

Mood Disorders And Antidepressant Use Are Associated With Trabecular Bone Score In Women

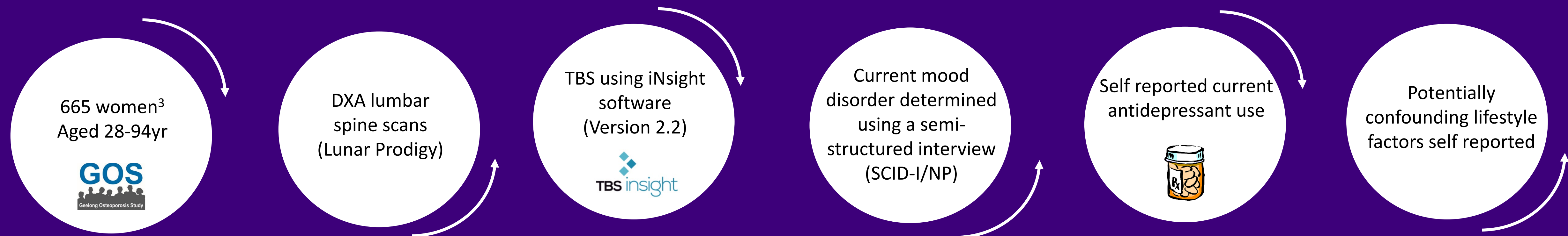
Kara B Anderson¹, Kara L Holloway-Kew¹, Lana Williams¹, Julie A Pasco^{1,2,3,4}

1. Deakin University, Geelong, Australia; 2. Barwon Health, Geelong, Australia; 3. Melbourne Medical School – Western Campus, Department of Medicine, The University of Melbourne, St Albans, Australia; 4. Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia.

BACKGROUND AND AIM

- Mood disorders and antidepressants, particularly selective serotonin reuptake inhibitors (SSRIs), have been previously associated with lower bone mineral density (BMD) and increased fracture risk.¹
- Trabecular bone score (TBS) is a bone imaging technique using lumbar spine DXA images to assess grey-level variation and provide an indirect measure of trabecular microarchitecture at the lumbar spine.²
- Using data from the Geelong Osteoporosis Study (GOS) – a large, randomly-selected, population based cohort study – we aimed to determine if TBS was associated with mood disorders and antidepressant use.

METHODS



- Multivariable linear regression models were used to assess associations between mood disorders, antidepressants and TBS, adjusting for potential covariates including age, height, weight and lifestyle factors (alcohol consumption, physical activity, smoking and other medication use). Age was centred about the mean for inclusion in the models.
- Models were developed separately for both current mood disorder and antidepressant use. In addition, a combined model including both variables was developed to test for independent effects.
- Interval plots highlight differences in mean TBS between those with and without current mood disorders, with and without current antidepressant use, and with and without current SSRI use.

RESULTS

- Characteristics of those with and without a current mood disorder, as well as antidepressant users and non-users, are shown in Table 1.
- Current mood disorder was correlated with TBS ($r=-0.073$, $p=0.059$). In a model adjusted for age and height, current mood disorder was associated with a 4.9% decrease in TBS ($p<0.001$).
- Similarly, current antidepressant use was correlated with TBS ($r=-0.171$, $p<0.001$), as was current use of SSRIs ($r=-0.138$, $p<0.001$). In a model adjusted for age, height and smoking status, current antidepressant use was associated with a 3.5% decrease in TBS ($p<0.001$).
- Interval plots for TBS show differences in mean TBS between groups (see Figure).
- A combined model including current mood disorder and use of antidepressants found their effects on TBS to be independent (see Table 2).

Table 2: Combined model for TBS including current mood disorder and antidepressant use. Mean age was 55.3yr.

Variable	B-coefficient	P-value
Age-mean (yr)	-0.007183	<0.001
(Age-mean) ² (yr)	-0.000036	0.079
(Age-mean) ³ (yr)	0.000003	0.002
Height (cm)	-0.004180	<0.001
Current mood disorder (y/n)	-0.0476	0.009
Antidepressant use (y/n)	-0.0376	0.008

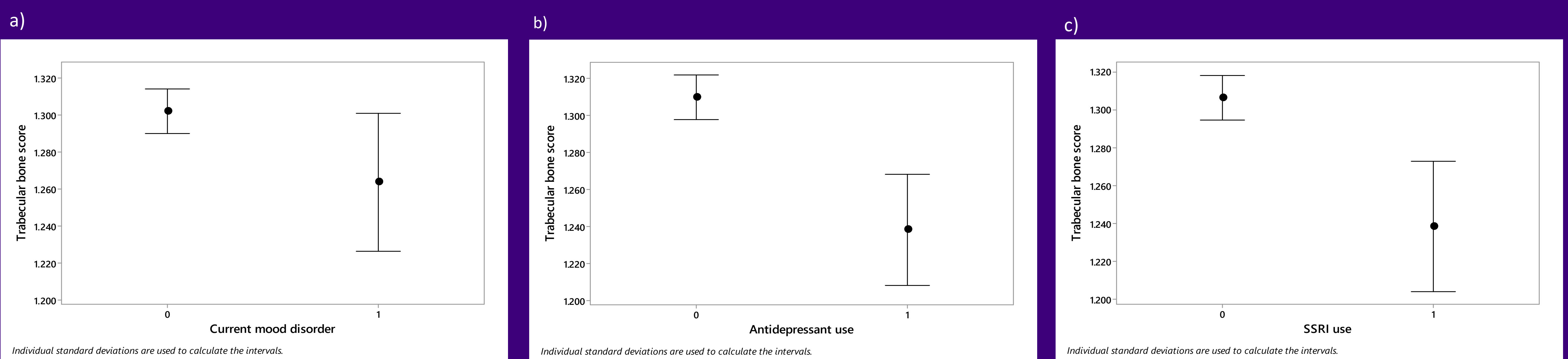


Figure: Interval plots for TBS by (a) current mood disorder, (b) any antidepressant use and (c) SSRI use.

Table 1: Descriptive characteristics of the women included in the study. Data presented as mean±SD, median (IQR) or n (%).

	All (n=665)	Current mood disorder (n=60)	No current mood disorder (n=605)	P-value	Antidepressant use (n=107)	No antidepressant use (n=558)	P-value
Age	55.2 (42.0-68.2)	49.7 (38.9-63.2)	55.5 (42.6-68.9)	0.043	59.6 (46.5-71.4)	54.1 (40.9-67.4)	0.016
Weight	71.9±13.4	73.1±13.3	71.8±13.4	0.477	74.3±13.2	71.5±13.4	0.045
Height	162.1±6.5	161.7±7.4	162.2±6.4	0.614	161.6±7.0	162.2±6.4	0.368
TBS	1.298±0.150	1.264±0.144	1.302±0.150	0.055	1.240±0.158	1.310±0.146	<0.001
BMD (g/cm ³)	1.205±0.182	1.210±0.156	1.205±0.184	0.796	1.209±0.171	1.205±0.184	0.813
SSRI use	82 (12.4)	32 (53.3)	50 (8.3)	<0.001	82 (76.6)	0 (0)	<0.001
High alcohol consumption	34 (5.1)	4 (6.7)	30 (5.0)	0.539	6 (5.6)	28 (5.0)	0.810
Low mobility	160 (24.1)	22 (36.7)	138 (22.8)	0.033	37 (34.6)	123 (22.0)	0.021
Current smoking	80 (12.0)	17 (28.3)	63 (10.4)	<0.001	18 (16.8)	62 (11.1)	0.157
Antiresorptive use	35 (5.3)	4 (6.7)	31 (5.1)	0.610	9 (8.4)	26 (4.7)	0.111
Glucocorticosteroid use	16 (2.4)	2 (3.3)	14 (2.3)	0.623	3 (2.8)	13 (2.3)	0.769

DISCUSSION AND CONCLUSION

- Both current mood disorder and antidepressant use were independently associated with lower TBS in a population based sample of Australian women.
- The strengths of this study include a randomly-selected, population-based sample, the use of the SCID-I/NP for comprehensive diagnosis of mood disorders at time of visit, and a large array of clinical and questionnaire data for adjustment against confounding. A limitation was that medication use was self-reported, and there was limited power to look at antidepressant classes other than SSRIs.
- Future work in this area could explore other classes of antidepressants.
- This confirms previous research showing negative effects of both mood disorders, and antidepressant medication on bone health including BMD and fracture risk, and presents new data indicating that bone microarchitecture as measured by TBS is also affected.

REFERENCES

- Williams et al 2016 ANZJP, 50(9) 829-830
- Winzenrieth et al 2013 J Clin Densit, 16(3) 287-296
- Pasco et al 2012 Int J Epidemiol, 41(6) 1565-1575

