Clinical Quandary: Falls are a significant cause of injury, functional decline, and permanent transfer to a higher level of care across the long-term care continuum. Providers often field calls related to resident falls yet often feel that interventions to prevent future falls lack evidence of benefit. Nursing administrators, staff, and providers need implementable, evidence-based interventions that will reduce falls and promote safety, mobility, and quality of life.

Clinical Question: Which evidence-based interventions designed for long-term care settings are most effective for reducing number of falls, recurrent falls, and residents who fall?


Bottom Line: Pooled data of 36 trials demonstrated that the most effective intervention for reducing the risk for falls, the proportion of fallers, and the proportion of recurrent fallers in the nursing home (NH) setting is exercise, either as a single or combined (multiple or multifactorial) intervention. Additionally, staff education on fall prevention, person-centered care, and medication reduction lowered the risk of falls and recurrent fallers. Single-intervention medication review did not impact the rate of falls or number of fallers/recurrent fallers. There is insufficient evidence to recommend or prohibit the use of these interventions in NH residents living with cognitive impairment. Based on this evidence, fall prevention programs in long-term care should include exercise and staff/professional education on medication reduction and person-centered care.

Summary: Published in January 2020, this systematic review and meta-analysis updated a previously published review on randomized controlled trial (RCT) interventions designed for nursing home residents to prevent falls, fallers, or recurrent fallers. The study group also investigated the generalizability of the findings to residents living with cognitive impairment or dementia.

Three dozen studies met the inclusion criteria of RCT (12 trials) or cluster RCT (24 trials) set in NH settings with a duration of intervention and monitoring of falls or number of fallers of at least six months. The trials represented all continents and included mostly developed countries. The study participants were mostly women aged 80 or older. The studies were categorized according to the Prevention and Falls Network Europe taxonomy as single (one intervention, N = 25), multiple (two or more fixed interventions, N = 3), or multifactorial (more than one intervention tailored to the individual after an assessment, N = 8). The trials measured the number of falls (reported as relative risk or absolute number per person-year), number of fallers (reported as proportion of residents in the trial with one or more falls interventions relative to control), and recurrent fallers (two or more falls during the trial).

Because there was a wide array of interventions and some population differences among the included studies, the systematic review research group applied a variety of statistical methods to account for these variations. They used a random effects model that considered different individual study effect sizes to calculate a mean effect size across all of the studies, large and small. They also assessed publication bias and calculated 95% confidence intervals (CI). Meta-analyses are important because pooled data of small nonsignificant studies may collectively show a statistically significant treatment effect through pooled CI calculations. Finally, the study team performed a subgroup analysis based on the proportion of persons reported with cognitive impairment or dementia participating in the studies.

Overall, interventions designed to prevent falls in this setting reduced the risk of falls by 27%, and the proportion of fallers and recurrent fallers by 27% and 30%, respectively. Both single- and multiple-intervention studies reduced the proportion of fallers, the single intervention-studies reduced recurrent fallers, and the multifactorial studies reduced the number of falls.

This meta-analysis showed that exercise, as part of single, multiple, and multifactorial interventions, reduced the proportion of fallers and recurrent fallers as well as the overall risk of falls. This finding highlights the critical role of exercise in fall prevention programs. Subanalysis by type of exercise was not performed, but prior evidence has suggested that a combination of balance, functional, strength, and resistance training is associated with the greatest reduction in falls.

Pooled analysis of the data on the effect of staff education, which included person-centered care and medication reduction strategies, showed a reduction in recurrent fallers and number of falls. Single-intervention medication review alone was not associated with a reduction in falls, fallers, or recurrent fallers in any analysis.

Subanalysis of these data shows that the results are not generalizable to residents with cognitive impairment because very few of the studies included such participants or reported data on level of cognition, especially the studies in which exercise was a component. Given the multiple factors that impact adherence, resource allocation, and staff training in NH, implementation of these interventions in a real-world setting may be challenging, particularly in a population with a high prevalence of dementia. This study highlights the need for additional studies that include pragmatic implementation designs and further evaluation in people with cognitive impairment. Nevertheless, this systematic review can help guide implementation of fall prevention strategies in the long-term care setting following an evidence-based approach.

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