

# Metabolically-defined body size and body shape phenotypes and risk of postmenopausal breast cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC)

Wednesday, 21 September 2022 12:03 (12 minutes)

## BACKGROUND

Excess body fatness is an established risk factor for postmenopausal breast cancer. Higher insulin levels are also associated with an increased risk of postmenopausal breast cancer, however, whether women with high body fatness but with normal insulin sensitivity or those with normal body fatness who have high levels of insulin are at elevated risk of breast cancer is not known. We investigated the associations of metabolically-defined body size phenotypes with the risk of postmenopausal breast cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC).

## METHODS

Concentrations of C-peptide —a marker for insulin secretion —were measured in serum from 610 incident postmenopausal breast cancer cases and 1130 matched controls. C-peptide concentrations among the control participants were used to define metabolically healthy (MH; in 1st tertile) and metabolically unhealthy (MU; >1st tertile) status. We created four metabolic health/body size phenotype categories by combining the metabolic health definitions with normal weight (NW; BMI<25 kg/m<sup>2</sup>, or WC<80 cm, or WHR<0.8, or ABSI<73) and overweight or obese (OW/OB; BMI≥25 kg/m<sup>2</sup>, or WC≥80 cm, or WHR≥0.8, or ABSI≥73) status : (1) MHNW, (2) MHOW/OB (3) MUNW and (4) MUOW/OB. Conditional logistic regression was used to compute odds ratios (ORs) and 95% confidence intervals (CIs) for associations between metabolically-defined body size phenotypes and risk of postmenopausal breast cancer.

## RESULTS

Cases were diagnosed on average 3 years after blood collection at an average age of 64 years. Women classified as MUOW/OB were at higher risk of postmenopausal breast cancer compared to MHNW women considering BMI (OR=1.58, 95% CI=1.14-2.19), WC (OR=1.51, 95% CI=1.09-2.08) and WHR (OR=1.29, 95% CI=0.94-1.77) cut points but not when considering ABSI (OR=1.15, 95% CI=0.83-1.59) definition. Conversely, women with the MHOW/OB and MUNW were not at statistically significant elevated risk of postmenopausal breast cancer risk compared to MHNW women.

## CONCLUSION

These findings suggest that being overweight or obese and metabolically unhealthy raises risk of postmenopausal breast cancer while overweight or obese women with normal insulin levels are not at higher risk. Additional research should consider the combined utility of anthropometric measures with metabolic parameters in breast cancer risk.

**Primary authors:** MAHAMAT SALEH, Yahya (IARC); RINALDI, Sabina (IARC); Prof. KAAKS, Rudolf; BIESSY, Carine (IARC); GONZALEZ GIL, Esther (IARC); MURPHY, Neil (IARC); WEIDERPASS, Elisabete (IARC); GUNTER, Marc (IARC); DOSSUS, Laure (IARC)

**Presenter:** MAHAMAT SALEH, Yahya (IARC)

**Session Classification:** Oral Presentation