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Improving Health Care Quality for Patients Undergoing Hemodialysis by Analyzing Vascular Access Methods

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Purpose

Vascular access is the main access method for administering hemodialysis to patients. Hemodialysis quality is crucial for the health care quality of patients requiring such treatment. Complications related to hemodialysis access may reduce hemodialysis quality. With a view to maintaining patients' health care quality, this study analyzed data from the Taiwan Society of Nephrology: Kidney Dialysis, Transplantation (TSN KiDiT) registration system and investigated the steps involved in continuous quality improvement to understand the relationship between hemodialysis access types and health care quality and shed light on the various types of access through which patients currently receive hemodialysis.

Methods

This study was conducted in a teaching hospital in Taiwan and involved a review of past data. Considering the sample size, this study selected only patients' hemodialysis treatment data from the TSN KiDiT that matched the study objective. This study was approved by the supervising unit and Institutional Review Board (ECKIRB1060801) and adhered to the ethical regulations and related laws of human research. All analyzed patients were at least 20 years old and were undergoing hemodialysis. Data on 1,909 patients recorded between January 2005 and December 2015 were analyzed. The statistical software SPSS 20.0 was used for analysis. Descriptive statistical analysis was conducted on the variables of the patients undergoing hemodialysis, including sex, age, duration of hemodialysis treatment, dialysis access, and diabetes mellitus history.

Results

Among the 1,909 hemodialysis patients analyzed in this study, 921 (48.2%) were men. All patients were aged between 21 and 104 years (mean = 72.6 years). The patients had been receiving hemodialysis for an average of 8.6 years. A total of 294 patients (15.4%) used permcaths or other short- or long-term catheters, whereas the other 1,615 (84.6%) used artificial or autogenous arteriovenous or intravenous fistulas. A total of 1,030 patients (54.0%) had diabetes mellitus. The analysis yielded the following results: Patients undergoing hemodialysis and aged 65 years or older were especially worthy of attention. This group contained 1,356 patients, accounting for 71.0% of the sample, and were aged 80.0 years on average. Among them, 596 (44.0%) were men. The patients in this group had been receiving hemodialysis for an average of 8.0 years; 246 patients (18.1%) used permcaths or other short- or long-term catheters, whereas the other 1,110 (81.9%) used artificial or autogenous arteriovenous or intravenous fistulas. Among this group, 761 patients (56.1%) had diabetes mellitus.

Conclusion

This study was conducted to help professional medical teams understand the implications of various groups of patients receiving hemodialysis through various types of access, thereby strengthening medical professionals' understanding of health care quality in relation to hemodialysis quality and reducing the amount of medical treatment required and the frequency of infections and embolisms induced by dialysis access. The duration of hemodialysis treatment and dialysis access methods may be factors that directly contribute to access-related injury risk. In addition, these factors may indirectly result in negative outcomes such as stenosis, flow rate reduction, and infections or embolisms.

Applications in nursing: When offering nursing care, in addition to considering hemodialysis access types, nurses should consider patients' ages. Compared with patients of other age groups, those aged at least 65 years undergoing hemodialysis are more likely to encounter problems related to hemodialysis access. To maintain the function of vascular access and minimize the risk of complications caused by hemodialysis, medical team members must cooperate with one another and maintain frequent communication with patients and their caregivers to provide them with accurate information regarding taking care of vascular access. Nurses should focus on solving vascular access problems in the early stages of care for patients with terminal chronic kidney diseases. Nurses play a crucial role in maintaining unobstructed vascular access; therefore, ensuring continuous education for patients undergoing hemodialysis should not be neglected.

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