

Association and Causal Mediation Analysis for the Relationship Between Parity and the Risk of T2DM

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Background/Aims: This study aimed to investigate the complex relationship between multiparity and the risk of type 2 diabetes mellitus (T2DM) in women. We conducted a comprehensive analysis with consideration of possible mediators such as race, socio-economic status, body composition, and genetic factors.

Methods: This study is based on data from the UK biobank. We excluded participants who were already diagnosed with T2DM at baseline, and those missing parity data, and those missing blood test data. The data of reproductive factors were provided through self-reported questionnaire. The definition of T2DM was identified through hospitalization records, which were coded using ICD-10 diagnostic codes. We explored the association through multivariable adjusted Cox proportional hazard regression models. Furthermore, we further conducted a causal mediation analysis to assess the potential mediators.

Results: During a follow-up period of 8.9 years, a total of 4,045 participants (1.7%) were newly diagnosed with T2DM. The hazard ratio for the development of T2DM per additional child was 1.16 (95% CI: 1.13–1.16). Adjusting for various factors attenuated the overall risk but did not eliminate the increased risk among multiparous. In subgroup analysis, Asian showed a stronger association between multiparity and T2DM. The obese women, especially those with abdominal obesity exhibited the stronger association, but there was no such association in non-obese group. Mediation analysis identified waist circumference and BMI as the most significant mediators.

Conclusions: In our study, the risk of T2DM increased as parity level increased to three or more children compared to nulliparous. This association was especially notable among Asian and women with obesity and abdominal obesity, but non-obese women do not have an increased risk. Mediation analysis highlighted a significant relationship between parity and T2DM, particularly, in relation to abdominal obesity. In conclusion, it is important to publicize the possible importance of post-pregnancy weight management by emphasizing that non-obese women do not experience an increased risk of diabetes.

The Relationship Between Parity and the Risk of Type 2 Diabetes

A Prospective Study among Women in the UK Biobank

