

# Why do some falls result in fractures?

## An analysis of over 33,000 institutional falls

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### BACKGROUND

➤ Falls among older people in institutional care are an issue of growing concern. While the majority of falls do not result in serious harm, injuries such as fall-related fractures particular those of the hip, are associated with high mortality and a substantial economic cost<sup>3</sup>.

➤ While many risk factors for falls in hospital and residential care settings have been identified, the risk factors for fall-related fractures could differ from the risk factors for falls in general.

➤ Therefore, a program with a broad fall prevention focus may not necessarily reduce the rate of fracture and other types of serious injury.

➤ A greater understanding of which types of falls are most likely to produce fracture or serious injury would contribute towards increased cost-effectiveness of programs by allowing for a more targeted approach to falls prevention.

### AIM

The aim of this study was to establish whether specific incident-related characteristics (demographic, spatial, temporal, functional and activity variables) predisposed certain falls to result in fractures.

### METHODS

A retrospective cohort design was employed and utilised clinical incident reports completed after falls in public hospital and residential care facilities. Characteristics of incidents included in the dataset are presented in Table 1. Logistic regression analysis was used to examine relationships between a range of predictor variables and fractures

**Table 1. Characteristics of fall incidents in study sample\*\***

Mean (SD) or ratio (%)	Hospital	Residential Care
Reported falls	24,218	8,980
Mean Age (SD)	70.14 (17.28)	80.48(10.65)
Median Age	74.35	82.37
Gender % (M:F)	57:43	54:46
Reported fractures (% of reported falls)	229 (0.94)	74 (0.82)

\*\*each fall represented separately, not clustered by individual in this table.

### RESULTS

➤ Our study identified a number of significant ( $p < 0.05$ ) fall-related fracture predictors, and key findings are presented.

➤ While male hospital patients who fell were almost 3 times less likely to sustain fractures compared to females [OR:0.37 (95% CI: 0.28-0.50)], gender remained non-significant in the residential care cohort.

➤ Advance age (over 80) was not linked to fracture risk in residential care. In contrast, the oldest patients in hospital were the ones most likely to fracture upon falling [OR:1.51 (95% CI:1.16-1.96)].

➤ Variables linked to body positions associated with higher impact potential trended towards increased fracture odds across both groups. For example, in hospital, falls while walking [OR:1.96, (95% CI:1.50-2.56)], falls in corridors [OR:2.39 (95% CI:1.58-3.62)] and falls in bedroom areas other than bedside [OR:1.36 (95% CI:1.00-1.85)] achieved statistical significance. A similar alignment was seen in the residential care data.

➤ Hospital patients reported as having been fall risk screened or risk assessed [OR:0.66 (95% CI:0.48-0.92)] were almost half as likely to sustain fractures upon falling.

### DISCUSSION

➤ This study yielded a divergent set of fall-related fracture risk factors across hospital and residential care cohorts, highlighting key differences between groups.

➤ In line with current biomechanical models our findings also indicate that falls from positions with higher impact potentials (eg standing) are most likely to cause fractures.

➤ Additionally, patients reported to be risk assessed or screened at admission appeared less likely to fracture upon falling. It is possible that these patients received fall prevention strategies with a differential minimizing effect on fracture producing falls.

➤ Our results suggest that hospital injury prevention programs should focus on older female patients and all those aged over 80 due to their higher likelihood to fracture upon falling.

➤ Falls due to trips and falls while walking were associated with increased odds of fractures across both settings suggesting that the identification and management of environmental hazards may contribute towards reducing rates of fracture.

### CONCLUSIONS

This study uncovers important associations between the characteristics of falls and fracture outcomes in institutional settings. These findings further our understanding of the types of institutional falls with the highest fracture potential and may help guide future intervention research.

### REFERENCES

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### FURTHER INFORMATION

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