Urinary Tract Infections: Literature Review

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This student will look at studies involving urinary tract infections and prevention methods for this literature review. Urinary tract infections are considered the second most common infection in the body and the most common type of healthcare-associated infection (Taylor et al., 2019). Prevention is imperative to patients' health, as urinary tract infections can lead to other systemic infections, which may cause harm to patients, require hospitalization, and drive-up health care costs (Taylor et al., 2019). The cornerstone for combatting this ongoing issue is learning from peer-reviewed studies that expand upon proactive ways to educate communities on what a urinary tract infection is and how to prevent it.

Quantitative determination of leukocyte esterase with a paper-based device

This study aims to explore cost-effective ways of detecting urinary tract infections. Urinary tract infections cost the health care system an estimated 1.6 billion annually (Ho et al., 2020). The healthcare system must find cost-effective ways to detect and combat urinary tract infections as an overall health concern. This study uses a quantitative approach to analyze data collected while using the proposed method of a paper-based analytical device to detect the presence of UTIs. The authors seek to prove that this method is cost-effective and comparable to traditional methods of UTI detection (Ho et al., 2020).

Key Points

The authors of this study are proposing the use of paper-based devices containing a coating of mixed 3-(*N*-tosyl-L-alaninyloxy)-5-phenylpyrrole (PE) and 1-diazo-2-naphthol-4-sulfonic acid (DAS) as a recognition molecule for reaction with the analyte (LE) opposed to the use of the fast-acting twelve-panel dipstick (Ho et al., 2020). The data collected is from sixteen patients, with a total of twenty-one specimens. Among the specimens, eight are known to have UTI-presenting bacteria. Tables show that overall, the paper-based device outperformed the traditional dipstick testing and attributed to the early detection of bacteria. The *p*-value within this study was $p = 0.001$ in 13 non-UTI samples in comparison to the dipstick testing p-value of $p = 0.003$ (Ho et al., 2020). This data shows that the paper-based device can be considered accurate and valuable in the early detection of urinary tract infections and associated bacteria (Ho et al., 2020).

Assumptions

The authors of this article assume that the data presented will prove comparable and more cost-effective in detecting UTIs compared to traditional diagnostics. They are comparing the paper-based diagnostic testing with the traditional dipstick method and trying to prove that their testing outperforms the traditional. The researchers explain that the traditional twelve-step dipstick does not have the sensitivity to detect early signs of UTI-producing bacteria (Ho et al., 2020).

Deficit/Conclusion

This student would recommend implementing the paper-based device for the early detection of urinary tract infections and associated bacteria. This study implies that the cost of urinary tract infections is substantial yearly. Facilities can reduce costs and treatment time by developing devices and adopting early detection methods. This student agrees with this assumption; the cost of urinary tract infections and their associated risks threaten patients' overall health. Treatment can start sooner when using devices that can detect bacteria at a sensitive level, and patient outcomes and satisfaction will be at higher levels. Researchers stated that if early detection is achieved, fewer people will have the associated effect of urinary tract infections, and costly, invasive treatments will not be needed. If not adopted by nursing, the current effect of UTIs will remain, and early detection will provide the insight needed for nurses to treat accordingly and in a timely fashion.

Mapping of health services to urinary catheter users: challenges for the advanced nursing practice

This study is a quantitative, descriptive-exploratory study that seeks to measure the effects of distributing urinary catheter materials in mapped service areas. By effectively mapping these areas and distributing information, researchers hope to understand better care needed within the populations of São Paulo, Brazil (Castilho et al., 2022). Misguided catheterization can lead to numerous issues in the urinary tract, such as infection, pain, trauma, and sepsis (Taylor et al., 2019).

Key Points

The authors of this study propose using questionnaires and electronic based interviews to optimize the distribution of catheter materials and education. The data collected is analyzed by descriptive statistics. The researchers mapped five locations to determine the need for materials. These locations were health centers, family health units, outpatient clinics, specialized centers, hospitals, and emergency care units. The data collected included the availability of materials, questions about healthcare providers, and services associated with treatment. The data collected was put into a spreadsheet, and descriptive statistical analysis of categorical variables was presented as absolute frequency (AF) and relative frequency (RF). Using this method, the researchers created a map of areas in need of materials (Castilho et al., 2022).

Assumptions

Researchers assume that the infection rates will be lower by distributing materials and education. By distributing materials in needed areas, researchers think that the knowledge base about catheterization will increase and produce healthy outcomes. The researchers assume that by collecting data via a questionnaire on catheter use, they will receive accurate intelligence on areas that need assistance with materials and education.

Deficit/Conclusion

This student does not accept this line of reasoning. The data collected is just used for the mapping of services needed. It is understood that this is needed; however, is it necessary? Researchers indicate that nurses perform the task of catheterization in these regions already, so education and training are provided. Knowing which services are needed in certain areas is helpful, but not when those services are already in place. The possibility of providing extensive education and a plethora of materials is a better option. It appears that by mapping areas of need, the researchers seek to help within these areas; this would help the nurses perform their duties with less hassle if materials are provided.

Interventions and strategies to prevent catheter-associated urinary tract infections with short-term indwelling urinary catheters in hospitalized patients: An integrative review

This quantitative research explores the educational resources provided to nurses via online platforms. The researchers in this study seek to explore nursing knowledge, judgment on indwelling catheters, and standing protocol. A standing protocol is orders that are in place and constant; they allow the team to perform tasks within an approved scope without prior authorization from the doctors. By pulling evidence bases information from online resources that address catheter care, insertion, and specimen collection, the researchers seek to expose the resources or lack of nursing education. The data for twelve studies were computed to compare outcomes, interventions, and practicum (Yu et al., 2020).

Key Points

The data used in this study is collected via the internet with searches for evidence-based practice and its outcomes. The *p*-values for each study were set at .0001 to meet the algorithm criteria for inclusion. Twelve studies made it to the evaluation point and then narrowed down to nine with slight overlapping. From this point, researchers looked at the categories of studies conducted in an adult inpatient setting, patients with short-term catheterization. They were peer-reviewed with two or more implementation strategies (Yu et al., 2020).

Assumptions

The authors of this study assume that certain evidence-based practice studies are classified as effective and provide better outcomes than others. They seek to prove that not all strategies are effective and that one must be diligent in their search when seeking education. By scrutinizing the methods and algorithms, the authors want to prove that some studies are more effective than others (Yu et al., 2020).

Deficit/Conclusion

The researchers concluded that out of all the studies, those using evidence-based clinical practice guidelines have the best patient outcomes for combatting catheter-associated urinary tract infections. It is highlighted that implementation is a significant factor in combating these infections. The staff must implement proper measures to avoid UTIs in the patient's best interest. If not adequately implemented or taken seriously by the nursing field, evidence-based clinical practice guidelines do nothing for the patient we serve. Evidence-based clinical practice guidelines look different in many regions but hold the same basic principle of using evidence to uphold the practice.

Conclusion

As previously stated, prevention is imperative to patients' health, as urinary tract infections can lead to other systemic infections, which may cause harm to patients, require hospitalization, and drive up health care costs (Taylor et al., 2019). Patient outcome is of the utmost importance when dealing with an infection; catheter-associated infections cause the patient pain and cost them extra money should an infection occur. The healthcare team will minimize patient infection and costs by implementing the nurse-driven protocol, early detection testing, and educational and equipment distribution. As nurses, we need to utilize every tool to promote optimal patient outcomes; this includes evidence-based studies that provide new insight into protocols and possible changes. Many articles, journals, and studies are conducted annually to improve patient outcomes, drive costs down, and promote nursing satisfaction. It is the reader's job to utilize these resources to the fullest of their potential to optimize outcomes.

Healthcare benefits from the research on quality improvement, analytics, and best practice protocols.

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