



# Impact of High-Risk Medications on Number of Falls in Assisted Living Settings

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## BACKGROUND

- Falls significantly impact older adults in assisted living facilities (ALFs), causing injuries, increased healthcare use, and higher costs.<sup>1</sup>
- Polypharmacy, particularly involving high-risk medications from the Beer's Criteria, is common among ALF residents.<sup>2</sup>
- High-risk medications can cause adverse effects such as dizziness, sedation, and hypotension, potentially increasing fall risk.<sup>2,3</sup>
- Currently, guidelines for managing medications in ALFs to prevent falls are limited, highlighting the need for further research.<sup>2</sup>

## METHODS

A retrospective chart review from two assisted living facilities (ALFs) was conducted from October 1 to November 19, 2024. The primary outcome was the number of falls experienced by each resident within this period. Medication data were collected from electronic medication administration records (eMAR). Falls data were gathered and reviewed during monthly multidisciplinary meetings involving pharmacists, nursing staff, physical therapists, and facility providers. Data analyses included descriptive statistics, Spearman correlation, and Negative Binomial regression to determine associations between high-risk medications and fall incidence. Spearman Correlation test was done due to non-normal distribution of fall data. Negative binomial regression test were performed to accurately model number of falls with variability exceeding the mean.

Inclusion Criteria:

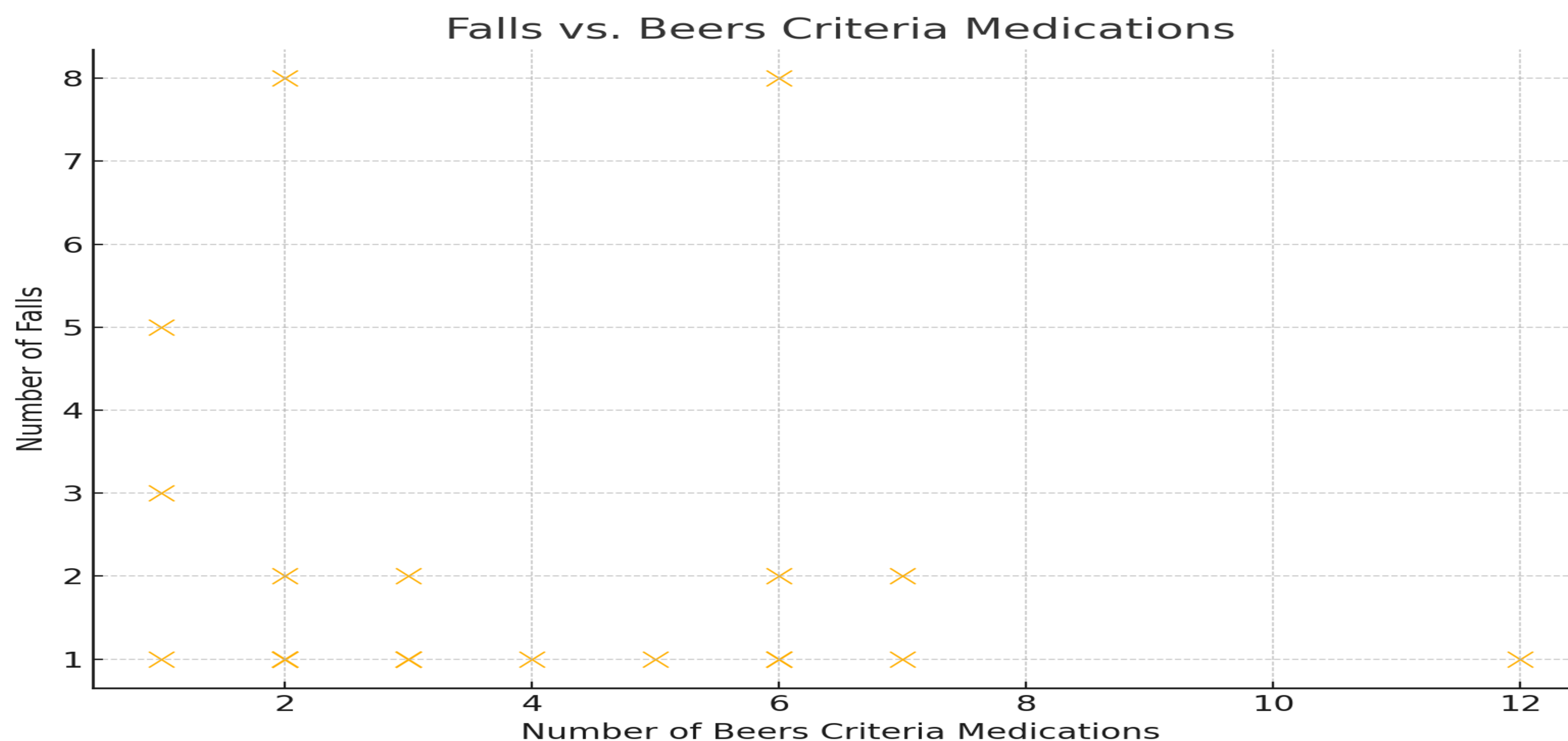
- Patients admitted to one of the two ALF's that were observed
- Patient must have fallen in during the time of the study with review of said fall occurring at multidisciplinary meeting

Exclusion Criteria

- Anyone living at the ALF's that did not fall during the time period of the study
- Anyone that had an unwitnessed fall that was not recorded for further workup

## RESULTS

Characteristics	Mean (SD)		Age	Number of comorbidities	Number of medications	Number of Beers list medications	Number of falls
Age	83.9 (8.2)		1	-0.2180	0.1809	0.0668	-0.0601
Number of Comorbidities	11.4 (3.9)		-0.2180	1	0.0903	0.1739	-0.0290
Total Medications	16.8 (7.5)		0.1809	0.0903	1	0.7722	-0.1570
Beer's List Medications	3.9 (2.6)		0.0668	0.1739	0.7722	1	-0.1527
Number of Falls	2.0 (2.0)		-0.0601	-0.0290	-0.1570	-0.1527	1



- Each additional Beer's Criteria medication was associated with an approximate 10% increase in fall risk (p=0.329)
- Dialysis significantly increased fall risk (IRR=7.68, p=0.001)
- Age, total number of medications, and the number of comorbidities were not significantly associated with falls in this study

## Discussion

- Effective Multidisciplinary collaboration improved the accuracy and comprehensiveness of data collection.
- The small sample size significantly limited the statistical power of our findings, emphasizing the need for larger, prospective studies.
- Careful medication management and regular medication reviews could play essential roles in fall prevention strategies within ALF's

## FUTURE PLANS

Future research should focus on conducting larger prospective studies to clarify the relationship between high-risk medications and fall risk. Additionally, developing and evaluating targeted medication review programs in ALFs could contribute significantly to reducing fall incidence and improving resident safety.

## CONCLUSION

This study highlights that there was a clinically meaningful trend toward increased fall risk with a greater number of Beer's Criteria medications, statistical significance was not achieved. This lack of significance is likely due to limitations of the study, particularly the small sample size, which restricted the power of the statistical analysis. Although the goal of this study was to highlight the risk of falls with Beers Criteria medications, dialysis as a critical risk factor for falls was observed in this study of residents of assisted living facilities. Further investigation with larger populations is essential to clearly establish impact of medication management of high-risk medications on fall prevention in the assisted living setting.

## References

- Centers for Disease Control and Prevention. (n.d.). Important facts about falls. Retrieved from <https://www.cdc.gov/falls/facts.html>
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- Hamza, S. A., et al. (2019). The relation between falls and medication use among elderly in assisted living facilities. *Pharmacoepidemiology and Drug Safety*, 28(6), 849–856.