Research Critiques and PICOT Statement

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Research Critiques and PICOT Statement Final Draft

The World Health Organization states, "in the U.S. alone there are at least 80,000 fatalities each year from healthcare-associated infections (HAI)" (WHO, n.d.). Compliance by healthcare workers with proper hand hygiene practices can dramatically reduce these unnecessary HAI deaths and increase the level of quality care and patient safety. In order to find better methods of preventing HAIs, there have been numerous research studies focusing on ways to increase hand hygiene compliance rates in hospitalized patients and healthcare workers. This paper will critically analyze four research articles and provide a thorough background on the problem, methods and results of studies, ethical considerations, and the proposed evidence-based practice changes.

Nursing Practice Problem and PICOT Question

As a healthcare worker, proper hand hygiene is one of the most important things a person can do to prevent the spread of healthcare-associated infections (HAIs) between patients. HAIs can greatly impact the quality of life and mortality of patients, as well as increase healthcare costs. Proper hand hygiene is the main infection prevention measure that should be performed according to organizational guidelines during the patient care process. The World Health Organization (WHO) has determined “five fundamental moments for hand hygiene: before patient contact, before aseptic procedures, after exposure to body fluid regardless of wearing gloves, after patient contact, and after contact with the patient’s environment, regardless of patient contact” (WHO, 2009). PICOT question: Among healthcare workers, does proper hand hygiene vs. incorrect hand hygiene reduce hospital-acquired infections during adult patients’ hospital stays?

Quantitative Studies

Background

In the first study of the quantitative research appraisal, *Healthcare-associated respiratory infections in intensive care unit can be reduced by a hand hygiene program: A multicenter study*, the researchers assessed the change in the level and trend of HAIs of the respiratory tract after the intensive care unit (ICU) staff participated in a hand hygiene program (Finco et al., 2018). Additionally, the problem to be solved is "HAIs of the respiratory tract are common and greatly affect a person's quality of life and mortality, as well as increasing costs for the patient and healthcare systems due to prolonged hospitalization." (Finco et al., 2018). The research question for the study included:

1) After the hand hygiene program for ICU staff, will there be a change in the number of respiratory tract HAIs?

The research question is significant to nursing because HAIs are prominent in ICUs. Also, as care is usually performed by nurses, a hand hygiene program for the nursing staff should greatly decrease the number of HAI cases.

In the second quantitative study, *Use of a patient hand hygiene protocol to reduce hospital-acquired infections and improve nurses' hand washing*, the aim of the research study was to find out if "implementing a new patient hand hygiene protocol will improve nurses' and patients' hand washing compliance rates and decrease the number of HAIs in the ICU" (Fox et al., 2015). The research question for the study included:

1) "Is the hand hygiene protocol for patients associated with increased handwashing compliance among ICU nurses?" (Fox et al., 2015).

The research question related to the problem of the study was to ensure that optimal hand hygiene protocols are followed by nurses and patients in an effort to decrease the rates of HAIs in the hospital.

Article Support

In the first article, the quantitative study relates to the PICOT question in that the study focus is to "see if changes occur, such as curbing the number of HAIs, after the teaching of hand hygiene programs" (Finco et al., 2018). In the second article, the study relates to the PICOT question by exploring if implementing new procedures of hand hygiene for patients will improve handwashing for all and decrease the number of cases of HAIs (Fox et al., 2015). As far as interventions and comparison groups in the quantitative articles, both studies answer the PICOT question by proving the results, that among nurses, other healthcare workers, and patients using good handwashing technique, there was a decrease in HAIs of patients during their hospitalization.

Methods of Study

The first quantitative study used the Chi-square test to compare the incidence of HAIs before and after the intervention, and using the Interrupted Time-Series Method for evaluating the effects of a hand hygiene program on both trend and level of HAIs. One benefit of using these methods of study is that the rates of compliance are easy to compute as you are testing participants before interventions, and after interventions. In contrast, because "the actual effects of the intervention are influenced by external factors, repeated measurements are needed to avoid potential bias due to the variability of the phenomenon over time" (Finco et al., 2018).

In the second quantitative study, a pre-experimental study design was used to compare:

1) 12-month rates of two common HAIs
    a) central catheter-associated bloodstream infections
    b) catheter-associated urinary tract infections
2) Nurses' handwashing compliance before and during use of the protocol; and, patient and/or patient's family was taught about proper hand hygiene practices, and a document explaining the protocol was added to each ICU patient's admission packet. Additionally, all patients admitted to the ICU were included in the study.

"Statistical analyses were conducted using SPSS version 21" (Fox, et al., 2015). One benefit of using this method is the inclusion of not only hospital nursing staff, but also the patients and their families. This teaching and education on ways to decrease the spread of HAIs can hopefully lead to less transmission of germs and disease. Alternatively, a limitation of this method is that "protocol results were compared with pre-intervention results instead of a randomized control group, limiting confidence in the effect of the protocol" (Fox, et al., 2015).

The methods and design used in both quantitative studies are pertinent to the PICOT question and to the research questions.

Qualitative Studies

Background

In the first qualitative study of this research appraisal, *Healthcare Workers' Attitudes Toward Hand Hygiene Practices: Results of a Multicentre Qualitative Study in Quebec*, the researcher explored healthcare workers' attitudes and practices toward hand hygiene policies and how it affected HAIs in the hospital setting (Atif, Lorcy, & Dube, 2019). Additionally, "the study

examined the perceived barriers and enablers influencing hand hygiene compliance and HAI risk perceptions" (Atif et al., 2019). The research question for the study included:

1) What factors influence healthcare workers' compliance with hand hygiene guidelines?

The research question related to the problem for the study is due to healthcare employees not being compliant with hand hygiene protocols in their hospitals, and a large number of patients continue to suffer from HAIs in Quebec hospitals, which increases the economic costs for healthcare systems and or patients" (Atif et al., 2019).

In the second qualitative study, *Exploring New Approaches to Improve Hand Hygiene Monitoring in Healthcare*, the aim of the research study was to "1) define current and future approaches to hand hygiene monitoring in clinical settings, 2) to identify strategies for hand hygiene monitoring improvement, and 3) to test the possibility of new approaches to improve hand hygiene monitoring" (Mackrill, Dawson, Garvey, & Gould, 2017). The research questions for the study included:

1) "What is the current process for monitoring hand hygiene?" and
2) "How can hand hygiene monitoring be improved?"(Mackrill et al., 2017).

The research questions related to the problem of the study were to ensure that optimal hand hygiene practices were followed by all clinical staff in the healthcare organization.

Article Support

In the first qualitative article, the study relates to the PICOT question in that the study aims to "explore healthcare workers' attitudes and practices toward hand hygiene policies and how it affects the number of HAIs in the hospital setting" (Atif et al., 2019). In the second qualitative article, the study relates to the PICOT question by aiming to "define current and

future approaches to hand hygiene monitoring practice in a healthcare setting to decrease the risks of HAIs" (Mackrill et al., 2017). As far as interventions and comparison groups in the articles, both compositions thoroughly answer the PICOT question by showing the evidence that among healthcare workers using proper hand hygiene, there is a reduction in HAIs of adult patients during their hospital stay.

Methods of Studies

The first study is a qualitative study using semi-structured interviews and observations. The "interview recordings were transcribed verbatim and supplemented with transcribed observations and field notes" (Atif, S., 2019). Also, "the data was collected and coded thematically using a qualitative data analysis software" (Atif, 2019). In the second qualitative study, a discussion panel of infection control experts was gathered, and they discussed their perceptions and experience of the current hand hygiene monitoring process within the acute care setting. Also, healthcare professionals discussed exploring future system improvements regarding proper hand hygiene practices. Additionally, "interviews were held, and the people were grouped into their specific areas of involvement in the monitoring of hand hygiene" (Mackrill et al., 2017).

The article methods are different in that the first study uses interviews, observations, and field notes for the qualitative data. Because of this data collection approach, the study would be considered a grounded theory design. One benefit of using the grounded theory design would be the approach to analyzing the data is systematics. Instead, a limitation of this method would be the potential for scientific research errors. The second study used condition monitoring measures, such as staff satisfaction and behavior, and also sought to understand the perceptions and

experience of the healthcare staff. This method seems more like a phenomenological design, as it studies participants through their lived experiences. A benefit of using the phenomenology design is obtaining unique perspectives on the subject studied. However, a limitation of this method could be the researcher-induced bias influencing the study.

The methods and design used in both qualitative studies are pertinent to the PICOT question and to the research questions.

Results of the Studies

In the first quantitative article, the results of the study showed that after implementing the handwashing program for healthcare workers, “there was a significant reduction (about 53%) in the number of respiratory tract infections, as well as a reduction in the monthly infection level” (Finco et al, 2018). In the second quantitative article, the results of the study found “the ICU staff’s handwashing compliance rate before the study was consistent with rates in published reports and supported the low compliance rates reported for an ICU setting” (Fox et al., 2015). In the first qualitative article, the results of the study "identified key barriers at various levels, including inadequate staffing, demanding workloads, lack of sinks and hand hygiene stations, lack of knowledge, and reduced HAI risk perceptions" (Atif et al., 2019) of the healthcare staff. In the second qualitative article, the results of the study included identifying improvement areas to hand hygiene monitoring, such as increased education for staff and implementing morphological analysis to monitor future hand hygiene practices.

Implications of the four studies help to positively inform nursing practice. Healthcare administrators should focus on improving the physical and perceived barriers to hand hygiene and developing awareness on the importance of decreasing HAIs by maintaining proper hand

hygiene when providing patient care. Hence, researchers should persist in collecting data as "prevention of HAIs requires continuous quality improvement efforts to monitor lasting effectiveness, as well as investigation of new strategies to eliminate these infections" (Atif et al., 2019). Additionally, implications to nursing practice explore how continued teaching and education on hand hygiene should provide long-term adherence to healthcare policies and declines in HAIs.

Ethical Considerations

When conducting research studies, "ethical considerations are paramount in nursing research to ensure that participants are treated equally with respect, dignity, and compassion" (Green, S., & Johnson, J., 2018). Moreover, this ethical research aims to promote better patient outcomes, patient safety, and ensuring honesty. An analysis of both qualitative studies and both quantitative studies indicated that the researchers received permission from each site's research ethics board before conducting the studies. Furthermore, participation in the studies was through written informed consent. In the same way, all of the people taking part in the studies did so voluntarily. And, before data collection in the first qualitative study, "participants were reminded that the contents of their interviews and observations would remain confidential and that no identifying information would be shared with their peers or senior management teams" (Atif et al., 2019).

Outcomes Comparison

The key outcomes for all four research studies showed that there was a significant decrease in the number of HAIs after hand hygiene programs were implemented. The outcomes

and anticipated outcomes for the PICOT question are the same, in that after the hand hygiene programs were completed, the compliance rates increased while the number of HAIs decreased.

Conclusion

As evidenced by the critiques of these four research studies, educating patients, patient families, and healthcare personnel on proper hand hygiene practices leads to proven reductions in the spread of HAIs. Also, future research studies should continue to find permanent solutions to reducing the incidence of HAIs in healthcare organizations. And, judgement-free performance feedback from HCW and patients should be provided to promote indelible adherence to hospital handwashing guidelines to continue quality improvement efforts and patient safety for the populations.

Relationship of PICOT Question, Articles, and Nursing Practice Problem

The PICOT question seeks to find out if implementing proper hand hygiene protocols (vs. no hand hygiene or incorrect hand hygiene) in hospitals will reduce the number of hospital-acquired infections of adult hospital patients during their stay. Also, the nursing practice problem is the spreading of HAIs to patients while they are receiving care in the hospital, due to noncompliance of hand hygiene techniques by hospital staff and patients. Similarly, all four research articles aim to improve hand hygiene education, perception, and compliance, and to significantly decrease the number of HAIs in the corresponding facilities. Finally, after critically appraising the evidence and determining a practice change is necessary, the next step is to integrate the evidence with patient values and preferences and facilitate practice changes in our healthcare organizations.

Proposed Evidence-Based Practice Change

Part of integrating evidence-based practice changes into hospital settings, like Labor and Delivery, involve actively targeting the main causes of hand hygiene noncompliance that were discovered in our critiques and research. Before applying changes, "certain elements must be in place in an organization for change to take hold: an agreed-on direction for the practice, effective communication, a functional and effective leadership structure, and a culture that promotes and rewards change" (Gesme, D., & Wiseman, M., 2010).

For instance, one EBP change would be adding a required, monthly hand hygiene protocol refresher class each month to remind HCW of the importance of this technique. Also, providing more handwashing stations, and easy access to hand hygiene equipment and dispensers. Additionally, providing visual cues, like colorful signs, are helpful in reinforcing and reminding patients and staff to frequently clean their hands. Finally, hanging disposable glove dispensers near sinks, trash receptacles, and hand-rub dispensers will facilitate better compliance with using gloves.

Some of the ways to implement these changes is to "frequently communicate with others, foster a team culture, identify and empower champions, and provide feedback and positive reinforcement" (Gesme, D., & Wiseman, M., 2010). Being proactive and constantly evolving in nursing practice will create growth and success in providing quality care and patient safety for all.

References

Atif, S., Lorcy, A., & Dube, E. (2019). Healthcare workers' attitudes toward hand hygiene practices: results of a multicentre qualitative study in Quebec. *Canadian Journal of Infection Control, 34*(1), 41-48. Retrieved from https://eds-a-ebscohost-com.lopes.idm.oclc.org/eds/pdfviewer/pdfviewer?vid=5&sid=976628b3-5c04-456b-83d9-0a2be66883ce%40sessionmgr4008

Centers for Disease Control and Prevention. (2019). Healthcare-associated infections. Retrieved from https://www.cdc.gov/hai/prevent/infection-control-assessment-tools.html

Finco, G., Musu, M., Landoni, G., Campagna, M., Lai, A., Cabrini, L., Sardo, S., Mura, P., & Galletta, M. (2018). Healthcare-associated respiratory infections in intensive care unit can be reduced by a hand hygiene program: A multicenter study. *Australian Critical Care, 31*(6), 340-346. doi.org/10.1016/j.aucc.2017.10.004

Fox, C., Wavra, T., Drake, D., Mulligan, D., Bennett, Y., Nelson, C., Kirkwood, P., Jones, L., & Bader, M.K. (2015). Use of a patient hand hygiene protocol to reduce hospital-acquired infections and improve nurses' hand washing. *American Journal of Critical Care, 24*(3), 216-224. doi.org/10.4037/ajcc2015898

Gesme, D., & Wiseman, M. (2010). How to implement change in practice. *Journal of oncology practice*, *6*(5), 257–259. doi:10.1200/JOP.000089

Green, S., & Johnson, J. (2018) Nursing research: understanding methods for best practice. Retrieved from https://www.gcumedia.com/digital-resources/ grand-canyon-university/ 2018/nursing-research_understanding-methods-for-best-practice_1e.php

Mackrill, J., Dawson, C., Garvey, B., & Gould, D. (2017). Exploring new approaches to improve hand hygiene monitoring in healthcare. *Infection, Disease & Health, 22*(1), 21-27.

doi.org/10.1016/j.idh.2016.12.004

World Health Organization. (n.d.). *Clean care is safer care*. Retrieved from https://www.who.int/gpsc/tools/faqs/evidence_hand_hygiene/en/

World Health Organization. (2009). *WHO guidelines on hand hygiene.* Retrieved from https://whqlibdoc.who.int/publications/2009/9789241597906_eng.pdf