

Table 3 Multivariable-adjusted odds ratios and 95% CIs for depression, anxiety and high psychological distress across categories of BMI and waist circumference for women^a

	BMI status ^b				<i>P</i> _{trend}	WC status ^c			<i>P</i> _{trend}
	Normal weight	Overweight	Obese			Normal	Action level 1	Action level 2	
Depression (borderline+severe)									
Crude	1.0	1.14 (0.95–1.37)	1.15 (0.87–1.53)	0.14	1.0	0.99 (0.78–1.26)	1.28 (1.03–1.59)	0.02	
Adjusted ^d	1.0	1.03 (0.82–1.30)	0.86 (0.60–1.24)	0.61	1.0	0.98 (0.73–1.31)	1.02 (0.76–1.38)	0.83	
Depression (severe)									
Crude	1.0	1.11 (0.85– 1.45)	1.45 (1.0–2.11)	0.05	1.0	1.13 (0.80–1.61)	1.63 (1.19–2.24)	0.001	
Adjusted	1.0	0.90 (0.64–1.25)	0.84 (0.51–1.37)	0.42	1.0	1.20 (0.79–1.82)	1.17 (0.77–1.79)	0.50	
Depression (borderline)									
Crude	1.0	1.15 (0.93–1.43)	0.97 (0.68–1.38)	0.59	1.0	0.90 (0.68–1.20)	1.08 (0.83–1.41)	0.48	
Adjusted	1.0	1.14 (0.87–1.50)	0.89 (0.57–1.38)	0.99	1.0	0.85 (0.59–1.21)	0.94 (0.66–1.33)	0.79	
Anxiety (borderline+severity)									
Crude	1.0	1.27 (1.01–1.59)	1.33 (0.94–1.87)	0.02	1.0	1.12 (0.81–1.54)	1.80 (1.36–2.38)	< 0.001	
Adjusted	1.0	1.0 (0.75–1.33)	0.96 (0.62–1.49)	0.90	1.0	1.09 (0.74–1.61)	1.47 (1.01–2.14)	0.03	
Anxiety (severe)									
Crude	1.0	1.27 (0.91–1.80)	1.66 (1.03–2.67)	0.02	1.0	1.42 (0.88–2.28)	1.99 (1.30–3.07)	0.001	
Adjusted	1.0	1.03 (0.67–1.59)	1.12 (0.60–2.11)	0.72	1.0	1.56 (0.87–2.80)	1.86 (1.04–3.34)	0.04	
Anxiety (borderline)									
Crude	1.0	1.29 (0.97–1.70)	1.14 (0.73–1.77)	0.19	1.0	0.94 (0.63–1.41)	1.66 (1.18–2.35)	0.002	
Adjusted	1.0	0.99 (0.69–1.41)	0.89 (0.51–1.54)	0.73	1.0	0.84 (0.52–1.37)	1.27 (0.80–2.0)	0.21	
Psychological distress									
Crude	1.0	0.98 (0.81–1.20)	1.13 (0.83–1.52)	0.56	1.0	1.06 (0.82–1.38)	1.31 (1.03–1.66)	0.02	
Adjusted	1.0	0.94 (0.74–1.21)	0.84 (0.57–1.24)	0.39	1.0	1.15 (0.85–1.57)	1.17 (0.86–1.60)	0.33	

^aSevere anxiety and depression defined as Hospital Anxiety and Depression Scale score ≥ 11 ; 8–10 was considered as borderline'. Psychological distress was defined as General Health Questionnaire score ≥ 4 .

^bNormal weight (≤ 24.9 kg/m²), overweight (25.0–29.9 kg/m²) and obesity (≥ 30.0 kg/m²).

^cNormal (< 80 cm), abdominal obesity level 1 (80–87.99 cm), abdominal obesity level 2 (≥ 88 cm).

^dAdjusted for age, marital status, education, smoking and physical activity.

BMI = body mass index; CI = confidence interval; OR = odds ratio; WC = waist circumference.

in either sex (22). Our results are in agreement with some findings (27) but in contrast with others (28). The negative association between severe depression and obesity in men has also been shown in some studies (29). These conflicting results might be explained by the different pattern of abdominal obesity among men and women in different countries and greater relationship between abdominal obesity and depression in women (30). The possible mechanisms through which abdominal obesity might affect depression, anxiety and high psychological distress are unknown. Poor self-esteem, unhealthy dietary habits (31), binge eating as well as decreased

physical activity (32) in abdominally obese individuals might provide some reasons. Additionally, abdominal-obesity-related chronic conditions such as diabetes and cardiovascular disease might affect depression, anxiety and high psychological distress. These conditions can cause vascular damage and earlier studies have suggested that vascular damage in brain might predict depression (33). Abdominal obesity is related to higher inflammation. Increased concentrations of inflammatory biomarkers might also contribute to depression (34). Cortisol secretion (35) and sex-dependent steroid hormones (36) and their dysregulation occur in individuals with