

Question 3. Does there seem to be a relationship between cesarean delivery rate and neonatal mortality rate? Explain your answer with the help of data reported in the study.

Question 4. Does there seem to be a relationship between cesarean delivery rate and per capita healthcare spending? Explain your answer with the help of data from reported in the study.

Question 5. Does there seem to be a relationship between neonatal mortality rate and per capita healthcare spending? Explain your answer with the help of data from reported in the study.

CASE STUDY 14.2: Prospective Cohort Study

Modified from: Gunderson EP, Hurston SR, Ning X, et al. Lactation and progression of type 2 diabetes mellitus after gestational diabetes mellitus: a prospective cohort study. *Ann Intern Med.* 2015; 163(12):889–898.

Gestational diabetes mellitus (GDM) is a disorder of glucose tolerance that affects 5%–9% of all U.S. pregnancies (approximately 250,000 pregnant women). Women who experience GDM have a 7 times greater risk of subsequent diabetes mellitus (DM) than women who do not. Breastfeeding or lactation is a modifiable postpartum behavior that improves glucose and lipid metabolism and has favorable metabolic effects that persist after weaning.

The purpose of this study was to examine whether breastfeeding had any effect on or a relationship with the occurrence of DM in the 2-year period following delivery among women who had GDM during pregnancy. A total of 1,035 pregnant women who had been diagnosed with GDM and who delivered a baby after 35 weeks or more of pregnancy were enrolled and followed from August 2008 to December 2011. Three in-person examinations of these women from 6 to 9 weeks after delivery were conducted to collect baseline data. Thereafter, annual follow-ups included anthropometric measurements, personal interviews, and glucose tolerance testing 2 hours after oral administration of 75 grams of glucose.

Of the 1,035 women initially enrolled, 25 were excluded from the study because they either had DM 6–9 weeks after delivery or delivered a baby before 35 weeks of pregnancy. Out of the remaining 1,010 women who delivered a baby after 35 or more weeks of pregnancy and did not have DM 6–9 weeks after delivery, the researchers were able to follow 959 (95%) for up to 2 years, and 113 (11.8%) of them were noted to have developed DM during the course of this time.

Data were analyzed using advanced statistical methods, including regression analysis, to examine the independent association of different levels and durations of breastfeeding with the incidence of DM after adjusting for potential confounding factors such as age, race, and weight.

Crude incidence rate of Type 2 DM within 2 years of follow-up of women with GDM by lactation intensity groups at 6 to 9 weeks after delivery showed that women in the “exclusively formula milk” group had an incidence rate of 8.79 per 1,000 person-months of follow-up, those in the “mostly formula milk” group had an incidence rate of 6.47, those in “mostly lactation” group had an incidence rate of 4.88, and those in the “exclusively lactation” group had an incidence rate of 3.95 per 1,000 person-months of follow-up. **TABLE 14.14** shows lactation intensity groups 6–9 weeks after delivery and adjusted hazard ratios (representing the risk of DM) of the incidence of DM within the 2-year follow-up period among women who had GDM during pregnancy.

Questions

Question 1. What research question was addressed in this study, or what hypothesis was tested?

Question 2. Why are incidence rates of DM in this study reported per 1,000 person-months rather than per 100 or per 1,000 women, and what does person-months mean?

Question 3. What do hazard ratios in Table 14.14 indicate? Are these results statistically significant? Explain your answer with the help of data from the table.

Question 4. Why in this study were the estimates of the health outcome (DM) statistically adjusted for variables such as age, maternal risk factors, neonatal outcomes, and postpartum maternal lifestyle?