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Staff Education on UTI Screening, Antimicrobial and Antibiotic Resistance, and Poor Regimen Adherence

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Walden University

College of Nursing

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Executive Summary: Staff Education Project

Staff Education on UTI Screening, Antimicrobial and Antibiotic Resistance, and Poor Regimen

Adherence

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Summary

This staff education project focused on enhancing nurses' knowledge of urinary tract infections (UTIs) and antibiotic and antimicrobial resistance intended to promote screening for UTIs. The practice problem addressed was lack nurses' knowledge of UTI screening and antibiotic resistance. Inadequate screening contributed to increased UTI rates, re-occurrences, and complications such as delirium. It was essential to address the issue because nurses are at the frontline regarding educating, screening, and providing care to patients with UTIs. Knowledgeable nurses can implement standard practices to ensure adequate screening for UTIs. Effective screening would enhance early treatment and minimize misuse and unnecessary antibiotic prescriptions. The project answered the PICOT question: Does education about UTI screening, antimicrobial resistance, antibiotic resistance, and poor antibiotic regimen adherence improve nurses' knowledge and intent to screen for UTIs? Nurses also stated their intent to screen for UTI. Some of the analytical strategies were pre- and post-knowledge assessments. A total of 15 registered nurses attended the training in one nursing facility.

The average pre-education knowledge score was 65% ($SD = 12\%$), and the average post-education score was 88% ($SD = 8\%$). Knowledge improvement was statistically significant ($p < .001$, paired t-test). Ninety-three percent of the sample stated intent to increase UTI screening after education. Conclusively, education programs can positively impact social changes by incorporating training for continuous educational development among nurses to ensure the nurturing of a highly skilled workforce, improving management of emerging healthcare implications, and sustaining the nursing practice. Improved screening for UTI impacts care, improving equity and inclusion of all societal members. These findings underscore the importance of ongoing staff development initiatives as a vital strategy for improving patient outcomes and advancing evidence-based nursing practice.

Background

The current practice at the project facility lacked documented criteria for initiating a full UTI workup, leading to missed UTI symptoms and diagnoses, increased UTI rates and re-occurrences, and higher re-hospitalization rates. Nurses relied primarily on urinary incontinence to trigger UTI testing, capturing only a narrow range of symptoms. This inadequate screening contributed to increased UTI rates, re-occurrences, and complications such as delirium. Effective UTI screening helps to ensure UTIs are detected early, preventing infection from spreading to other organs, such as the kidneys. The spread of the disease can pose more severe complications, such as pyelonephritis or sepsis (National Institute for Health and Care Excellence, 2023). Early and accurate diagnosis of UTIs through screening is a pathway toward prompt and more effective treatment, which can significantly improve patient outcomes and quality of life. Effective screening can, therefore, help prevent chronic issues and reduce the frequency of infections. In addition, by ensuring accurate screening, the providers can make informed decisions on appropriate antibiotic use, reducing the risk of antibiotic resistance.

In recent years, the ability to treat infections has been compromised due to rising cases of antibiotic resistance. Using antibiotics for extended periods could be a precedent for developing resistance. Nurses have an essential role in combating the threat posed by antibiotic resistance. Lalithabai et al. (2022) posited that many medical professionals, notably nurses and doctors, lack a current understanding of antibiotic resistance, which is a cause for serious concern. Therefore, an evaluation of the nurse's knowledge and attitudes toward antibiotics and resistance is necessary to eliminate the associated risks of resistance. The study by Lalithabai et al. (2022) also noted gaps in the scope and sufficiency of nurse training. UTIs are rated second regarding the most common infections needing antibiotics (Mwape et al. 2022). Inadequate UTI screening can lead to multiple occurrences and

unnecessary antibiotic treatments, increasing the risk of antibiotic resistance. Educating nurses on proper UTI screening and antibiotic stewardship is crucial for reducing antibiotic resistance and improving patient outcomes.

Project Question and Project Purpose

Project Question

The project addressed the gap in practice of inadequate UTI screening criteria and lack of nurses' knowledge on UTI screening and antibiotic resistance. This gap contributed to increased UTI rates, re-occurrences, complications, and unnecessary antibiotic use, increasing antibiotic resistance risk. The project question was as follows: Does education about UTI screening, antimicrobial resistance, antibiotic resistance, and poor antibiotic regimen adherence improve nurses' knowledge and intent to screen for UTIs?

Project Purpose

This staff education project aimed to increase nurses' knowledge and intent to screen for UTIs. The program also aimed at enhancing the nurse's understanding of the appropriate use of antibiotics to combat antibiotic resistance effectively. With improved knowledge, nurses can partner with providers to enhance the quality of care and patient outcomes. The project also sought to optimize resource allocation through the effective use of antibiotics, contributing to antibiotic stewardship and the overall goal of reducing antibiotic resistance in the healthcare setting.

Evidence Supporting the Gap

The gap in practice addressed by this project was the lack of documented UTI screening criteria and insufficient nurses' knowledge of UTI screening and antibiotic resistance at the facility. This gap led to missed UTI diagnoses, increased UTI rates and re-occurrences, higher re-hospitalization rates, and unnecessary antibiotic use, which contributed to antibiotic resistance. Despite nursing staff being aware of the correct

utilization of antibiotics to enhance patient's health, not all were adhering to the set guidelines. Teshager et al. (2022) conducted a study to assess nurse's knowledge of preventing UTIs. From the collected evidence, the researchers concluded that there was a need to enhance nurse's knowledge through appropriate educational and training programs on preventive measures to prevent UTIs. In addition, early antibiotic treatment for bacteriuria without UTI symptoms could also precipitate additional complications apart from antibiotic resistance, such as delirium (Dutta et al., 2022). Comprehensive educational strategies can thus be employed to improve the quality of antibiotics prescribed among the nurses.

Summary of Evidence Supporting Change and Strengths

A study conducted by De Vita et al. (2024) highlighted that nurses play a crucial role in patient education, guiding them toward the effective utilization of antimicrobial agents. Hence, implementing the change of enhancing nurses' knowledge provides them the capability to improve patient's knowledge in return. The evidence provided by De Vita et al. (2024) is strong, and one of its major strengths is its utilization of a bi-sample size of 848 participants, enhancing the results' reliability. Additionally, the article employed a structured anonymous questionnaire, which improves the quality and likelihood of getting honest responses, hence the collection of high-quality data.

Another study by Williams (2023) corroborated the findings of previous research, which asserted that sufficient staff education on matters of UTI screening and management is a crucial factor in ensuring that nursing staff can provide the proper care, improving health outcomes for patients suffering from UTIs. An educational program to educate the nurses on UTIs significantly increased unlicensed assistive personnels' knowledge of UTIs from an average score of 69.39 to 85.92 (Williams, 2023). In addition, there was a 36.8% reduction in UTIs diagnosed in the facility after the intervention, signifying the importance of nurse education programs in addressing various health conditions. This evidence significantly

highlights the role of training in enhancing UTI outcomes and hence supports the need for further change. The primary strength that makes it strong evidence is the utilization of validated pre- and post-assessment questionnaires for evaluation of knowledge gained by the staff, which highlights the essence of educational programs and their impacts on improving nurse's knowledge.

In their study, Abdelmoaty et al. (2022) suggest that healthcare education is key to providing quality patient care. Healthcare providers with continuous training in best practices become the key foundation of quality patient care and healthcare facilities. Hence, evidence-based education is critical in-patient outcomes and decreased UTI rates, including catheter-associated urinary tract infections. This evidence supports the need for the implementation of an educational program to nurture a highly informed workforce that can reflect on the services they provide to patients and the overall UTI rates. This evidence is also strong and reliable. Conducting a longitudinal study follow-up is a major strength of this evidence. The study conducted an early and one-month post-test demonstrating that the acquired knowledge was immediate and sustained over time.

Staff Education Project Development

Participants

The primary participants in the staff education project were 15 registered nurses working in a nursing facility, providing care to elderly patients and those with dementia. The project team consisted of this DNP student, who was the project coordinator, responsible for organizing and overseeing the project, and the facility Director of Nursing, who assisted with project planning and implementation. It also included the Assistant Director of Nursing, nursing supervisors, and the staff educator. The expert panel that reviewed and provided feedback about the educational content and surveys consisted of a staff educator, an

Infectious Disease Specialist, and a Certified Wound, Ostomy, and Continence Nurse (CWOCN).

Procedures

The project followed the ADDIE (analysis, design, development, implementation, and evaluation) model for instructional design. Prior to implementation, organizational and Walden University approval was secured. The implementation phase included delivering the education material through staff in-service, PowerPoint handouts, and group discussions. A knowledge survey was administered before and after the education.

Analysis

The project employed both quantitative and qualitative analysis to assess the progress of the education exercise. Quantitative analysis included descriptive statistics, such as means and standard deviations, and inferential statistics, such as paired t-tests and McNemar's tests, to analyze the survey and assessment data and make comparisons of the nurses' pre- and post-evaluation results to measure improvements in their knowledge and intent to screen for UTIs. Qualitative analysis involved reviewing open-ended feedback from participants to identify common themes and insights regarding the effectiveness of the training and potential areas for improvement. To evaluate the long-term outcomes of the education program, the facility team will continue to monitor outcomes related to UTI screening and antibiotic resistance over a year to assess the sustained impact of the training.

Results

Post Implementation Results

A total of 15 nurses attended the training at one nursing facility. Improvements were recorded in nurses' knowledge regarding UTI screening and their attitudes towards adopting early UTI screening with the proper protocols. The pre-intervention mean knowledge score was 65% ($SD = 12\%$), while the post-intervention mean score was 88% ($SD = 8\%$),

indicating a significant improvement ($p < 0.001$, paired t -test). A paired t test was conducted to compare the pre- and post-intervention knowledge scores, revealing a statistically significant improvement ($t(29) = -8.97, p < .001$, Cohen's $d = 1.64$). The large effect size (Cohen's $d > 0.8$) indicated a substantial increase in nurses' knowledge following the educational program. In the post-intervention survey, 93% of the participants expressed their intention to screen for UTIs more frequently and consistently.

Impact on Organization

Creating and sustaining a supportive environment are critical factors for organizational success. This can be attained through investing in the employees, who are a valuable asset, through training. One of the significant notable impacts of the educational program was the nursing staff's willingness to learn.

The facility hopes to see improved patient outcomes, higher patient satisfaction rates, and decreased UTI incidents. The enhanced knowledge of UTI screening and antibiotic resistance will likely result in improved screening and positive patient outcomes. Improved patient outcomes reflect positively on the facility's image. A good reputation builds confidence among patients and the public, encouraging them to acquire healthcare services from the organization. Patients are also more likely to return to the facility for care and recommend others to obtain skilled and long-term services from the facility, further enhancing their performance.

Limitations and Impact on Results

Despite the positive implications of the project, some limitations had a notable impact on the project. One of the primary limitations was the lack of access to advanced medical monitoring equipment such as a bladder scan. While the educational content focused on theoretical knowledge and best practices related to UTI screening, the lack of hands-on training with specialized equipment may have limited the nurses' ability to apply the

knowledge in practice. Hence, the program did not provide a comprehensive picture of UTI screening as it lacked equipment such as a bladder scanner, which is critical in UTI screening. The other major limitation was a nursing shortage in the organization. This significantly impacted the effective implementation of the program because not all the nurses could participate at once due to the workload in the facility. When they could participate, they had to struggle between balancing time for the educational content and their workload, which could have led to incomplete integration of the knowledge learned into practice. Furthermore, the small sample size and single-site setting may limit the generalizability of the findings to other healthcare settings

Importance of Project beyond Local Site

Enhancing nurses' knowledge of UTI screening and antibiotic resistance is essential beyond local sites in various ways. The project can contribute to public health goals of reducing antibiotic resistance. Antibiotic resistance remains one of the significant global challenges, entailing the transfer of bacteria and genes between humans, animals, and the environment (Larsson & Flach, 2022). Given the project's success in the facility, it can be utilized organization-wide to continue the advancement of combating antimicrobial resistance on a global scale. The project is also important beyond the local site as it has the potential to set a standard for best nursing practices. The project findings can be shared among healthcare institutions and published to enhance standards of care for UTI management worldwide. This project can serve as a role model for other healthcare organizations to adopt the initiative to improve UTI outcomes among their patients and minimize high rates of antimicrobial resistance.

Conclusions

This staff education project improved nursing knowledge and intent to screen for UTI. The project question was answered. Educational training programs can have a significant

positive impact on staff, patients, and the organization. With enhanced knowledge, nurses can provide evidence-based care to patients, positively impacting social change and enhancing inclusion, equity, and diversity.

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