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Psychobiological associations between restraint eating and female hormone status in middle age

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Introduction: Evidence from animal studies suggests that estradiol (E2) inhibits the release of ghrelin. The decrease in E2 levels after menopause raises questions about the relationship between E2 and ghrelin in pre- and postmenopausal women. As ghrelin levels have been shown to be elevated in patients with anorexia nervosa (AN), another question is whether women with a prior history of AN show different relationships between ghrelin and menopausal status.

Objectives: The goal of this study is to understand the relationships between menopausal status, E2, prior history of AN and postprandial ghrelin levels in middle-aged women.

Methods: Fifty-seven healthy middle-aged women (N = 57) were recruited for this study and divided into two groups according to their pre- or post-menopausal status and prior history of AN. Premenopausal women were examined during the ovulatory phase of their menstrual cycle. Plasma was collected from all women before and after a test meal (total calorie intake: 326.05 kcal) for 180 minutes.

Results: The interaction effect between menopausal status, E2 and time showed a significant effect The area under the curve for ghrelin was increased in participants with a prior history of AN compared to participants without prior history of AN.

Conclusion: There is an association between menopausal status, E2 and postprandial ghrelin levels in middle-aged women. Women with a prior history of AN showed increased ghrelin levels.

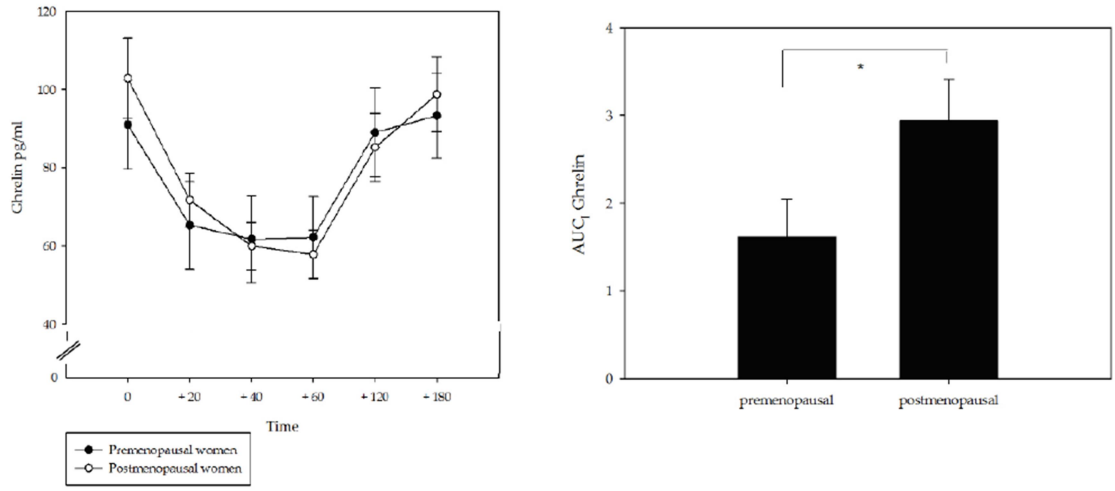

Figure 1: Association between menopausal status, E2 and postprandial ghrelin changes in pre-menopausal and post-menopausal women. There was a significant interaction effect between menopausal status, E2 and time [$F(5,47) = 2.63$, $p = .046$, partial $\eta^2 = .208$]. Ghrelin AUC_I showed that the AUC_I levels were significantly increased in post-menopausal women compared to pre-menopausal women [$F(1,56) = 4.1$, $p = .048$, $\eta^2 = .072$]

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