High physical activity and high sedentary behavior increased the risk of gestational diabetes mellitus among women with excessive gestational weight gain: a prospective study

ABSTRACT

Background: Although physical activity (PA) in pregnancy benefits most women, not much is known about pregnancy-related changes in PA and its association with gestational diabetes mellitus (GDM) risk. The aim of this study was to identify the trajectory of PA during pregnancy and possible associations with the risk of GDM. Methods: This was a prospective cohort study of 452 pregnant women recruited from 3 health clinics in a southern state of Peninsular Malaysia. PA levels at the first, second, and third trimester were assessed using the Pregnancy Physical Activity Questionnaire. GDM was diagnosed at 24–28 weeks of gestation following the Ministry of Health Malaysia criteria. Group-based trajectory modeling was used to identify PA trajectories. Three multivariate logistic models were used to estimate the odds of trajectory group membership and GDM. Results: Two distinct PA trajectories were identified: low PA levels in all intensity of PA and sedentary behavior (Group 1: 61.1%, n = 276) and high PA levels in all intensity of PA as well as sedentary behavior (Group 2: 38.9%, n = 176). Moderate and high intensity PA decreased over the course of pregnancy in both groups. Women in group 2 had significantly higher risk of GDM in two of the estimated logistic models. In all models, significant associations between PA trajectories and GDM were only observed among women with excessive gestational weight gain in the second trimester. Conclusions: Women with high sedentary behavior were significantly at higher risk of GDM despite high PA levels by intensity and this association was significant only among women with excessive GWG in the second trimester. Participation in high sedentary behavior may outweigh the benefit of engaging in high PA to mitigate the risk of GDM.

Keyword: Physical activity; Trajectory; Sedentary behaviour; Gestational diabetes mellitus