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Country Data

Evaluation of Nurses Awareness and Practice of Hemodialysis Access Care in Khartoum State, Sudan

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Abstract

Introduction: In hemodialysis (HD) wards, nurses play a pivotal role in HD access care. Unfortunately, guideline recommendations for routine preventive care are not always followed. This study was designed to evaluate nurses' awareness and practice of HD access care in Khartoum state, Sudan.

Methods: The study included 50 randomly selected HD nurses. Nurses' knowledge was evaluated using a participant-filled questionnaire and their practice was evaluated by direct monitoring. Variables were summarized as frequencies and related to nurses' educational level.

Results: Females constituted 72% of study participants and 85% were university graduates. Half the nurses had more than two years experience in HD centers. Structured training on HD machines and HD access care was received by 56% and 54% of respondents respectively. All participants stated that proper HD access care helps prevent access infection but only 54% stated that it helps in preserving access function. Most nurses (98%) stated that hand hygiene in HD centers was necessary to prevent infection but only 70% were adherent to hand hygiene before access manipulation. Most nurses (98%) evaluated HD access function before connection but only 52% evaluated it for signs of infection. Nurses with a bachelor degree tended to be more adherent to hand hygiene (72.5 versus 42.9%, P=0.1) and the use of gloves (100% versus 85.7%, P=0.1) compared to nurses with a diploma degree, but the difference was not statistically significant.

Conclusion: HD nurses adherence to the recommended infection control measures in studied HD centers was suboptimal. HD centers are required to organize adequate training on HD access care for their nursing staff.

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Introduction

In hemodialysis (HD) wards, nurses play a pivotal role in HD access care. They are responsible for maintaining access integrity, preventing access failure and reducing access related complications. They also play an important role in educating patients about the care of their own accesses [1-4].

In a recent study that endeavored to identify best practices in dialysis, respondents believed that technician proficiency in protecting vascular access and training of nurses to provide education in vascular access were strongly related to dialysis outcomes [5]. One important aspect of HD access protection is undeniably the prevention of access related infections [6]. The consequences of access related infection are well known. In USA, 37.5% of hospitalizations of patients on HD in 2007 were due to infection, making it the leading cause of hospitalization and the second leading cause of death. This cost was not just in patient lives but also in dollars, since the catheter costs per person per year was much higher than either graft or fistula cost [6]. Beathard evaluated a protocol for catheter related bacteremia prophylaxis that was based on the Dialysis Outcomes Quality Initiative (DOQI) guidelines. Data were collected for a 24-month study period and compared to retrospectively collected control data for the immediately preceding nine months in the same patient population under the same conditions except for the prophylaxis protocol. Incidence of catheter related bacteremia fell from an average level of 6.97 per 1000 catheter days during the control period to an average of 1.68 during the study period. Staff compliance with the protocol required repetitive education and assessment [7]. Unfortunately, guideline recommendations for

routine preventive care are not always followed. For example, Patel and colleagues noted that recommended exit site topical agents were underutilized despite the demonstrated infection prevention. Reasons could be cost or the added care step, which are not acceptable excuses given the literature supporting this practice. There are several options for topical agents. The application of these agents takes less than one minute, and the cost is minimal, especially when compared to the cost to treat an infection [6].

This study was designed to evaluate nurses' awareness and practice of HD access care in Khartoum state, focusing on the application of proper hand hygiene and HD access care.

Methods

This is a descriptive study that included 50 HD nurses practicing in Khartoum State. Nurses were selected randomly from four HD centers: Ribat HD Center in Khartoum (20 nurses), Gameya HD Center in Khartoum North (20 nurses), Omdurman HD Center in Omdurman (7 nurses) and Alnaw HD center in Omdurman (3 nurses). Informed consent was obtained from each participant. Data was collected between July and September 2010 in two stages. Nurses' knowledge was evaluated using a questionnaire filled by respondents, including items related to the benefits of hand washing, glove use and HD access care. Nurses' practice was evaluated by on-the-job monitoring of hand-washing, use of gloves and HD access care.

Data was analyzed using the statistical package for social sciences ver. 9 for windows (SPSS, Inc., Chicago, IL, USA). Variables were summarized in mean values and frequencies, and related to nurses' educational level and experience using chi-square test. P value < 0.05 was considered significant.

Results

The study included 50 HD nurses, 72% of whom were females. Their ages ranged between 23 and 31 years. The majority of them held university bachelor degrees (85%) including 11% with post graduate education. Fifteen percent had nursing diplomas. Most nurses (84%) had more than one year experience on HD and 52% had more than two years experience. Structured training on HD machines, HD access care and water treatment system was received by 56%, 54% and 32% of respondents respectively.

Nurses with a bachelor degree were more adherent to hand hygiene (72.5 versus 42.9%, P=0.1) and the use of gloves (100% versus 85.7%, P=0.1) compared to nurses with a diploma degree, but the difference was not statistically significant. There was no significant difference between nurses with less than two years of experience compared to nurses with two or more years of experience in adherence to hand hygiene (56.3% versus 73.1%, P=0.2) and the use of gloves during connection/disconnection (100% versus 93.8%, P=0.4).

Discussion

The predominance of females in this study population reflects the general situation in our hemodialysis centers. Most nurses were university graduates and at least half of them had more than two years experience working in HD centers. However, structured training on HD machines and HD access care was received by only half the study population. Most HD centers rely on senior nurses to instruct and educate new staff members regarding techniques and protocols. This method of education is undeniably useful and necessary, but it should not replace structured training programs for new staff members. In addition, studies have shown that staff compliance with protocols required repetitive education and assessment [7].

Arteriovenous fistulae (AVF) are the best available option for HD access, and have a much lower infection rate compared to central venous catheters (CVC). Nevertheless, the rigorous implementation of hand hygiene and aseptic handling of the vascular accesses at all times remains a key to minimize both AVF and CVC infection and improve the long-term HD access outcomes [7]. Most nurses were aware of the importance of hand hygiene and the use of gloves in preventing HD access infection. However, only 54% were fully aware of the role of proper HD access care in preservation of access function. Moreover, not all aspects of HD access care acknowledged by nurses were implemented in practice. Only 70% of nurses actually performed hand hygiene before access manipulation and only 52% of nurses properly assessed the access for signs of infection before connection. Factors that may have contributed to this include the lack of adequate hand washing facilities in some HD centers and the time constrains of having to connect/disconnect a large number of patients within a limited time.

It is also noted that HD centers rarely keep a record of HD access infection rates. Keeping such a record would help

Table-1: Proportion of surveyed hemodialysis nurses who displayed proper understanding of important aspects of hemodialysis access care

Item	Percentage
Hand hygiene in HD centers is necessary to prevent infection	98%
HD access infection can be prevented by wearing gloves during connection/disconnection	98%
Wearing gloves during connection/disconnection helps provide self protection	18%
Sterile rather than clean gloves should be used during connection/disconnection	58%
Proper HD access care helps prevent access infection	100%
Proper HD access care helps preserve access function	54%

Table-2: Proportion of surveyed hemodialysis nurses who actually performed important aspects of hemodialysis access care

Item	Percentage
Hand hygiene before access manipulation	70%
Wearing gloves during connection/disconnection	98%
Using sterile rather than clean gloves for connection/disconnection	90%
Assessment of HD access function before connection	98%
Assessment of HD access for signs of infection before connection	52%
Application of disinfectant before placing the fistulae needles	100%
Placing the fistulae needles at least 5 centimeters apart	76%
Removing heparin from HD catheter lumen before connection	86%
Using the correct heparin dose for HD catheter block	76%

draw the staff's attention to the importance of everyday practices in improving the center's infection rate.

Conclusion

HD nurses adherence to the recommended infection control measures in studied HD centers was suboptimal. HD centers are required to provide adequate hand washing facilities and organize adequate training on HD access care for their nursing staff.

References

1. Thomas A. Revisiting quality standards in hemodialysis vascular access: where is the bar? CANNT J; 2005 Oct-Dec;15(4):30-3.

2. Leitch R, Ouwendyk M, Ferguson E, Clement L, Peters K, Heidenheim AP, Lindsay RM. Nursing issues related to patient selection, vascular access, and education in quotidian hemodialysis. Am J Kidney Dis; 2003 Jul;42(1 Suppl):56-60.

3. Mapes D. Nurses' impact on the choice and longevity of vascular access. Nephrol Nurs J; 2005 Nov-Dec;32(6):670-4.

4. McCann M, Einarsdóttir H, Van Waeleghem JP, Murphy F, Sedgewick J. Vascular access management 1: an overview. J Ren Care; 2008 Jun;34(2):77-84.

5. Desai AA, Bolus R, Nissenson A, Bolus S, Solomon MD, Khawar O, Gitlin M, Talley J, Spiegel BM. Identifying best practices in dialysis care: results of cognitive interviews and a national survey of dialysis providers. Clin J Am Soc Nephrol. 2008 Jul;3(4):1066-76.

6. Dinwiddie LC, Bhola C. Hemodialysis catheter car: current recommendations for nursing practice in North America. Nephrol Nurs J. 2010 Sep-Oct;37(5):507-20.

7. Beathard GA. Catheter management protocol for catheter-related bacteremia prophylaxis. Seminars in Dialysis. 2003;16:403-5.