

# Low falls in trauma patients aged over 64 years: the low impact trauma with high impact outcomes

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## BACKGROUND

Persons aged over 64 years will comprise 39% of trauma admissions by 2050 (1), with the most common mechanism of injury being low falls (2). Despite the low force of this mechanism, this group has been shown to have poor outcomes. A large contributing factor to this is frailty, “a multidimensional syndrome of loss of reserves”. The aims of this study are to: (1) analyse the frailty of patients aged over 64 years presenting after low falls; (2) compare the outcomes of low falls to other mechanisms; (3) describe the association between injury severity score (ISS) and mortality versus frailty and mortality.

## METHODS

Retrospective single-arm cohort study of the prospective Trauma Registry at the Royal Melbourne Hospital (RMH), a Level 1 adult trauma centre. The study included patients admitted in 2017 aged over 64 years who met the Victorian State Trauma Registry inclusion criteria (2). Outcomes (length of stay, discharge destination and mortality at 12 months) were analysed by mechanism of injury, age, frailty and ISS. Patients were assigned a Rockwood Clinical Frailty score (3), from very fit (=1) to very severely frail (=8) and terminally ill (=9) (Figure 2).

Figure 2. Frailty score distribution in low falls

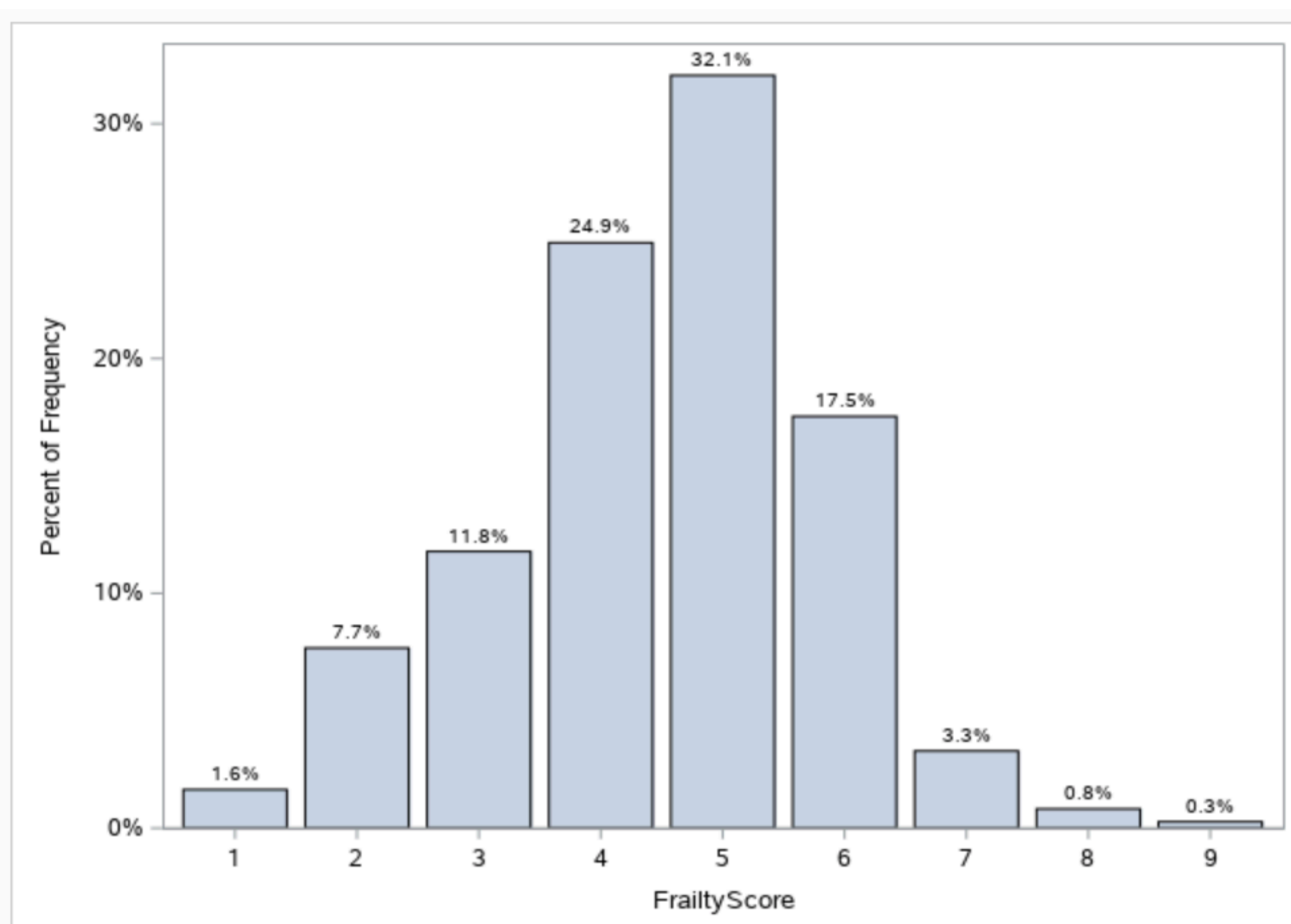


Figure 2. Frailty score 1 to 9 (left to right)



## RESULTS

The study included 619 patients, 59% of whom had a low fall <1 metre. The majority (79%) of low fall patients were at least vulnerable (frailty score  $\geq 4$ ) (Figure 1). The 12-month mortality after a low fall was 23%, significantly higher than the other mechanisms ( $p < 0.0001$ ). Univariate regression (Table 1a) showed that age, frailty and low fall were significantly associated with 12-month mortality ( $p < 0.0001$ ,  $p < 0.0001$  and  $p = 0.0002$  respectively), but ISS > 12 was not ( $p = 0.19$ ). Multivariate regression (Table 1b) showed frailty and ISS > 12 were significantly associated with 12-month mortality ( $p < 0.0001$ ,  $p = 0.02$  respectively), whereas age and low fall were not.

Table 1a. Univariate regression model for 12-month mortality post trauma in patients aged over 64 years

Factor	Odds Ratio 12-month mortality (95%CI)
Injury severity score >12	1.21 (0.87-1.98), $p = 0.19$
Age	1.06 (1.04-1.09), $p < 0.0001$
Frailty	1.98 (1.67-2.35), $p < 0.0001$
Low fall	2.41 (1.52-3.83), $p = 0.0002$

Table 1b. Multivariate regression model for 12-month mortality post trauma in patients aged over 64 years

Factor	Odds Ratio 12-month mortality (95%CI)
Injury severity score >12	1.78 (1.11-2.84), $p = 0.02$
Age	1.00 (0.98-1.04), $p = 0.70$
Frailty	1.99 (1.61-2.45), $p < 0.0001$
Low fall	1.04 (0.58-1.84), $p = 0.91$

## CONCLUSIONS

Low falls in the elderly are a large proportion of the workload in Trauma Services, and this will continue to increase as the population ages. Despite the low force of the mechanism, low falls have a 12-month mortality of 23%, most likely due to the frailty of this cohort. Frailty is identified as the strongest predictor of 12-month mortality in the multivariate analysis, ahead of ISS.

A low fall should be seen as a red flag for functional decline. Development of specific management pathways and targeted multidisciplinary care in this vulnerable cohort will optimise their outcomes.

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## References

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