Use of Fall Detection Alarm Devices to Reduce Falls among Older Adults in Long-term Care

Facilities

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Summary of the Articles

Introduction

Falls are among the significant public health issues globally. The rate of falls in older adults (65 years and above) is higher than in other populations, which is the reason behind the high prevalence of falls and fall-related injuries in long-term nursing homes. Although various mechanisms have been implemented to mitigate the issue, falls remain the primary cause of prolonged hospital stay, readmissions, and increased mortality rates among the elderly. Mileski et al. (2019) conducted a systematic review to investigate the effectiveness of using alarm systems to prevent falls in a long-term nursing facility. Most falls occur in residential rooms, which nurses might overlook. Mileski et al. found that installing alarm devices aids nurses in addressing the incidences of falls. Inpatient facilities also record a high number of falls and fall-related injuries among the aging population, thus raising concern about the most effective way to mitigate the issue. Due to the limited knowledge concerning the efficacy of fall-alarm devices, Subermaniam et al. (2017) conducted a quasi-experimental study to investigate the effectiveness of these devices using the M-BAS to detect the instances of bed exits among elderly inpatients.

Methodology

Mileski et al. (2019) used 28 articles from websites such as PubMed. The authors used safety, quality improvement, skilled nursing, alarms, falls, and the aging population as key search words to obtain more relevant articles with information aligning with the topic. The authors analyzed the information from the articles after considering the inclusion and exclusion criteria and obtained data relevant to the study. On the other hand, Subermaniam et al. (2017) used a quasi-experimental study design to evaluate the efficacy of the M-BAS device in a geriatric ward. The authors used a sample of 47 participants, all of whom were inpatients and above 65

years deemed to be at risk for falls. Additionally, 30 nurses were included in the study. The devices were fixed on beds, and nurses recorded falls before and after the implementation. The authors compared the fall rates before and after the implementation of the device to assess its efficacy in fall prevention.

Results

According to the study conducted by Mileski and colleagues (2019), implementing alarming and alerting devices in long-term care (LTC) facilities led to a noteworthy decrease in falls, as supported by statistical analysis. The review encompassed various studies documenting a spectrum of reduction rates, the most substantial being 80%. The researchers also observed that specific equipment categories, such as bed alarms, exhibited higher efficacy than alternative devices. On the other hand, Subermaniam et al. (2017) found that introducing a wireless modular bed absence sensor device led to a noteworthy decrease in falls among elderly hospitalized patients. Most nurses, precisely 83%, found the device effective in preventing falls. Additionally, a significant proportion of nurses, precisely 97%, reported that the device was easy to use. Furthermore, 87% of the nurses expressed their willingness to utilize the device in the future.

Discussion

According to Mileski et al. (2019), implementing alarming and alerting devices can serve as a viable approach to mitigating the incidence of falls in long-term care (LTC) facilities. Nonetheless, it is advised that the devices must not be perceived as an independent remedy and must be employed in combination with other measures for preventing falls. The authors acknowledge the variability of device efficacy, contingent upon the device type and the particular long-term care establishment. According to Subermaniam et al. (2017), the wireless M-BAS device has the potential to serve as an effective intervention for preventing falls among elderly

hospitalized patients. According to the authors, the device can be readily installed and incorporated into current care protocols and can potentially furnish nursing personnel with prompt data to avert falls. The authors additionally observe that the device exhibits cost-effectiveness and has the potential to mitigate healthcare expenses linked with falls.

Conclusion

The two studies prove that using fall detection alarm devices can serve as a successful measure for preventing falls in adults at risk of falls. The findings of Mileski et al. (2019) suggest that implementing alarming and alerting devices can effectively decrease the incidence of falls. Similarly, Subermaniam et al. (2017) proved the effectiveness of implementing alarm devices as the data analysis indicated reduced fall incidences after installing the M-BAS device. These findings suggest that fall detection alarm devices should be considered part of a comprehensive fall prevention program in LTC facilities.

Critique of the Articles

The systematic review by Mileski et al. (2019) provided insights into the effectiveness of implementing alarm devices to mitigate falls among older patients. The research is dependable, given its adherence to a clearly defined and rigorous methodology. The researchers performed an exhaustive exploration of various databases and exclusively incorporated investigations that satisfied particular standards. The studies incorporated in the analysis underwent a quality assessment, and the results were synthesized using suitable statistical techniques.

The study's validity is satisfactory. The researchers precisely delineated falls and implemented specific criteria for the inclusion and exclusion of studies (Mileski et al., 2019). Furthermore, the researchers evaluated the potential for bias in the studies incorporated into the analysis through the utilization of standardized instruments, thereby augmenting the credibility

of the results (Polit & Beck, 2010). The study is subject to certain limitations, including the potential for publication bias, given that the authors exclusively incorporated studies published in the English language (Mileski et al., 2019). The research is deemed reliable and relevant and exhibits significant triangulation. The authors employed various data sources to identify relevant studies, evaluated the potential for bias, and performed suitable statistical procedures.

On the other hand, the study conducted by Subermaniam et al. (2017) was qualitative. It aimed to assess the efficacy of a wireless modular bed absence sensor device in preventing falls among elderly inpatients. The authors used two groups where the participants were divided into experimental and control groups. The quasi-experimental design compared the nurse's workload after and before implementing the M-BAS devices (Subermaniam et al., 2017). The authors followed all ethical concerns, including training participants, obtaining ethical approval from the UMMC, participants were given informed consent forms, and they were assured of their confidentiality and anonymity. The authors analyzed the results statistically using the Mann–Whitney U test (Subermaniam et al., 2017). The study design, methodology, and procedure contributed to the overall strength of the research.

The study's limitations pertain to its susceptibility to bias, as the authors did not specify whether they accounted for potential confounding or mediating variables. Furthermore, the study exhibits a deficiency in randomization as the authors opted for a convenience sample and did not employ random assignment of participants to the intervention group (Polit & Beck, 2010). The authors omitted information regarding the blinding method employed in the study, thereby constraining the study's masking or blinding. The authors ensured reflexivity in the study by furnishing a comprehensive account of the procedures involved in data collection and analysis. The study's external validity and applicability may be constrained due to its single-site nature

and modest sample size (Polit & Beck, 2010). Notwithstanding certain limitations, such as the absence of control for potential confounding variables and limited sample size, the authors have furnished a comprehensive account of the study's methodology, data collection, and data analysis, thereby augmenting the study's credibility.

Clinical Question

Population: Older adults (65 years and above) in long-term care facilities

Intervention: Implementation of Fall Detection Alarm Devices

Comparison: Two-hour checks by nurses

Outcome: Prevent falls and fall-related injuries

Time: Four months

PICOT Question: In older adults (65 years and above) in long-term care facilities, does the implementation of fall detection alarm devices, compared to the two-hourly checks by nurses, effectively prevent/reduce the prevalence of falls and fall-related injuries within four months?

References

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