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Adolescent Perinatal Outcomes in South West Sydney, Australia

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Abstract

Objective: To compare perinatal outcomes, blood pressures throughout pregnancy, rates of hypertensive disorders of pregnancy, preeclampsia, gestational diabetes mellitus, and immediate obstetric outcomes in adolescents younger than 20 years at delivery and those in the 20- to 34-year age group.

Patients and Methods: Questionnaires were administered to pregnant women at Campbelltown and Liverpool hospitals within South West Sydney, Australia, as part of a broader study of sleep-disordered breathing in pregnancy between February 1, 2009, and February 28, 2013. Data collected included demographic data, blood pressure readings, pregnancy complications, delivery type, and neonatal outcomes. Adolescents were compared with older women using Student *t* tests and χ^2 statistics.

Results: A total of 103 adolescents were compared with 2291 women aged 20 to 34 years. Adolescents were more likely to be primiparous, had longer average gestations, and had lower pre-pregnancy body mass index. Adolescents had lower rates of cesarean section delivery and gestational diabetes mellitus. There was no significant difference in smoking rates, perinatal mortality rate, small for gestational age, intrauterine growth restriction, Apgar score of less than 7 at 5 minutes, admission to special care nursery, or hypertensive disorder of pregnancy rates. Adolescents had lower booking systolic and diastolic blood pressures, and their highest antenatal systolic blood pressures were lower.

Conclusion: Adolescents have birth outcomes to similar to those of their older counterparts. Adolescents had lower booking blood pressures. This may have implications for the screening and diagnosis of hypertensive disorders of pregnancy in adolescents.

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Adolescent pregnancy is defined as pregnancy occurring in women younger than 20 years at time of delivery. In Australia in 2013, there were 14.6 live births per 1000 adolescent women. This number has been steadily decreasing over the past decade but still remains significantly above Australia's overall birth rate of 1.9 per 1000.[1] Previous studies have consistently shown adolescents to be at an increased risk of preterm delivery, low birth weight and small for gestational age (SGA) infants, and increased maternal and infant mortality.[2-8] These trends have been shown internationally and nationally.[9]

Hypertension is common in pregnancy, affects up to 6% to 8% of all pregnancies, and is reported to be increased in adolescents.[10] Hypertensive disorders in pregnancy (HDP) are defined using the criteria set out by the International Society for the Study of Hypertension in Pregnancy.[11] The literature varies on whether adolescents are at an increased risk of preeclampsia, with some studies reporting an increased risk[3,5] and others a decreased risk.[4,6,12] Theoretically, adolescents would be at an increased risk for preeclampsia due to their higher rates of primiparity[12]; however, they would also be protected by lower rates of chronic hypertension, gestational diabetes, and other comorbidities.[3,7,13]

The Sydney South West Local Health District has a rapidly growing population

and services one of the most socioeconomically disadvantaged communities in New South Wales, Australia.[14] Within this population, socioeconomic factors have been shown to be independent risk factors for adverse pregnancy outcomes and lifestyle choices, for example, higher rates of smoking in pregnancy,[15] lower rates of breast-feeding,[16] and higher rates of admission to special care nursery (SCN).[17] Furthermore, adolescence has been shown to be an independent risk factor for smoking in pregnancy and not breast-feeding.[15,16]

The aim of this study was to assess the effect and outcomes of adolescent pregnancy on obstetric birth outcomes in metropolitan hospitals in Southwestern New South Wales. The maternal outcomes assessed were a formal diagnosis of HDP, gestational diabetes mellitus (GDM), delivery type, induction, and blood pressures throughout pregnancy. Birth outcomes measured were rates of intrauterine growth restriction, SGA, Apgar scores, gestational age at delivery, perinatal mortality rate, admission to SCN, and exclusive breast-feeding at discharge from hospital.

PATIENTS AND METHODS

Patients recruited for this study were part of a broader study (National Health and Medical Research Council project 0711-215M Sleep Disordered Breathing in Pregnancy: Frequency and Impact); patients provided written consent prior to being enrolled in the study and data collected. All pregnancies were accepted regardless of maternal age, including those aged younger than 18 years.

Questionnaires were administered to pregnant women at Campbelltown and Liverpool hospitals, 2 metropolitan hospitals within the Sydney South West Local Health District, as part of a larger study of sleep-disordered breathing during pregnancy, conducted between February 1, 2009, and February 28, 2013. All women younger than 34 years with singleton pregnancies were included and were divided into 2 groups: adolescents (age at delivery <20 years) were compared with those aged 20 to 34 years at delivery. Anthropomorphic data were collected at the first antenatal clinic visit including height, pre-pregnancy weight, booking weight, pre-pregnancy and booking body mass index (BMI; calculated as the weight in kilograms divided by the height in meters squared), and booking blood pressures (mm Hg). Highest antenatal and postnatal blood pressures (mm Hg) were collected retrospectively. All delivery and neonatal data were collected in accordance with state perinatal statistical collection requirements. The age of the mother at delivery was determined by the easily verified date when the pregnancy ended, not by the estimated date of conception. Only the first pregnancy for each woman was included in the analysis.

Hypertensive disorders in pregnancy were defined using the criteria set out by the International Society for the Study of Hypertension in Pregnancy.[11] Gestational diabetes mellitus was defined by criteria set out by the Australasian Diabetes in Pregnancy Society.[18] Within our population, women underwent a 2-hour oral glucose tolerance test at 26 to 28 weeks of gestation. Delivery type was classified as vaginal delivery, cesarean section, or assisted delivery (including forceps and vacuum extraction). Intrauterine growth restriction was defined as birth weight less than third percentile for gestational age and sex, and SGA as a birth weight less than 10th percentile for gestational age and sex.

Continuous variables were summarized using mean ± SD, and categorical variables were summarized using number (percentage). Continuous variables that were normally distributed were compared between adolescents and women between the ages of 20 and 34 years at delivery using the Student *t* test. Continuous variables that were nonnormally distributed were compared using the rank sum test. When sample sizes were small, as indicated by more than 20% of the cells of a contingency table having expected values of less than 5, a Fisher exact test was used to compare categorical variables between adolescents and women between the age of 20 and 34 years at delivery; otherwise, a χ^2 test was used. A *P* value of less than .05 was used to denote statistical significance. All analyses were performed with IBM SPSS v.20.

RESULTS

A total of 3511 questionnaires and outcomes were attained for singleton pregnancies at all ages. There were a total of 176 adolescents