

Osteoporosis care gap in ambulatory geriatric patients: A retrospective cross-sectional analysis

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Background

- Osteoporosis is highly prevalent in Canada, occurring in 18% of 65-69 year-olds and 38% of 90+ year-olds
- Osteoporosis-related fractures can result in mortality or increase the risk of chronic pain, anxiety and depression, and decreased mobility, in addition to increasing healthcare costs
- Treatment rates for osteoporosis in Canada are approximately 20%
- The consequences of osteoporosis are exacerbated by the osteoporosis care gap
- Previous studies measuring the osteoporosis care gap have primarily investigated specialized osteoporosis fracture clinics and populations with previous fragility fractures, but the extent of the gap in the geriatric population outside of these settings is unknown

Purpose

To characterize the osteoporosis care gap in an outpatient geriatric population, identify factors associated with the care gap, and determine the impact of an outpatient geriatric clinic on the care gap.

Objectives

Primary Objective

- To determine the size of the osteoporosis care gap in an ambulatory geriatric population

Secondary Objectives

- To determine the proportion of patients who, at clinic admission, are receiving osteoporosis care that follows International Osteoporosis Foundation (IOF) guideline recommendations based on risk category
- To identify if age, sex, body mass index (BMI), renal dysfunction, smoking, alcohol use, Charlson Comorbidity Index (CCI) score, dementia, documented osteoporosis diagnosis, BMD testing, history of falls, or number of medications are associated with osteoporosis treatment
- To describe the osteoporosis-related interventions provided by the interdisciplinary team to reduce the osteoporosis care gap

Methods

Retrospective cross-sectional chart review conducted at the Central Okanagan Seniors' Health and Wellness Centre

Inclusion Criteria

- 65 years or older with a best possible medication history documented between January 1, 2019 and October 30, 2022
- Evidence of potential indication for osteoporosis care
 - Diagnosis of osteoporosis,
 - Evidence of osteoporotic fracture,
 - T-score \leq -2.5 or -1.0 to -2.5,
 - FRAX 10-year risk $>$ 10% (major osteoporotic fracture) or $>$ 1% (hip fracture)

Exclusion Criteria

- Subsequent referral to study clinic
- End-stage renal failure receiving hemodialysis

FRAX Scores

- Calculated using BMD if available

Statistical Analysis

- Stepwise multivariate regression to identify factors associated with osteoporosis treatment

Definitions

- Osteoporosis care: calcium, vitamin D, pharmacotherapy, and/or BMD testing
- IOF guideline recommendations:
 - Low risk: optimize calcium and vitamin D status
 - BMD recommended: optimize calcium and vitamin D status, complete BMD testing, repeat FRAX score, and identify risk category
 - High or very high risk: optimize calcium and vitamin D status, antiresorptive^a

Table 1. Baseline Characteristics

Characteristic	n = 255
Mean age, years (SD)	82.1 (6.6)
Female (%)	178 (69.8)
Median number of medications (IQR)	5 (3,7)
Median CCI score (IQR)	5 (4,7)
Fall in the last year (%)	143 (56.1)
Documented osteoporosis diagnosis (%)	43 (16.9)
BMD testing in last 5 years (%)	47 (18.4)
Mean 10-year major osteoporotic fracture risk (SD)	20.1 (10.8)
Mean 10-year hip fracture risk (SD)	8.3 (5.8)
IOF risk category	
• Low (%)	154 (60.4)
• BMD measurement recommended (%)	80 (31.4)
• High or very high (%)	21 (8.2)

Table 2. Results

Primary Outcome (n = 255)		n	%		
Patients receiving osteoporosis care upon clinic admission		160	62.7		
Secondary Outcome (n = 255)					
Osteoporosis care received pre-clinic referral, n (%)					
	Calcium	Vitamin D	Antiresorptive ^a	BMD Test	Any Care
Low Risk (n = 154)	46 (29.9)	83 (53.9)	24 (15.6)	43 (8.4)	100 (64.9)
BMD Recommended (n = 80)	16 (20.0)	42 (52.5)	7 (8.8)	4 (5.0)	43 (53.8)
High or Very High Risk (n = 21)	10 (47.6)	15 (71.4)	3 (15.0)	3 (15.0)	16 (76.2)
Total (n = 255)	72 (31.4)	140 (60.4)	34 (15.7)	50 (12.5)	159 (62.4)
Secondary Outcome (n = 255)		n	%		
Patients receiving osteoporosis care that follows IOF guideline recommendation		40	15.7		
Secondary Outcome (n = 220 ^b)					
Association with osteoporosis treatment		Odds Ratio	95% Confidence Interval	P-value	
• Documented osteoporosis diagnosis		5.91	2.17-16.06	<0.001	
Secondary Outcome					
Osteoporosis care provided by study clinic, n (%)					
	Calcium	Vitamin D	Antiresorptive ^a	BMD Test	Any Care
Low Risk (n = 154)	11 (7.1)	23 (14.9)	3 (1.9)	2 (1.3)	31 (20.1)
BMD Recommended (n = 80)	16 (20.0)	17 (21.3)	4 (5.0)	5 (6.3)	28 (35.0)
High or Very High Risk (n = 21)	2 (9.5)	4 (19.0)	2 (9.5)	1 (4.8)	7 (33.3)
Total (n = 255)	29 (11.4)	44 (17.3)	9 (3.5)	8 (3.1)	66 (25.9)

^aBisphosphonate, bisphosphonate holiday, denosumab; ^bMissing data for 35 patients

Limitations

- Retrospective chart review: limited by missing data, small sample size
- IOF guideline was recently published, and clinicians may utilize other guidelines for practice

Conclusions

- 63% of patients being referred to the study clinic were receiving osteoporosis care, however, only 16% of patients were receiving care aligned with IOF guideline recommendations
- Having a documented diagnosis of osteoporosis was the only factor significantly associated with receiving treatment
- Interdisciplinary geriatric clinic teams may play an important role in closing the osteoporosis care gap in ambulatory geriatric patients, particularly for calcium and vitamin D
- More interventions are required to narrow the osteoporosis care gap in high and very high risk groups

We acknowledge and thank Arsalan Mohammadi and Sierra Sandhu, 4th Year UBC E2P PharmD students, for their contributions to this project.

