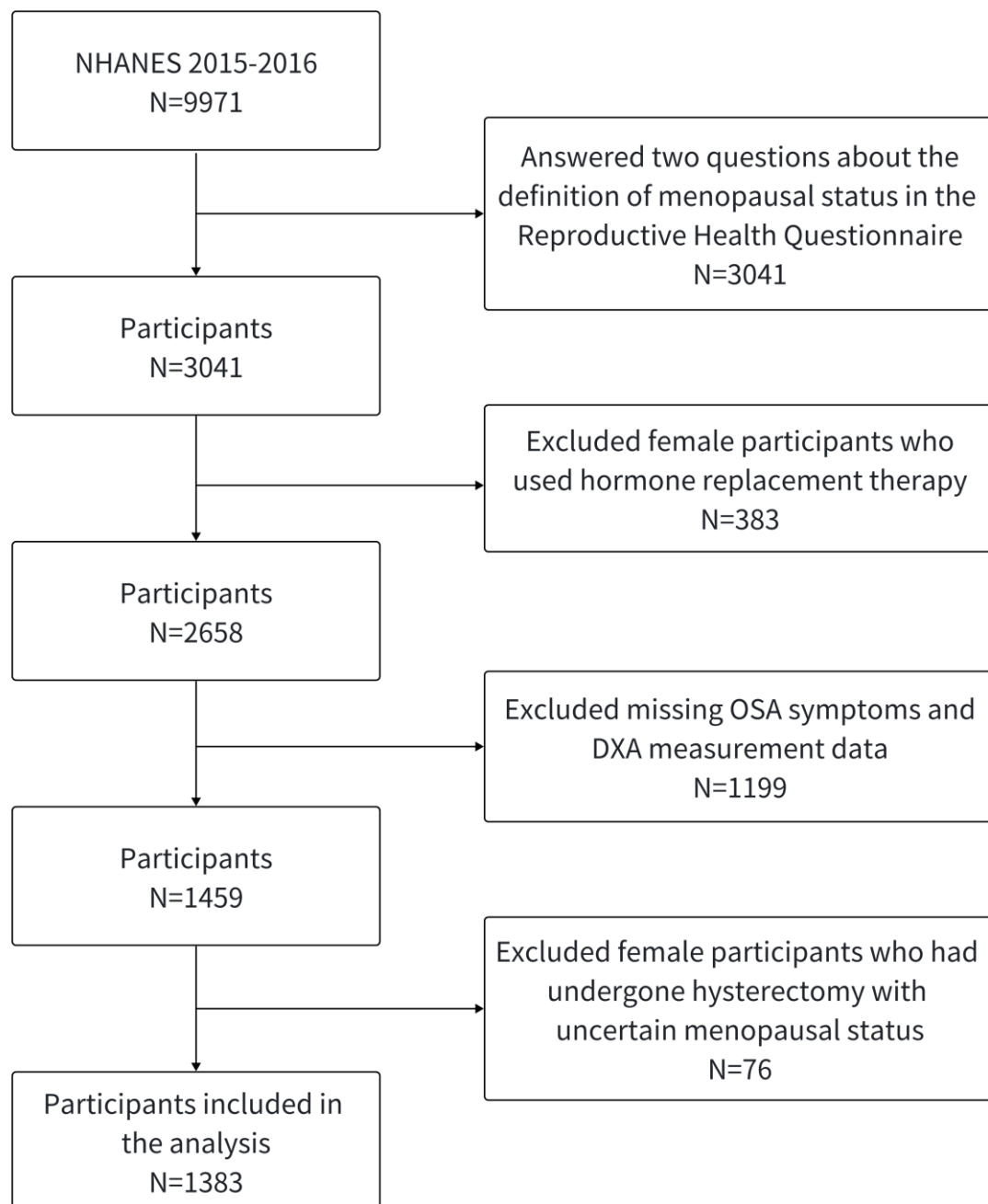


SENSITIVITY ANALYSIS

Definition of menopausal status: Self-reported menopausal status has been shown to be highly accurate. Based on previous literature, we used two questions from the NHANES Reproductive Health Questionnaire to assess menopausal status: (1) Had regular periods in past 12 months; (2) Reason not having regular periods. Participants were classified as postmenopausal if they responded "No" to the first question and indicated "Menopause or Change of life" to the second question. Participants were classified as premenopausal if they answered "Yes" to the first question, or if they answered "No" to the first question and "Pregnancy", "Breast feeding", or "Other" to the second question, provided they were under 55 years of age. We classified women who reported having undergone bilateral oophorectomy as postmenopausal. In addition, we excluded individuals who had previously received hormone replacement therapy (consisting of estrogen and progestin) because of concerns about the possible effects of such therapy on body fat distribution. The assessment of female hormone use was conducted through the question, "Ever use female hormones?" In this sensitivity analysis, we further excluded women who had undergone hysterectomy with uncertain menopausal status. Specifically, we excluded female participants who answered "no" to the first question and "hysterectomy" to the second question if they were both under 55 years of age.

Supplement Figure 1.
Flowchart of participants inclusion and exclusion from NHANES 2015–2016



Supplementary Table 1. Sensitivity analysis of the associations between menopausal status and OSA symptoms

Variable	Non-adjusted OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value
Menopausal status	2.02 (1.20,3.40)	0.01	1.57 (1.01, 2.46)	<0.05

Note: Significant results are in bold.

Abbreviations: OR, odds ratio; 95% CI, 95% confidence interval; BMI, body mass index; OSA, obstructive sleep apnea.

Adjusted for race, BMI, smoking, alcohol, hypertension, diabetes, physical activity, and total cholesterol.

Supplementary Table 2. Sensitivity analysis of comparison of body fat distribution between premenopausal and postmenopausal women

Variable	Premenopausal women Mean (SE)	Postmenopausal women Mean (SE)	Non-adjusted β (95% CI)	P-value	Adjusted β (95% CI)	P-value
Total abdominal fat (kg)	2.31 (0.04)	2.56 (0.12)	0.25 (0.02,0.47)	0.03	0.13 (0.03, 0.23)	0.01
Visceral fat (kg)	0.41 (0.01)	0.61 (0.04)	0.21 (0.13,0.28)	<0.01	0.12 (0.06, 0.18)	<0.01
Subcutaneous fat (kg)	1.90 (0.04)	1.95 (0.09)	0.04 (-0.12,0.21)	0.59	0.02 (-0.05, 0.08)	0.60
Android fat (kg)	2.39 (0.06)	2.69 (0.16)	0.30 (0.01,0.58)	0.04	0.12 (0.00, 0.25)	0.05
Gynoid fat (kg)	5.36 (0.09)	5.49 (0.17)	0.13 (-0.25,0.51)	0.47	0.17 (-0.10, 0.43)	0.20

Note: Significant results are in bold.

Abbreviations: SE, standard error; β : effect size; 95% CI, 95% confidence interval; BMI, body mass index; OSA, obstructive sleep apnea.

Adjusted for race, BMI, smoking, alcohol, hypertension, diabetes, physical activity, and total cholesterol.

Supplementary Table 3. Sensitivity analysis of the associations between body fat distribution and OSA symptoms

Variable	Non-adjusted OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value
Total abdominal fat (kg)	1.96 (1.52,2.53)	<0.01	1.34 (0.86, 2.07)	0.18
Visceral fat (kg)	13.37 (4.91,36.36)	<0.01	4.12 (1.59, 10.71)	0.01
Subcutaneous fat (kg)	2.13 (1.59,2.86)	<0.01	0.92 (0.51, 1.68)	0.77
Android fat (kg)	1.65 (1.36,2.01)	<0.01	1.21 (0.96, 1.52)	0.10
Gynoid fat (kg)	1.32 (1.17,1.48)	<0.01	0.89 (0.75, 1.05)	0.16

Note: Significant results are in bold.

Abbreviations: OR, odds ratio; 95% CI, 95% confidence interval; BMI, body mass index; OSA, obstructive sleep apnea.

Adjusted for race, BMI, smoking, alcohol, hypertension, diabetes, physical activity, and total cholesterol.

Supplementary Table 4. Mediation analysis of the association between menopause and the risk of OSA symptoms mediated by visceral fat mass

Exposure	Non-adjusted β (95% CI)	P-value	Adjusted β (95% CI)	P-value
Total effect	0.21 (0.13, 0.28)	<0.01	0.09 (0.01, 0.17)	0.03
Direct effect	0.08 (0.00, 0.15)	0.04	0.05 (-0.03, 0.14)	0.18
Mediation effect	0.13 (0.08, 0.16)	<0.01	0.04 (0.01, 0.06)	0.02
PM, %	63.30%	<0.01	41.39%	<0.05

Note: Significant results are in bold.

Abbreviations: β : effect size; 95% CI, 95% confidence interval; BMI, body mass index; OSA, obstructive sleep apnea.

Adjusted for race, BMI, smoking, alcohol, hypertension, diabetes, physical activity, and total cholesterol.