

## Impact of obesity and abdominal obesity on the incidence of gynecological malignancy in Korean women: a nationwide retrospective cohort study

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### Background

In Korea, the patterns of prevalence of gynecological cancers have been changed with an increase of obesity-related cancer. We evaluated the associations of BMI and WC with the risks for gynecological malignancy in Korean women.

### Methods

We used the data from the NHIS cohort. Among the 2,000,026 women aged  $\geq 19$  years who underwent health check-ups at the baseline year (2009-2010), 365,581 participants were included in the final analysis after excluding those who had died or had been diagnosed with cancer or had undergone hysterectomy and/or salpingo-oophorectomy before the index date (December 31st, 2010) and those with missing values or outliers for BMI and WC. Participants were followed up until December 31st, 2021, and the incidences of endometrial, ovarian, and cervical cancer were evaluated. The HRs and 95% CIs for each gynecological malignancy according to BMI and WC were calculated using Cox proportional hazard regression.

### Results

Among the 365,581 participants, 898, 1268, and 873 cases of endometrial, ovarian, and cervical cancer developed. The HRs (95% CIs) for endometrial cancer were 1.37 (1.15-1.63), 1.63 (1.38-1.94), and 3.64 (2.81-4.70) for BMIs (kg/m<sup>2</sup>) of 23.0-24.9, 25.0-29.9, and  $\geq 30$  compared to BMIs of 18.5-22.9. The HRs (95% CIs) for ovarian cancer were 1.16 (1.00-1.33), 1.19 (1.03-1.37), and 1.49 (1.12-1.98) for BMIs of 23.0-24.9, 25.0-29.9, and  $\geq 30$  compared to BMIs of 18.5-22.9. There was no significant association between BMI and the risk for cervical cancer. The HRs (95% CIs) for endometrial cancer were 1.35 (1.09-1.66), 1.41 (1.14-1.74), and 1.90 (1.55-2.34) for the 2nd, 3rd, and 4th quartiles of WCs compared to the 1st quartile. There were no significant associations between WC and the risks for ovarian and cervical cancer.

### Conclusion

In Korean women, the risks for endometrial cancer and ovarian cancer increased in a graded fashion from the pre-obese level as BMI and WC increased, while the risk for cervical cancer tended to increase

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as WC decreased. Awareness on obesity-related gynecological cancers should be reinforced for the management of obesity considering the high incidence of these cancers among Korean women with obesity.