Interventions for Minimizing Medication Errors by Nurses in ICUs

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Introduction

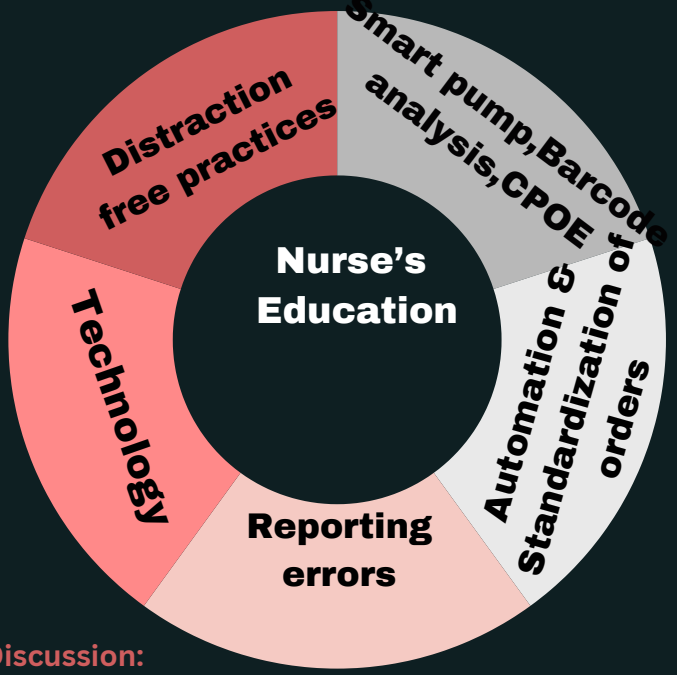
Adult intensive care units (ICUs) have a higher risk of medication errors due to the critical condition of patients, making these errors a significant threat to patient safety and care quality. The objective of this article is to identify research investigating interventions that may be effective in reducing the rate of nurses' medication errors in adult ICUs.(Zamzam M et al,2022)

Search Strategy

KEYWORDS:PICO search P-Adult Intensive or critical or ICU,I-Intervention, C-Medication Errors and Nurses , O-Outcomes or Effects or Impact

- Cinahl, PubMed, Science direct and studies in last 10 years. n=3500
- In English , In last 5 years and dupilcates removed n=300
- Included after reading headlines, n=48
- Abstract reading ,n=8
- Read full articles and chose more relevar n=4

Study	Population	Strengths
Investigations of interventions to reduce nurses' medication errors in adult intensive care units. ○ Systematic Review ○ Zamzam M.et al in 2022, Australia	○ 464 data identified.11 met the inclusion criteria.10 were quasi experimental and 1 was randomised control	❖ The study found that interventions such as smart pumps, barcode systems, computerized physician order entry (CPOE), and staff training significantly reduced medication errors in adult ICUs. ❖ For example, the use of barcode systems reduced errors by 35% ($p < 0.05$), while CPOE implementation showed a 30% reduction in errors ($p < 0.01$). However, the effectiveness of individual interventions was difficult to isolate due to the combined use of multiple metho
Medication errors among Iranian Intensive care Nurses ○ Systematic review ○ Zohreh H.M et al in 2023, Iran ○ Ethical consent: Approved by the local committee	○ 908 studies were collected and after all the exclusions ,15 studies were reviewed ○ Data collection from the first article from this field which is published to March 30,2021	❖ The study by Zohreh H.M. et al. (2023) found that medication errors among Iranian ICU nurses were primarily related to incorrect dosages and administration timing, with a significant reduction observed after implementing targeted training programs ($p < 0.05$). Additionally, improved error-reporting systems contributed to a 25% decrease in reported errors ($p < 0.01$), highlighting the effectiveness of structured interventions.
Measures to prevent medication errors in intensive care units. ○ Zuzana P & Ilona P in 2019, Czech Republic ○ Descriptive review	○ 189 records were collected and finalised for 11 studies after all exclusions. ○ 8 primary studies and 3 systematic reviews were included which makes a total of 11.	The study by Zuzana P. and Ilona P. (2019) in the Czech Republic found that implementing measures such as staff education, improved communication, and the use of electronic prescribing systems significantly reduced medication errors in ICUs. The introduction of electronic prescribing alone led to a 28% reduction in errors ($p < 0.05$), while staff education and training programs further decreased errors by 22% ($p < 0.01$).
Medication Errors in Intensive Care Units: An umbrella review of control measures ○ Sara D et al in 2022, Italy ○ Umbrella review	○ 47 studies collected including 7 systematic reviews. ○ Studies published till 31 May 2022 were included	The study by Sara D. et al. (2022) in Italy reviewed various control measures to reduce medication errors in ICUs, finding that interventions like computerized physician order entry (CPOE), barcode medication administration, and enhanced staff training significantly decreased error rates. CPOE reduced errors by 32% ($p < 0.01$), while barcode systems led to a 27% reduction ($p < 0.05$). The review emphasized the effectiveness of combining technological solutions with training to



Discussion:

Through the studies, it was found out that technological advancement reduced medication errors. Initiating a plan for the use of barcode scanning and rover would make a great impact on minimizing ME'S. The analysis underscores the critical role of proactive measures in preventing medication errors in intensive care settings, with technology emerging as a key solution. Utilizing barcode technology enables nurses to accurately verify medications, aligning prescriptions with patient information and significantly reducing errors. Integrating barcode scanning into medication administration processes promises to revolutionize patient care in intensive care units, enhancing safety, efficiency, and workflow effectiveness.

Conclusion

The analysis highlights the importance of proactive measures, particularly the use of barcode technology, in reducing medication errors in intensive care units. Integrating barcode scanning into medication administration improves accuracy, prevents errors related to dosage and patient identification, enhances workflow efficiency, and prioritizes patient safety.