Women's Health

The Impact of Maternal Comorbidities on the Cost of Care for Pregnant Women and Newborns

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Keywords
comorbidities
pregnancy costs
newborn care
prenatal care

Poster Presentation

Objective

To examine the prevalence of maternal comorbidities and their effect on pregnancy, delivery, and newborn-related health care costs.

Design

Retrospective comparative cohort database analysis.

Setting

Truven Health MarketScan Commercial Claims and Encounters Database, 2007 to 2011.

Sample

Women aged 15 to 49 with commercial health care insurance, a medical claim of live birth, and continuous medical and drug benefit coverage 12 months before the first medical claim for pregnancy and 3 months following the birth.

Methods

Comorbid conditions among women with live births were identified during the 12 months prior to the first pregnancy claim (index date) using an adaptation of the AHRQ Clinical Classification. Women and their newborns were linked using a unique family identifier; the first live-birth event in the study period was retained for analysis. Medical (inpatient and outpatient) and pharmacy costs accrued between the index date and the day before delivery for the mothers and 3 months following delivery for the mothers and newborns were assessed. Health care utilization and costs were descriptively analyzed for the women with one or more prespecified comorbidity and compared to women without the comorbidity during pregnancy and 3 months following delivery. The incremental pregnancy or newborn costs associated with the comorbidity were assessed using multivariable regression controlling for maternal demographics, all comorbidities evaluated, and compared to mothers without comorbidities.

Results

A total of 322,141 mothers with live births were included in the database. Of these, 135,572 were linked to 137,040 newborns after applying the inclusion criteria. The most prevalent comorbidities among all mothers included back disorders (9.5%), mental disorders (excluding psychoses; 6.4%), allergic rhinitis (5.9%), headache/migraine (5.6%), osteoarthritis (4.9%), hypertension (2.1%), and diabetes (1.1%). The estimated costs of care for mothers without a comorbid condition and their newborns were $10,221 (*SE* = 219) and $1,653 (*SE* = 171), respectively. The presence of maternal nongestational diabetes and hypertension were associated with the highest incremental costs of care in the mother ($6,211 [CI 5,720-6,702] and $3,367 [CI 2,935-3,799], respectively) and newborn ($2,067 [CI 1,515-2,618] and $1,210 [CI 725-1,695], respectively). Inpatient care was the largest single contributor to incremental costs across all comorbidities.

Conclusion/Implications for Nursing Practice

Particular comorbidities lead to significant incremental costs of care for the mother during pregnancy and the newborn. Comorbidities with the highest cost represent opportunities for additional focus that may potentially improve care and reduce costs.

Pre-Pregnancy Obesity and Weight Gain During Pregnancy: Relationship to the Development of Gestational Diabetes Mellitus and the Birth of a Large for Gestational Age Neonate

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Keywords
maternal
neonate
obesity
large for gestational age
gestational diabetes
gestational weight

Women's Health Poster Presentation

Objective

To compare the prevalence of gestational diabetes mellitus (GDM) and large for gestational age (LGA) neonates in pregnant obese women who gain less than, within, and greater than the 2009 recommended weight gain guidelines of the Institute of Medicine (IOM).

Design

A retrospective cohort study.

Setting

Data from the University of North Carolina (UNC) Perinatal Database.

Sample

Women with singleton pregnancies and body mass indices (BMI kg/m^2) ≥ 30 delivering between January 2012 and December 2012 who underwent routine screening for GDM at UNC Women's Hospital.

Methods

We measured the association between early weight gain (EWG) and diagnosis of GDM and the association between total gestational weight gain (TWG) and LGA neonate. To determine EWG and TWG, respectively, we subtracted prepregnancy weight from weight at GDM screening or weight at last prenatal visit >37 weeks. We calculated and classified EWG as less than, greater than, and within based on IOM guidelines for first trimester (1.1 pounds) and second trimester weekly weight gain (0.4-0.6 pounds; <0.4 = below, 0.4-0.6 = within, >0.6 = above). Women were separately classified as gaining less than (<11 pounds), within (11-20 pounds), and greater than (>20 pounds) IOM guidelines for TWG. We compared maternal demographics and medical history data using Pearson chi-square and *t* test. We reported unadjusted and adjusted risk ratios (RR, aRR) with 95% confidence intervals (95%CI) for GDM and LGA with women gaining less than IOM guidelines as reference. Final adjusted models included prepregnancy BMI, EWG within guidelines, and gestational age at 1-hour screening.

Results

Among 778 obese women, 67% (524/778) had full data for EWG analysis; 33% (171/524) gained less than, 17% (90/524) within, and 50% (263/524) greater than IOM recommendations. EWG adherence was not associated with a GDM diagnosis ($p = .9$). Seventy-one percent (549/778) had full data for TWG analysis; 24% (130/549) gained less than, 20% (108/549) within, 55% (304/549) greater than IOM guidelines. Compared with women gaining less than, those gaining within IOM guidelines were more likely to have an LGA neonate (RR = 2.88, 95% CI 1.05-7.95; aRR = 3.36, 95% CI 1.10-10.31). Compared with women gaining less than, those gaining greater than IOM recommendations were more likely to have an LGA neonate (RR = 3.25, 95% CI 1.30-8.08; aRR = 3.54, 95% CI 1.10-11.79).

Conclusion/Implications for Nursing Practice

Among obese women, EGW adherence to IOM guidelines did not affect GDM diagnosis in our data. Total gestational weight gain within and greater than the IOM recommendations was associated with birth of LGA neonate. Using arenas of practice, health policy, and education nurses can assist in decreasing the incidence of LGA and GDM.