In July 2015, Ana J. Torvie, Lisa S. Callegari, Melissa A. Schiff, and Katherine E. Debiec published "Labor and Delivery Outcomes among Young Adolescents," hereafter "Labor and Delivery Outcomes," in the American Journal for Obstetrics and Gynecology. The authors conducted a study using birth certificate data and hospital records in the state of Washington to compare the frequency and outcomes of cesarean and surgically assisted vaginal births among different age groups of pregnant people. They found that adolescents aged eleven to fourteen years are less likely to require cesarean or surgically assisted births but that their neonates were more likely to have birth-related complications than those of adults aged twenty to twenty-four years. While previous studies had yielded conflicting results, "Labor and Delivery Outcomes" reports generalized trends about young adolescents in labor and delivery. The researchers’ findings support future physicians in making more informed considerations for the care of pregnant patients under the age of fifteen.

At the time of publication, Torvie and colleagues were physicians at the Department of Obstetrics and Gynecology at the University of Washington School of Medicine in Seattle, Washington. Schiff was also involved with the Department of Epidemiology at the University of Washington, and Callegari was involved with Health Services Research and Development in the Department of Veterans Affairs Puget Sound Health Care System in Seattle, Washington.

Prior to Torvie and her colleagues’ study, researchers had posited that young adolescents aged eight to seventeen years with underdeveloped pelvses were more likely to require interventions in their labor and delivery than adults aged eighteen years or older. The authors of "Labor and Delivery Outcomes" present new research that calls into question the notion that patients under the age of fifteen are more likely than adults aged twenty years or older to need delivery interventions. Their research confirms, however, neonatal risks associated with adolescent pregnancies and births, such as low birth weight and preterm delivery. The authors identify interventions in labor and delivery as cesarean or surgically assisted vaginal deliveries. A cesarean birth, or cesarean section, means that a physician will deliver an infant by cutting open the abdomen and the uterus, and no vaginal birth will occur. A surgically assisted or operative vaginal delivery requires the assistance of tools such as a vacuum or forceps, as the person in labor has difficulties birthing the infant through the vagina. Torvie and colleagues argue that previous studies had enrolled too few people to make their results applicable to the general population. They also point out that samples in those previous studies underrepresented the age group of young adolescents, or patients under the age of fifteen. Torvie and colleagues investigated a larger sample of patients aged eleven to fourteen years in a general population of the state of Washington. They also evaluated trends among certain demographics represented in their sample.

"Labor and Delivery Outcomes" consists of four sections, including an unnamed introductory section, "Materials and Methods," "Results," and "Comment." In the introductory section, the authors acknowledge previous research that described delivery risks for pregnant patients under sixteen years of age. In "Materials and Methods," the authors describe their population-based study, in which they reviewed labor and delivery hospital records and sorted labor and delivery outcomes by age group. In "Results," they report that patients aged eleven to fourteen years were less likely than patients aged twenty to twenty-four years to require surgical interventions to have a successful delivery. They also described other trends and risks, such as neonatal complications, that were more likely to occur in the patients aged eleven to fourteen years. In "Comment," the authors analyzed their results and compared them with that of similar studies with more limited samples. They hypothesize that young maternal age could be related to some pregnancy or labor complications.

In the introductory section, the authors discuss conflicting findings from studies that argue for different treatment of young adolescents during labor and delivery than adults. They describe the previous hypothesis that young adolescents would likely be at a higher risk for having difficulties during labor that would require interventions, meaning cesarean or surgically assisted vaginal birth. If the risk of difficulty in labor is indeed higher in young adolescents, physicians need to be more proactive in deciding to intervene in younger patients’ deliveries than in adult deliveries. The authors state that there are other pregnancy and labor complications that pose dangers to both infant and pregnant person. The previous research concludes that those complications occur more frequently for pregnant people under the age of fifteen. The complications are preterm delivery, low birthweight, high blood pressure, anemia, and neonatal death. Anemia is a condition in which a person’s red blood cells are not healthy enough to carry sufficient oxygen in the body, resulting in tiredness. Torvie and colleagues describe the general disagreement about the association between various delivery complications and young maternal age. One study from three years prior had stated that patients of age twelve were more likely to require delivery interventions than patients of age fifteen or age twenty, but the infants in the study all displayed normal to high birthweights. The authors also state that many studies about
teenage pregnancy\textsuperscript{(7)} neglect to include data about pregnant people below the age of sixteen, who are the primary focus of “Labor and Delivery Outcomes.”

In "Materials and Methods," the authors describe their sample for the study and their criteria for inclusion in the study. The researchers evaluated the records of patients who were under twenty-five years in age, delivered their first pregnancy\textsuperscript{(7)} with one infant between twenty-four and forty-three weeks, and delivered from years 1987 to 2009. They further categorized the patients into the aforementioned age groups, which were young adolescents from eleven to fourteen years, young teenagers from fifteen to seventeen years, older teenagers from eighteen to nineteen years, and young adults from twenty to twenty-four years.

Torvie and colleagues evaluated the patients' hospital records and birth information for primary and secondary birth outcomes. Primary outcome was the method of delivery. The types of deliveries were cesarean, surgically assisted vaginal, or spontaneous vaginal deliveries. Comparing primary outcomes among different age groups shows whether the youngest age group has more complications and thus needs special consideration from physicians in deciding how to treat them while they are in labor. The secondary outcomes report several aspects of labor and delivery. The secondary outcomes related to maternal complications that arise during birth such as bleeding or tearing of the perineum, which is the area of skin between the vaginal opening and the anus. Other secondary outcomes reported were length of hospital stay, and infant related complications including shoulder injuries, infection, birth weight, and age of infant at delivery. The authors noted additional demographic information, such as race of pregnant person, amount of prenatal care received, tobacco use, and conditions like diabetes that can also yield pregnancy\textsuperscript{(7)} complications. The authors chose to consider those additional factors because they could interfere with any correlation between maternal age and delivery outcome.

In "Results," the authors state that their results affirmed previous conclusions that the eleven-to-fourteen-year age group had a higher risk of preterm delivery, low birth weight, and infant death than all other age groups. However, they did not find a higher risk of needing delivery interventions in that age group, finding instead that in the eleven-to-fourteen-year age group, patients had a twenty-seven percent lower risk to have a cesarean birth than the twenty-to-twenty-four-year age group. Torvie and colleagues noted that common indicators that necessitate cesarean birth were about the same for all age groups. Some of those common indicators were infections like genitals herpes or distress of the fetus\textsuperscript{(9)}, which would make vaginal delivery more dangerous. They also noted that younger pregnant people were less likely to have access to consistent prenatal care and were also less likely to be overweight. The authors found that there was a greatly increased risk of neonatal or infant mortality following birth for the eleven-to-fourteen-year age group. Torvie and colleagues include several tables throughout the article that organize the frequency of primary outcomes for eleven- to fourteen-year-old patients. They report that the majority of births among those patients were vaginal, either spontaneous or surgically assisted. Of those vaginal births, the majority were spontaneous.

In "Comment," the authors discuss how their results support the findings of some previous studies, while contradicting others. The authors restate that of all reported age groups, patients aged eleven to fourteen years were at the lowest risk of requiring cesarean or surgically assisted vaginal births. Their results supported existing findings of a lower risk of cesarean birth and higher risk of preterm delivery, low birth weight, and infant death in the eleven-to-fourteen-year age group, but conflicted with respect to their finding of a decreased risk for surgically assisted vaginal births. For example, a 1992 study from Hull, United Kingdom, implicated that patients in that age group were more likely to require the intervention of forceps in their vaginal delivery, but Torvie and colleagues note that the 1992 study had covered only a small geographic location and a very limited sample. The authors of "Labor and Delivery Outcomes" attribute their findings to their increased sample size and efforts to control for confounding variables. The authors hypothesize that the greatly increased risk of neonatal or infant mortality following birth observed in young adolescents could result from causes like abuse and neglect but that they would need to review data on a national level to more clearly determine the causes of infant death. Overall, the authors recommend that physicians treat pregnant people between the ages of eleven and nineteen the same way they would treat older patients during labor.

As of 2022, "Labor and Delivery Outcomes" has been cited over 120 times, often by studies also investigating adolescent pregnancy\textsuperscript{(7)} and delivery outcomes. One 2016 study that US health researchers conducted reaffirmed Torvie and colleagues' finding that there was no increased risk for cesarian or surgically assisted delivery in adolescent pregnancies. Another study that cited Torvie and colleagues was a 2017 study that looked at adolescent pregnancy\textsuperscript{(7)} and delivery outcomes in Romania, the country with the highest rates of teenage pregnancy\textsuperscript{(7)} in Europe at the time. The European study found that rates of pregnancy\textsuperscript{(7)} complications were not increased among adolescents compared to other age groups, in line Torvie and colleagues' results.

"Labor and Delivery Outcomes" provides evidence that physicians may treat younger adolescent patients similarly to adults regarding birthing method and surgical interventions. The study also opens other questions for further research about how to reduce the factors of pregnancy\textsuperscript{(7)} and birth that are more likely to impact younger adolescents and their neonates such as lack of access to prenatal care.

Sources


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