

## **Pre-pregnancy Lifestyle Factors, Psychological Distress and Adverse Pregnancy Outcomes among Female Survivors in the Childhood Cancer Survivor Study (CCSS) Cohort**

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**Purpose:** To evaluate associations between pre-pregnancy lifestyle factors, psychological distress and adverse pregnancy outcomes including preterm birth, stillbirth, miscarriage, and medical abortion in adult female survivors of childhood cancer.

**Methods:** We examined 2,179 pregnancies reported by 1,485 female participants from the CCSS. Generalized linear models, adjusted for age at diagnosis, age at pregnancy, parity, and education were used to estimate associations between pre-pregnancy inactivity, overweight or obese status, smoking status (Never, 0 to 5 pack-years or > 5 pack-years), risky drinking (> 3 drinks/day or > 7 drinks/week), psychological distress (based on Brief Symptom Inventory-18) and pregnancy outcomes. Interactions between lifestyle factors, psychological distress, type of cancer and cancer treatment (pituitary, ovarian and uterine radiation, cyclophosphamide equivalent dose and anthracycline dose score) were assessed in multivariable models.

**Results:** The median age of study participants at the beginning of pregnancy was 28 years (range: 14-45). Among 2,179 reported pregnancies, there were 1525 singleton live births (381 were preterm), 29 stillbirths, 466 miscarriages, and 159 medical abortions. Survivors with >5 pack-year smoking history were nearly three times more likely to report a stillbirth (OR: 2.98; 95% CI: 1.78, 4.98) than those who never smoked. Compared to those who had never smoked, survivors with > 5 pack-years smoking history had a higher risk for miscarriage among those with > 2.5 Gray of uterine radiation (OR: 11.51; 95% CI: 1.79, 73.93) than those with no history of uterine radiation (OR: 1.37; 95% CI: 0.23, 7.90; P interaction= 0.03). Other interaction terms between lifestyle factors or psychological distress and cancer treatment were not significant for any pregnancy outcomes. Pre-pregnancy physical inactivity, risky drinking, distress and depression were not associated with any pregnancy outcomes.

**Conclusion:** Smoking history is associated with risk of stillbirth and miscarriage. Other lifestyle factors and psychological distress are not predictive of adverse pregnancy outcomes.