World Academy of Science, Engineering and Technology
International Journal of Nursing and Health Sciences
Vol:18, No:11, 2024

Evaluating the Impact of Nursing Protocols on External Ventricular Drain Infection Control in Adult Neurosurgery Patients with External Ventricular Drainage at Directorate General of Khoula Hospital ICU, Oman: A Cluster-Randomized Trial

Authors : Shamsa Al Sharji, Athar Al Jabri, Haitham Al Dughaishi, Mirfat Al Barwani, Raja Al Rawahi, Raiya Al Rajhi, Shurooq Al Ruqaishi, Thamreen Al Zadjali, Iman Al Humaidi

Abstract : Background: External Ventricular Drains (EVDs) are critical in managing traumatic brain injuries and hydrocephalus by controlling intracranial pressure, but they carry a high risk of infection. Infection rates vary globally, ranging from 5% to 45%, leading to increased morbidity, prolonged hospital stays, and higher healthcare costs. Nursing protocols play a pivotal role in reducing these infection rates. This study investigates the impact of a structured nursing protocol on EVD-associated infections in adult neurosurgery patients at the Directorate General of Khoula Hospital, Oman, from January to September 2024. Methods: A cluster-randomized trial was conducted across neurosurgery wards and the ICU. The intervention group followed a comprehensive nursing protocol, including strict sterile insertion, standardized dressing changes, infection control training, and regular clinical audits. The control group received standard care. The primary outcome was the incidence of EVD-associated infections, with secondary outcomes including protocol compliance, infection severity, recovery times, length of stay, and 30-day mortality. Statistical analysis was conducted using Chi-square tests, paired t-tests, and logistic regression to assess the differences between groups. Results: The study involved 75 patients, with an overall infection rate of 13.3%. The intervention group showed a reduced infection rate of 8.9% compared to 20% in the control group. Compliance rates for key nursing actions were high, with 89.7% for hand hygiene and 86.2% for wound dressing. The relative risk of infection was 0.44 in the intervention group, reflecting a 55.6% reduction. Logistic regression identified obesity as a significant predictor of EVD infections. Although mortality rates were slightly higher in the intervention group, the number needed to treat (NNT) of 9 suggests that the nursing protocol may improve survival outcomes. Conclusion: This study demonstrates that structured nursing protocols can reduce EVD-related infections and improve patient outcomes in neurosurgery. While the findings are promising, further research with larger sample sizes is needed to confirm these results and optimize infection control strategies in neurosurgical care.

Keywords : EVD, CSF, nursing protocol, EVD infection
Conference Title : ICN 2024 : International Conference on Nursing
Conference Location : Sydney, Australia
Conference Dates : November 04-05, 2024