Newborn Consequences of Teenage Pregnancies

UMA R. KOTAGAL, MD

Over 1 million teenage pregnancies occur in the United States each year. The consequences of this phenomenon on the mother and the infant, and on society as a whole are far-reaching.1-3 This new morbidity is a reflection of societal problems we face and constitutes a major health-care crisis. Adolescents and their children represent populations at increased risk for medical and psychosocial problems.4,5 The health, psychosocial, and educational risks for these children born to adolescent mothers need to be understood thoroughly. These factors must be taken into account when designing programs to address the needs of this very special group of people.6 Although the data presented here are overwhelmingly negative, it must be emphasized that race, family support, and other variables probably have a larger impact on teenage pregnancy than maternal age alone. Intervention programs, some with long-term outcome data, also have demonstrated a significant effect in modifying the end result.7

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NEONATAL AND INFANT MORTALITY

The high infant mortality in the United States is in large part due to the incidence of low-birth-weight infants. These low-birth-weight infants are 40 times more likely to die in the neonatal period than infants of normal birth weight. Among the major risk factors associated with the occurrence of low birth weight is maternal age.8

In a review of infant mortality in the United States, it was found that babies born to mothers aged 25 to 34 years have the lowest infant mortality risk.8 In contrast, infants born to teenage mothers tended to be at high risk.8-10 The mortality risk for these infants was greater primarily because larger proportions of babies born to teenage mothers were of low birth weight. When the age-specific neonatal mortality risk was adjusted for differences in birth weight, the neonatal

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Dr. Kotagal is from the University of Cincinnati/Children's Hospital Medical Centers, Department of Pediatrics, Cincinnati, Ohio. Address reprint requests to Uma R. Kotagal, MD, University of Cincinnati Medical Ctr, Dept of Pediatrics, Division of Neonatology, 231 Bethesda Ave, Cincinnati, OH 45267-0541.
Teenage mothers were less likely to receive prenatal care compared with older mothers, and this contributed to both the incidence of prematurity and neonatal and postneonatal mortality rates. Teenage mothers were less likely to receive prenatal care compared with older mothers, and this contributed to both the incidence of prematurity and neonatal and postneonatal mortality rates. Studies that have offered special comprehensive prenatal programs have shown that the low-birth-weight rate can be significantly reduced. In a review of stillbirths and neonatal, and postneonatal mortality for England and Wales in 1977 factored by maternal age, it was found that teenage mothers had approximately the same rate of stillbirths as mothers in their 20s and lower stillbirth rates than mothers in their 30s. Postneonatal mortality, however, is highest for infants born to teenagers and is almost double that of infants born to mothers aged 25 years or older.

The mortality in the first 2 years of life in infants born to young mothers is significantly greater than that reported for older mothers. Infants born to adolescent mothers seem to be at a higher risk of dying from sudden infant death syndrome. Once again, whether this is related to socioeconomic factors or caused by biological differences is unclear. It seems that the former is more likely.

These are, however, studies that suggest that the effect of maternal age on outcome is minimal and that the poor outcome is related to associated conditions such as poverty, lack of access to care, lack of resources, and the numerous socioeconomic disadvantages these young women face.

**BIRTH WEIGHT**

In all studies on infant mortality, the age of the mother has been identified as a very important factor affecting birth weight. Low-birth-weight babies are two to six times as common in adolescent mothers. Approximately 85% of these babies are premature, and 15% are probably small for gestational age. This may result in a number of developmental problems in the infant. The health consequences of teenage pregnancy and childbirth are similar in a variety of countries. The data on the incidence of low birth weight and the causes of low birth weight in young adolescent mothers are, however, somewhat conflicting. Several studies have demonstrated a direct relationship between maternal age and birth weight, ie, the lower the maternal age, the greater the incidence of infants with birth weights <2500 g. In a study by Hardy and Mellits, young African-American women were found to have a much higher incidence of low-birth-weight infants.

Slap and Schwartz studied the medical records of mothers less than 20 years of age. Of the 26 medical and social variables that they evaluated, in a logistic regression model, they found the following correlated very well with mothers who delivered infants with lower birth weights:

- five or fewer prenatal visits,
• a history of a prior infant of low birth weight,
• illness during pregnancy, and
• trauma during pregnancy.

Thus, the higher incidence of low-birth-weight infants inadolescents is more likely due to the presence of other risk factors that coexist in this group. These risk factors themselves are important contributors to the incidence of low birth weight.22,23

Horon et al22 evaluated the birth weights of 422 infants born to mothers who were primigravida under the age of 16 years and compared them to a group of infants born to older mothers between the ages of 20 and 24. They found no significant differences in birth weights of infants in these two groups. However, infants born to mothers who were in the younger age group were more premature and had shorter lengths of gestation. Based on their studies, they concluded that maternal weight gain seemed to be an important factor in the adolescent group in determining the size of their infants.

Scholl et al evaluated weight gain during pregnancy in 696 adolescents who delivered at a gestation of ≥37 weeks.25 The risk of a low-birth-weight infant was greatly reduced in adolescents who gained ≥20 kg during their pregnancy. Prepregnancy weight had no effect on maternal weight gain, and the effect of maternal weight gain during pregnancy on birth weight also appeared to be independent of the mother’s prepregnancy weight. Scholl et al also demonstrated that even as early as 12 weeks gestation, one could demonstrate a significant association between the amount of weight gained and the infant’s birth weight measured at the time of delivery.26 By 16 weeks, infants whose mothers gained weight below the 25th percentile had an increased risk of having a low-birth-weight infant, and up to 20 weeks the risk of having a low-birth-weight infant was doubled. Caution must be exercised, however, in allowing the positive relationship between maternal weight gain and infant birth weight to be over-interpreted.

The causes of poor weight gain in adolescent pregnancy and low birth weight in infants born to young adolescent mothers is multifactorial. Factors such as incomplete maternal growth in the adolescent mother, the role of diminished maternal body size, and nutritional and dietary deficiencies in the adolescent pregnancy further complicate the issue. Adolescent mothers seem to be less inclined to seek early prenatal care and therefore have less access to nutritional counseling. The weight gain in pregnancy also may be limited either because of inadequate information concerning nutritional needs or inadequate understanding of recommendations.

In a study of birth-weight patterns in Australia, Stanley and Mauger reported that the majority of low-birth-weight births were related to preterm labor and not due to intrauterine growth retardation.19 In this study, the percentage of babies born <2500 g rose from 5.3% to 10.4% for nonaboriginal women and 11.4% to 18.2% for aboriginal women as maternal age fell from 24 years to under 15 years. The percentage of low-birth-weight infants who had intranierine growth retardation did not increase with falling maternal age. However, the percentage of births that resulted in preterm labor were higher in the aboriginal mothers and tended to increase with decreasing age in both racial groups. These data strongly suggest that prematurity and a shorter length of gestation rather than intrauterine growth retardation was responsible for the higher incidence of low-birth-weight infants born to teenage mothers.

Another factor that might have a profound influence on the weight of the newborn infant is the incidence of complications during pregnancy, such as hypertension and preeclampsia, that might directly result in inadequate fetal growth. The incidence of maternal complications in pregnancy resulting in low-birth-weight infants generally seemed to suggest that this was an important variable.27 The data on this is conflicting; several studies have shown no difference in the rates of anemia complications in pregnancy in adolescents.28,29

Finally, the reduction in birth weight cannot be disassociated from other multiple risk factors common in adolescent mothers, such as lower socioeconomic class, smoking, alcohol, use of other drugs, poor nutrition, and inadequate prenatal care.22,23 Zuckerman et al studied a total of 275 infants of primiparous adolescents and compared them with 423 infants of primiparous nonadolescents.30 They found no significant differences in gestational age at birth or size of the infants. They noted, however, that there were several factors other than maternal age that played a role in infant outcome. These factors were primarily related to social conditions and health factors. Miller and Merritt31 found a significant incidence of low-birthweight infants in mothers aged 14 or younger, but when compared with nonadolescent mothers, there was more cigarette smoking, alcohol, drug use, and gonococcal disease. When mothers with high-risk behavior were excluded from the analysis, there was no effect of age on the adolescent pregnancy weight gain.

Parity is another important factor affecting weight of the infant. Multiple pregnancies during adolescence clearly represent a risk for having low-birth-
weight infants, but once again it would appear that this risk is more related to social issues such as
interpregnancy intervals, economic status, dependency on welfare, or engaging in behaviors that nega-
tively affect fetal growth. These risk factors may be present in the mother even prior to her second
pregnancy and reflect an underlying problem rather than a specific effect of parity. If these factors are
excluded, maternal age does not have a significant impact on the weight of the infant.

To study the impact of better prenatal care on outcome in adolescent mothers, LaGuardia et al
compared the outcome in 112 pregnant adolescents residing in a maternity shelter with 113 pregnant
adolescents residing in their own homes but receiving identical medical care. The shelter group was made
up of high-risk adolescents who were more likely to be black, unmarried, receiving public assistance, and
registered late for prenatal care. The shelter group received comprehensive care, including incentives for
compliance with clinic appointments and school attendance, education on contraception and reproduc-
tive anatomy, preparation for labor and delivery, signs and symptoms of preterm labor, and plans for infant
after delivery. The shelter group had a better outcome as defined by fewer infants of low birth weight and less
preterm labor, although they were at greater risk.

It is unclear whether biological effects of maternal age or associated socioeconomic and health risks ex-
plain the low-birth-weight incidence in adolescents. This conclusion is confirmed by another study that
examined 184 567 single-term gestation infants to determine the effect of maternal age. The study found
that the incidence of low birth weight was greatest in mothers under 17 years of age (3.2%) and gradually declined with advancing maternal age to 1.3% in women aged 25 to 34 years of age. When the independent effects of maternal age on the incidence of low-birth-
weight infants were analyzed, the presence of other maternal factors seemed to be more important.

Programs that support early comprehensive prenatal care in a positive nurturing environment, taking
into account the special needs of the teenage mother, can result in an improved outcome.

NEONATAL COMPLICATIONS

In a study by Lawrence and Merritt, infants born to
adolescent mothers required admission more fre-
quently into the neonatal intensive care unit than
infants born to mothers of an older age. Segregated
by age and race of the mother, infants born to black
adolescent mothers had significantly more
hypoglycemia, more respiratory distress syndrome or pneumonia, more seizures or apnea, and more necrotizing enterocolitis than infants born to older black women. Among infants of young white mothers, there was no significant difference except for neonatal anemia when compared with older mothers in the same race. The total duration of hospitalization was slightly longer in infants of younger mothers. This probably reflects financial and social issues as well as intensity of maternal involvement.

LONG-RANGE OUTCOME AND
PARENTING ISSUES

Pregnancy and childbirth have long-term conse-
sequences for teenagers and their offspring. In
addition, concerns have been expressed regarding the
ability of teenagers to parent. Although the specific
effects of teenage pregnancy and parenting on child
development are controversial, based on available
data it appears that children of adolescents are at risk
themselves for various long-term problems compared
with children of older parents. Children of adoles-
cents appear to manifest difficulties in physical,
emotional, behavioral, and developmental areas more
often than do children of older parents. Children of
adolescents also seem to have more difficulty at school and score lower on standardized intellectual achieve-
ment tests. Of greater concern is that these differences appear to persist throughout childhood.

Panzarine et al have suggested that adolescent
mothers interact with their infants in ways that may
be detrimental to the infant. This may be because
adolescents are less sensitive in their responses to the
interactive stimuli that their offspring provide. It is
also likely that the adolescent mother's interaction
with her infant may reflect less modeling of optimal
parenting behavior in her own life. Clearly the
relationship between adolescent pregnancy and the
social and economic status of the adolescent itself
is critical in defining this interaction. This is at least
in part due to the stressful situation that the young
adolescent mother finds herself in during this time.
However, it does appear that whatever the cause may be, adolescent mothers engage in less positive maternal
toward their offspring.

The delayed negative effects of adolescent preg-
nancy on parent behavior may result in increasing
the potential for child abuse. The chronic social and
biological stresses that parenting a young child puts
on an adolescent mother contribute to both physical
abuse and neglect. Kinard and Klerman, however, clearly suggest that the relationship between teenage pregnancy and child abuse cannot be separated from the association of each variable with poorer socioeconomic status, and poorer social situations and lack of support. They implied that the link between teenage parenting and child abuse, rather than causal may be due to the same risk factors.

Girls born to teenage mothers are more likely to become teenage parents themselves than children of older mothers. Delinquency and early sexual activity in teenage years also were more likely to occur among children of teenage mothers. However, in a study by Furstenberg et al of 300 primarily urban black adolescent women, a substantial number had completed high school and found regular employment. Relatively few ended up with large families. Thus, although young women who gave birth at an early age had a disadvantage, there was a huge variability within the group, and women who were more economically secure and had better family support were more likely to succeed.

Not much is known or has been studied concerning teenage fathers and their role in parenting, and the effects of this on the infant. This is, however, an area of great focus currently because it would appear that involvement of the other “parent” in the child-rearing process may be critically important both in terms of its individual effects and its effect on support of the mother and the infant. Hardy and Duggan, reviewing births in Baltimore, described fathers of children born to teenage mothers. They reviewed four groups: 1) those in which the mother and father were teenagers, 2) those in which only the mother was a teenager, 3) those in which only the father was a teenager, and 4) those in which both parents were 20 years of age or older. The fathers in the first three groups appeared to have serious educational and financial disadvantages compared with those in which neither parent was a teenager. These disadvantages may themselves compound the ability to parent or bring resources to bear on the long-term needs of the infant. Teenage fathers, regardless of their marital status at conception, were much more likely to have

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been high school dropouts than other male teenagers.

Children of adolescent parents appear to do poorly in part because their parents are young, but also because their parents are poor and have less support. The social and economic factors that define the milieu in which these children are raised probably accounts for the greatest impact seen in these children.

**CONCLUSION**

The rate of sexual activity and the age at which initiation of sexual activity occurs is comparable between the United States and other developed countries. However, the United States has the highest rate of adolescent pregnancy. The estimate of the cost for childbearing by teenagers in the United States is astronomical.

Families headed by teenage mothers are seven times more likely to be poorer than families headed by older mothers. Adolescents tend to receive less prenatal care than older mothers, further compounding the problems. The negative social pressures and the limitations on the adolescent mother often leave her more isolated and alone. The crisis of adolescence is compounded by those of pregnancy and of being a single parent. This leaves the adolescent mother feeling overwhelmed and incapable, and may further affect her ability to parent the infant appropriately.

Strategies to improve the long-term outcome of children born to adolescents must focus not only on programs that offer real solutions but also on programs that will promote the mother’s economic independence and help her develop positive and effective parenting skills. Thus, alternative education programs and other support services that allow the adolescent mother to complete her education and begin to develop the steps necessary to become economically independent are critical. Interventions must also focus on the social and economic risks, as well as the opportunity for preventive services delivered in innovative ways. Communities must play a major role in this area as much families. Much work remains to be done to improve the outcome for young mothers and their children.

**REFERENCES**