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Title: Impact of a catheter-associated urinary tract infection (CAUTI) education package on nurses' knowledge, attitude and indwelling catheter management practices

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Objectives:

1. To identify staff nurses' current knowledge, attitudes and indwelling catheter management practices
2. To implement a catheter-associated urinary tract infection (CAUTI) education package on two surgical wards
3. To determine if a significant difference exists in the staff nurses' indwelling catheter management practices before and after the introduction of a CAUTI education package.

Research Question: What is the impact of a CAUTI education package on the knowledge, attitude and indwelling catheter management practices of nurses?

Design: A descriptive design involving mixed methods approach was utilised to answer the research question. The methods used include focus group discussions that explore and describe nurses' attitude toward catheter care and CAUTI prevention; pre-test and a post-test to measure and compare the nurses' level of knowledge on CAUTI prevention; and document analysis of a catheter maintenance checklist to identify staff nurses' catheter management practices.

Setting: Two surgical wards of a general district hospital located in Manukau City, Auckland, New Zealand.

Participants: A convenience sample of staff nurses (n=27) from the two surgical wards were invited to participate in the study through e-mail. Information about the research was discussed through flyers. Study participation was voluntary, with utmost respect for human dignity and autonomy.

Methods: The study had three phases. The first phase utilised focus group discussions that involved the gathering of baseline data to determine nurses' knowledge and attitudes about catheter management and CAUTI prevention. The second phase involved the implementation of education sessions and utilised a pre and post-test to measure nurses' level of knowledge. The final phase or the evaluation phase identified the impact of the education package on the nurses' knowledge, attitudes and whether this was translated into practice. This phase utilised an evidence-based checklist that nurses complete daily given patients with urinary catheters.

Results: A total of 13 staff nurses attended two focus group discussions. The focus group revealed that there is diversity in the undergraduate training experience and on-the-job training

of nurses that relate to their catheter management practices. Another theme that emerged from the focus group is the nurses' awareness, access and use of organisational policies and guidelines which serve as a primary go-to guide when recalling information at work. The staff also highlighted that the quality of their current catheter care practice utilizes a collaborative approach, is dependent on the nursing process and is affected by the nurse's and the patient's gender. The nurses also verbalized that there is training required in the use of catheter management resources. Lastly, catheter care challenges such as gender, dementia in patients and ethical dilemma affect nurse's catheter management practices. Fourteen nurses attended the education session. For the pre and post-test, paired t-test was carried out in order to test for a significant difference in the overall score. Descriptive statistical analyses indicate that there is a significant difference ($p < 0.0001$) in the overall score between the pre and post-test, with a mean difference of 6.64 and 95% CI of (4.96, 8.33). Document analysis of the catheter maintenance checklist revealed that most of the post-surgery patients came to the ward with catheters already in, thus prompting the nurses to complete only the catheter maintenance part of the checklist and the catheter removal part if necessary. Majority of the patients also had their catheters removed on the first day and this is documented on the checklist. Noticeable also is the dwindling of numbers of completed checklists when the study period reached its fourth month.

Conclusion: The CAUTI education package had a significant impact on the nurse's knowledge. While various factors affect catheter management practices, enhanced training will not only improve nurses' knowledge, but their practice as well. Catheter maintenance checklists serve as procedure prompts for nurses although dwindling of numbers may be expected as time passes by. This could be remedied by regularly reminding staff to complete the checklist and documentation. Finally, quality improvement initiatives on CAUTI prevention would help improve CAUTI rates and nurses' knowledge, skills and attitude toward catheter management.

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