

Chronobiological disorders and their impact on gestational diabetes mellitus outcomes: the Chrono-Nutrition Gestational Diabetes Study

Amalia Messika¹, Yoel Toledano¹, Eran Hadar¹, Riva Tauman¹, Oren Froy², and Raanan Shamir¹

¹Tel Aviv University

²Hebrew University of Jerusalem

May 20, 2022

Abstract

Objective Studies have shown that chronobiological factors may adversely affect glycemic control in patients with type 2 diabetes mellitus (T2DM). Our objective was to assess the association of chronobiological disorders with glycemic control and neonatal birthweight in women with GDM. Design A prospective observational study was conducted. Setting Israel Population 208 women aged 18-45 years with a singleton pregnancy who were randomly selected from among women undergoing follow-up for GDM at the Maternal-Fetal Medicine Unit of a tertiary medical center in 2016 and 2017. Methods Nutrition, sleep, and lifestyle patterns were assessed from onset of GDM until birth along with glycemic control and obstetrical outcomes. Data were collected by structured interview and from the medical files. Main outcome measures Maternal glycemic control and large for gestational age (LGA) neonate. Results Multivariate analyses on a cohort of 208 women revealed suboptimal glycemic control which was associated with a late breakfast (RR=2.26; 95% CI 1.09-4.67). Any 10-g increase in carbohydrate intake in the evening increased the risk 1.19 times for suboptimal glycemic control (RR=1.19; 95% CI 1.003-1.42), and 2.14 times for poor sleep quality (RR=2.14; 95% CI 1.04-4.41). The adjusted relative risk for birthweight above the 85th percentile was associated with excessive of 10-g increase of carbohydrate intake in the morning (RR=1.70; 95%CI 1.30-2.23) and in the evening (RR=1.39; 95% CI 1.16-1.67). Conclusions Chronobiological disorders are associated with suboptimal glycemic control and large-for-gestational-age newborn in women with GDM.

Hosted file

Messika et al., Main document.docx available at <https://authorea.com/users/483882/articles/569833-chronobiological-disorders-and-their-impact-on-gestational-diabetes-mellitus-outcomes-the-chrono-nutrition-gestational-diabetes-study>

Hosted file

Messika et al., Figure 1.pptx available at <https://authorea.com/users/483882/articles/569833-chronobiological-disorders-and-their-impact-on-gestational-diabetes-mellitus-outcomes-the-chrono-nutrition-gestational-diabetes-study>