

OSTEOPOROSIS AND URINARY INCONTINENCE IN AUSTRALIAN WOMEN: A LONGITUDINAL ANALYSIS.

Hypothesis / aims of study

In women, urinary incontinence and osteoporosis are prevalent, progressive disorders. Osteoporosis is characterised by compromised bone strength resulting in vertebral fractures, the most prevalent female osteoporotic fractures. Such fractures are strongly correlated with spinal deformity, and height loss - hypothesised to increase intraabdominal pressure. Height loss inherent with osteoporosis is significantly associated with female urinary incontinence which is associated with pelvic organ prolapse [1]. This study aimed to longitudinally explore associations between diagnoses of osteoporosis in relation to onset of urinary incontinence in Australian women.

Study design, materials and methods

In the first survey (1996), women were asked if they had "ever been told by a doctor that you had osteoporosis". In subsequent surveys were asked "in the last 2 years have you been diagnosed or treated for osteoporosis". Other baseline survey questions in both cohorts asked whether women had experienced leaking urine in the last year. Response options were: never, rarely, sometimes, or often. Responses to this question (those answering rarely, sometimes, often) were used to estimate the prevalence of leaking urine in both cohorts in each survey. Responses were analysed from 10,951 mid-aged women (aged 45-50 years in 1966) and 8847 elderly women (aged 70-75 in 1996) across 5 surveys in the Australian Longitudinal Study on Women's Health. After adjusting for confounders, crude and adjusted odds ratios for osteoporosis were obtained using longitudinal generalized estimating equation models, predicting incontinence for both cohorts.

Results

Statistically significant associations were found between osteoporosis and urinary incontinence (OR=1.21; 95% CI: 1.11, 1.33) in both the mid-age and older women.

Interpretation of results

Table 1: Osteoporosis status by Urinary incontinence for women in the 1946-1951 and 1921-1926 cohorts.

Cohort	Survey 1 1996		Survey 2 1998		Survey 3 2001		Survey 4 2004		Survey 5 2007	
	Osteoporosis		Osteoporosis		Osteoporosis		Osteoporosis		Osteoporosis	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1946-1951	(n=338)(n=10613)		(n=428)(n=11298)		(n=543)(n=9759)		(n=708)(n=8595)		(n=866)(n=8548)	
	%	%	%	%	%	%	%	%	%	%
UI Yes	28	19	32	25	24	20	42	35	33	26
UI No	72	81	68	75	79	80	58	65	67	74

Cohort	Survey 1 1996		Survey 2 1999		Survey 3 2002		Survey 4 2005		Survey 5 2008	
	Osteoporosis		Osteoporosis		Osteoporosis		Osteoporosis		Osteoporosis	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1921-1926	(n=1627)(n=7220)		(n=2005)(n=7799)		(n=2239)(n=5869)		(n=2240)(n=4507)		(n=2053)(n=3196)	
	%	%	%	%	%	%	%	%	%	%
UI Yes	27	18	18	13	23	18	29	26	34	31
UI No	73	82	82	87	77	82	71	74	66	69

Table 2: Crude and adjusted odds ratios for osteoporosis, obtained from longitudinal Generalized Estimating Equation (GEE) models, predicting Urinary incontinence for the 1946-1951 cohort.

Dependent variable		Crude			Adjusted		
		Odd Ratio	95% C.I.	p	Odd Ratio	95% C.I.	p
Osteoporosis	No (ref)	1.00	-	1.00			
	Yes	1.23	(1.11, 1.36)	0.0001	1.12	(0.98, 1.27)	0.1076

Table 3: Crude and adjusted odds ratios for osteoporosis, obtained from longitudinal Generalized Estimating Equation (GEE) models with time lag, POP) for the 1921-1926 cohort.

Dependent variable		Crude			Adjusted		
		Odd Ratio	95% C.I.	p	Odd Ratio	95% C.I.	p
Osteoporosis	No (ref)	1.00	-	1.00			
	Yes	1.24	(1.16, 1.33)	0.0001	1.19	(1.09, 1.3)	0.0002

Concluding message

Conclusion: Mid-aged and older women diagnosed with osteoporosis are at increased risk of developing urinary incontinence suggesting that on diagnosis of osteoporosis, women be screened for and informed about their increased risk of developing urinary incontinence .

References

1. Berecki-Gisolf J, Spallek M, Hockey R, Dobson A. Height loss in elderly women is preceded by osteoporosis and is associated with digestive problems and urinary incontinence. *Osteoporos Int.* 2010;21:479-85

Disclosures

Funding: None **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Newcastle University Human Research Ethics Committee **Helsinki:** Yes **Informed Consent:** Yes