

Significantly Higher Odds of Primary Fragility Fractures in Male Patients 65 and Older: A Stratum Specific Likelihood Ratio Analysis

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INTRODUCTION:

The United States Preventative Services Task Force (USPTF) has a grade B recommendation that women older than 65 should be screened for osteoporosis. Currently, there is insufficient evidence supporting routine osteoporosis screening in men. Therefore, the purpose of this study was to determine the age at which the odds of fragility fractures (FF) increased in men to help guide future policy discussions evaluating the optimal screening strategy in this population.

METHODS:

Patients older than 49 with primary FF were identified in a large insurance database. Patients with a traumatic fracture etiology, malignancy, or known history of osteoporosis prior to FF were excluded. Patients with autoimmune diseases requiring chronic corticosteroid therapy and various metabolic diseases related to low bone density were also excluded. Stratum Specific Likelihood Ratio (SSLR) analysis was conducted to identify data-driven age stratum that maximize the incremental FF risk with age. Once the strata were determined, multivariable regression was conducted using the youngest cohort as the control.

RESULTS:

The incidence of FF started to increase after the age of 64, with a sequential increase as age increased. Following multivariable regression, compared to patients aged 50-64, there was a stepwise increase in the odds of FF in those older than 64, increasing from 1.59 in those 65-69 to 6.45 in those greater than 80 (**Table 1**).

DISCUSSION AND CONCLUSION:

This study showed that the odds of fragility fractures significantly increased in men starting at the age of 65 and increased rapidly as age increased. The risk thresholds discussed here can be used to guide further public health and economic analyses in determining the age at which screening for osteoporosis is indicated in males.

Table 1. Incidence and Odds of Fragility Fracture based on SSLR Data-Driven Age Strata

<i>Age Strata</i>	<i>Patient Population</i>	<i>Fragility Fractures</i>	<i>Incidence</i>	<i>Odds Ratio</i>	<i>P-value</i>
<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Number</i>
<i>Total</i>	5,809,665	81,284	1.40%	-	-
<i>50-64</i>	4,520,672	48,453	1.07%	*Reference Age	*Reference Age
<i>65-69</i>	631,341	10,702	1.70%	1.59	<0.001
<i>70-74</i>	391,730	9,966	2.54%	2.41	<0.001
<i>75-79</i>	216,973	8,964	4.13%	3.98	<0.001
<i>>80</i>	48,949	3,199	6.54%	6.45	<0.001

*Ages 50-64 was used as the reference range for the multivariable regression