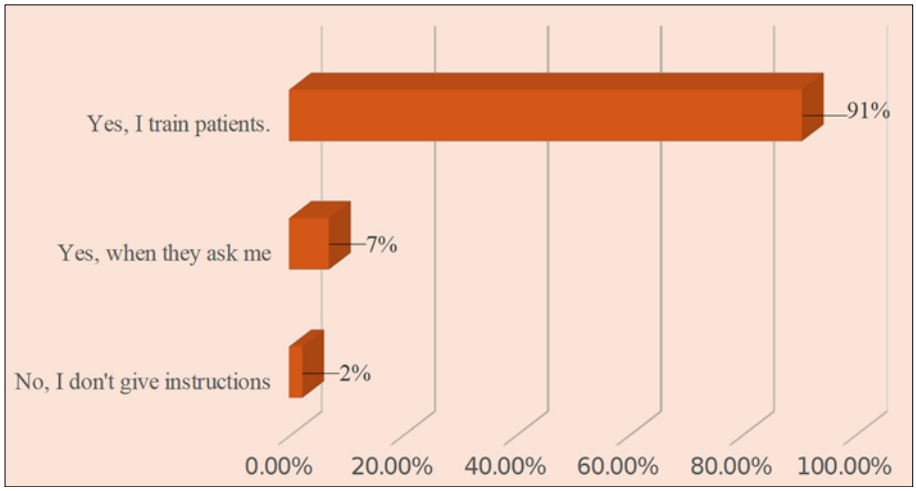

Fig 1: Do nurses educate patients about caring for the tunnelled catheter?

Regarding the patients' compliance with the instructions given to them for the care of the catheter, 9.3% of the nurses expressed the opinion that they were not followed, 7.0% gave a positive assessment of the patients, while the majority, 83.7%, with their answer "No, completely" hesitated. Fig. 2.

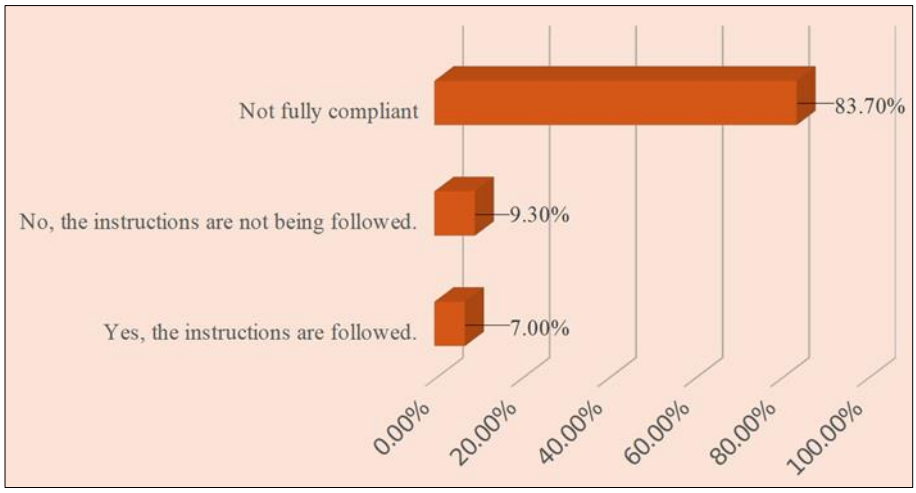

Fig 2: Do patients follow the instructions, according to nurses?

According to nurses, the most common reasons for patients not following the instructions given to them are low health literacy (77.4%), passive attitude (25.8%), and poor living conditions (19.4%). Fig.3

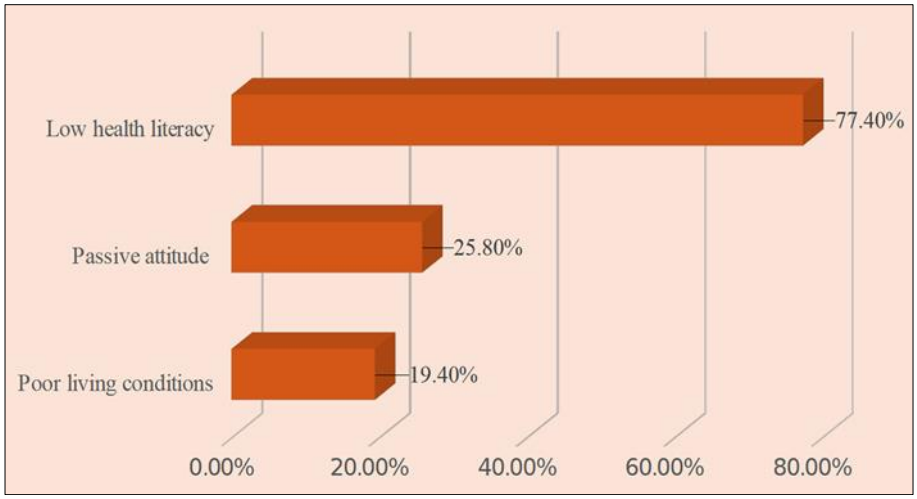

Fig 3: Reasons why patients do not follow instructions, according to nurses

Discussion

One of the methods of treatment of patients with end-stage chronic renal failure is hemodialysis.

Nurses in dialysis facilities provide specialized health care for hemodialysis patients, which require specific competencies[8] - good knowledge of the signs of infection, precise monitoring of dialysis equipment indicators, which are a valuable indicator of the functional state of the vascular access, which provides valuable information about its possible dysfunction; adequate behavior in case of possible complications during a dialysis session, effective communication with patients. The specific competence to educate the patient was considered by 65.1% of respondents who responded to the direct individual survey. Do they educate patients about hygiene and care for the catheter and monitoring their general condition, 90.7% of nurses are categorical that they fulfill this role of educators. 7% rely on the patient's desire and motivation to take care of their health and answer "Yes, when asked", 2.3% or 1 respondent does not give instructions to patients. This may be related to insufficient financial incentives for medical staff, lack of career development, and insufficient time for communication with the patient due to the lack of staff.

Education is about increasing the patient's awareness of possible complications, providing advice and support, and thus bringing about a change in behavior [1]. The patient's care for the tunneled catheter is to maintain the integrity of the dressing to prevent wetting in case of its disruption. It is not recommended to perform hygiene needs such as taking a shower, bathing in pools and seas, without a protective waterproof dressing. This will prevent complications such as outlet infection, tunnel infection, catheter-associated sepsis and infective endocarditis, which can lead to multiple subsequent hospitalizations burdening the health system and subsequent disability of the patient. The most common reason for patients not following the instructions, 77.4% of the respondents indicated low health literacy and incompetence, 25.8% that patients have a passive attitude towards the problem, 19.4% the presence of poor living conditions. The low health culture of patients is also rooted in uncontrolled hypertension and diabetes, obesity, which are among the main risk factors for the development of chronic renal failure. This neglect of chronic diseases is expressed in the lack or irregular control of blood pressure, inaccurate intake of medications with a hypotensive effect, omissions in visits to a personal doctor and cardiologist to monitor the general condition. For diabetes - low blood sugar control, errors in the diet, irregular visits to an endocrinologist. The unfavorable prognosis is based on the fact that the risk factors for these diseases are increasing in frequency. The forecast of the International Diabetes Federation is that the number of diabetics will increase from 366 million in 2011 to 552 million in 2030. Advanced methods of laboratory diagnostics, modern insulin preparations significantly improve the treatment of diabetes mellitus and prolong the survival of these patients. These and many other factors are the reason why the most common cause of chronic renal failure, including hemodialysis treatment, is diabetes mellitus [9]. A passive attitude to the problem is to ignore the appearance of symptoms that are indicative of the presence of a complication, such as pain, a feeling of warmth, tightness, increased body temperature and other manifestations of discomfort in the area of the tunneled catheter. These are all indicative complaints of a complication that can lead to catheter dysfunction, as well as to more serious complications such as bacteremia (sepsis) and infectious endocarditis. Failure to take any measures by the patient is reduced to notifying the staff about fever at home, fevers and other symptoms. The presence of poor living conditions, which respondents indicated as possible reasons for non-compliance with the instructions given for vascular access, is rather a social problem that affects skin care, maintaining good hand hygiene, whenever touching the catheter area, if an additional dressing is necessary. An exceptional level of hygiene in the home must be maintained, heavy physical exertion must be eliminated - for example, in agriculture, where the probability of contamination of the dressing is much greater, which is a prerequisite for the occurrence of infection. The patient, if he is in good physical shape, very often still performs activities in his daily life that were routine before catheterization. He needs to adjust his work and rest regime, that is, there is a change in the stereotype of life of the dialysis patient. The majority of patients turn to their general practitioner late for help. Accordingly, when a problem is identified, he refers them to a specialist nephrologist. Patients are not aware of the possible complications that may occur if the recommendations are not followed, both in terms of taking medications, neglecting the dietary and exercise regimen, and taking care of the vascular access. All this is directly related to the duration and quality of their life. Nursing care is of fundamental importance for patients with end-stage renal disease, since its quality is directly related to the quality of

treatment [10, 11]. Specialized nursing care in hemodialysis includes therapeutic and interpersonal relationships, as well as rapid responses to physical symptoms, functional limitations, psychosocial disorders and knowledge needs. For hemodialysis patients, who spend a significant part of their lives on treatment, nursing care is of fundamental importance for identifying and solving their problems.

Several authors have emphasized the particular importance of nursing care provided to patients with end-stage renal disease, due to the large proportion of patients suffering from CKD and the large number of patients on hemodialysis [11, 12, 13, 14, 15]. Clinical practice guidelines for the treatment of kidney disease support the provision of education. If adequate and timely, and with active patient participation, complications that can impair quality of life can be prevented. [16, 17, 18]

Conclusion

Nurses 90.7% educate patients on the care of their tunneled hemodialysis catheter, 7% fulfill this role only when patients take the initiative to ask them, 2.3% of respondents who do not educate patients need to take measures to fulfill this role in order to save them from complications. Patients need to realize that they must actively participate in the training and, above all, precisely follow the instructions given by the medical staff. This is a way to reduce the possible complications that may occur and thus extend the time of operation of the vascular access, as well as increase the quality of life and minimize disability.

Acknowledgements

I would like to express my gratitude to the managers and nurses at the dialysis centers in Pleven, Lovech, Veliko Tarnovo, Cherven Bryag, Sevlievo, Silistra, and Vidin who responded to the survey.

References

1. Mireva M, Tsekov M, Chaneva G. Qualification of nurses and rehabilitation specialists in healthcare for patients with chronic diseases. Healthcare. 2019;3:30-5.
2. Lok CE, Yuo T, Lee T. Hemodialysis vascular access: core curriculum 2025. Am J Kidney Dis. 2025;85(2):236-52. doi:10.1053/j.ajkd.2024.05.021
3. Torreggiani M, Bernasconi L, Colucci M, et al. Vascular access, complications and survival in incident hemodialysis patients. Kidney Dial. 2021;1(2):88-9. doi:10.3390/kidneydial1020013
4. Cobo-Sanchez JL, Blanco-Mavillard I, Mancebo-Salas N, et al. Early identification of local infections in central venous catheters for hemodialysis: a systematic review. J Infect Public Health. 2023;16(7):1023-32.
5. Nasiri E, Mohammad HR, Yusef M, Tayebi P, Bariki GM. Causes and risk factors of hemodialysis catheter infection in dialysis patients: a prospective study. Nephro-Urol Mon. 2021;14(1):e117820. doi:10.5812/numonthly.117820
6. Borisov B, Linkova S. Infectious complications of tunneled hemodialysis catheters—types, diagnosis, and treatment strategies. Pediatr Infect Dis. 2018;X(1):37-43.
7. Borisov B, Todorov V, Stoimenova M. Temporary and tunnelled catheters for haemodialysis treatment. Sofia: Paradigma Publishing House; 2018. p. 83.
8. Gergova P, Georgieva S, Mineva-Dimitrova E. Establishment of a therapeutic relationship nurse-patient in patients with oncology diseases. J IMAB. 2024;30(2):5538-41.
9. Georgieva E, Ermenlieva N, Kolarov N. Trends in chronic kidney disease in Bulgaria. J Med Coll Varna. 2019;2(1):23-5.
10. Liyanage T, Ninomiya T, Jha V, et al. Worldwide access to treatment for end-stage kidney disease: a systematic review. Lancet. 2015;385(9981):1975-82. doi:10.1016/S0140-6736(14)61601-9
11. Stavropoulou A, Grammatikopoulou MG, Rovithis M, et al. Through the patients' eyes: the experience of end-stage renal disease patients concerning the provided nursing care. Healthcare (Basel). 2017;5(3):36. doi:10.3390/healthcare5030036
12. Adem SZ, Walker DR, Abbott G, et al. Satisfaction with renal replacement therapy and education: the American Association of Kidney Patients survey. Clin J Am Soc Nephrol. 2011;6(3):605-12. doi:10.2215/CJN.06970810
13. Balaburova M, Tsvetanova K. Basic guidelines for specialized and intensive nursing care for patients with ischemic stroke: a review of global experience. Nursing. 2024;56(3):56-64.
14. Balaburova M. Innovative approaches in nursing care planning. Pleven: MU-Pleven Publishing Center; 2025. p. 41-2. ISBN: 978-954-756-464-3.
15. Palmer SC, de Berardis G, Craig JC, et al. Patient satisfaction with in-centre haemodialysis care: an international survey. BMJ Open. 2014;4(5):e005020. doi:10.1136/bmjopen-2014-005020
16. Mehrotra R, Marsh D, Vonesh E, Peters V, Nissenson A. Patient education and access of ESRD patients to renal replacement therapies beyond in-center hemodialysis. Kidney Int. 2005;68(1):378-90. doi:10.1111/j.1523-1755.2005.00453.x
17. Van Biesen W, van der Veer SN, Murphey M, Loblova O, Davies S. Patients' perceptions of information and education for renal replacement therapy: an independent survey by the European Kidney Patients' Federation. PLoS One. 2014;9(7):e103914. doi:10.1371/journal.pone.0103914
18. Camedda C, Bici G, Magi CE, Guzzon A, Longobucco Y. The therapeutic nurse-patient relationship in hemodialysis: a pilot mixed-method study on perceived quality of nurses' attitudes and caring behaviors. Nurs Rep. 2023;13(3):990-1003. doi:10.3390/nursrep13030087

How to Cite This Article

V Vasileva. Nurses in their competence to educate hemodialysis patients about tunneled catheter care. International Journal of Nursing and Health Sciences. 2025; 7(2): 161-164