

After a Teenage Daughter Has Become Pregnant or Given Birth, Mothers Monitor All Their Children Less Closely

Women with an adolescent daughter who has never been pregnant have higher achievement expectations for her and monitor all their children more closely than do mothers with a pregnant or parenting daughter. Moreover, they perceive adolescent childbearing as more problematic than do mothers of parenting adolescents and consider older ages as more appropriate for sex, marriage and childbearing.¹ Over time, mothers of pregnant teenagers supervise their children less closely, become more accepting of teenage sex and communicate less frequently and less easily with their younger children about sex and contraception.

Data for analysis came from 189 mothers in an urban area of southern California. Mothers were eligible to participate if they had a teenage daughter between 15 and 19 years of age who either had never been pregnant, was pregnant for the first time and planned to keep the baby, or had delivered her first child within the preceding six months and had kept the child. The family also had to include a younger sister or brother (aged 11–16) who had been living in the same household as the older sister for at least the previous five years.

Mothers were brought into the study through eligible older daughters. Pregnant and parenting young women were recruited from a university adolescent obstetrics clinic, at local Planned Parenthood clinics and through snowball sampling (a technique in which participants are asked for referrals to other potential participants); only those whose pregnancy or birth was the first in the family were eligible to participate. Never-pregnant teenagers were approached at a university adolescent medicine clinic, at local Planned Parenthood clinics and through snowball sampling.

Initial interviews were conducted with the mothers between July 1993 and February 1995, and follow-up interviews were conducted 13 months later. Fifteen families were excluded from the study because a teenager other than the older daughter had previously become pregnant or had a

baby, leaving a baseline sample of 174. Of the participating mothers, 94 had a never-pregnant daughter, 32 a pregnant daughter and 48 a parenting daughter. The second round of interviews included 145 mothers.

The majority of the mothers were Mexican American (65%), while 25% were black, 6% were non-Hispanic white, 1% were Asian and 3% were of other races. The three types of families did not differ by most socioeconomic and demographic factors. However, pregnant and parenting teenagers were significantly older (17.2–17.6 years) than never-pregnant adolescents (16.7). Furthermore, their families earned significantly less than those of never-pregnant teenagers and were significantly more likely to have received welfare.

At both baseline and follow-up, the mothers completed a 102-item questionnaire. These items formed 10 scales: parental monitoring, achievement expectations for the older daughter, achievement expectations for younger children, acceptance of adolescent sex, acceptance of teenage childbearing, problems caused by teenage childbearing, status attained through childbearing, appropriate ages for life-course transitions (i.e., first sex, marriage and childbearing), ease and frequency of communication with the older daughter about sex and contraception, and ease and frequency of communication with the younger children about those topics.

To determine if mothers of pregnant, parenting and never-pregnant adolescents differed according to these factors at either baseline or follow-up, the investigator per-

Table 1. Mean scores of mothers' parenting, attitudes and communication with children at baseline and follow-up, by older daughter's pregnancy and parenting status at baseline

Measure	Never-pregnant	Pregnant	Parenting
Baseline			
Monitoring	3.59*,†	3.28*	3.30†
Expectations for older daughter	4.24*,†	3.93*	3.92†
Expectations for younger children	4.38	4.17	4.17
Acceptance of teenage sex	1.62	1.57	1.86
Acceptance of teenage childbearing	1.19*	1.41	1.45*
Problems with teenage childbearing	4.54*	4.29	4.17*
Status gained by childbearing	1.60*	1.91	2.03*
Age at life-course transitions	22.84*	22.61	21.83*
Communication with older daughter	4.06	4.21	4.27
Communication with younger children	3.81	3.90	4.04
Follow-up			
Monitoring	3.27*	2.97*,†	3.16†
Expectations for older daughter	4.73*,†	4.03*,‡	3.73†,‡
Expectations for younger children	4.35	4.26	4.18
Acceptance of teenage sex	1.77	2.15	1.70
Acceptance of teenage childbearing	1.35	1.40	1.37
Problems with teenage childbearing	4.39*	4.14*,†	4.32†
Status gained by childbearing	1.50*,†	1.97*	1.89†
Age at life-course transitions	23.12*	22.95	22.30*
Communication with older daughter	3.97	4.21	4.27
Communication with younger children	3.51	3.41	3.81

Notes: Within each row, values with the same footnote symbol are significantly different from each other at p<.05. Value for life-course transitions is the mean of ages considered best for first sex, marriage and childbearing. All other measures are scales ranging from 1 to 5.

formed multivariate analyses of covariance that controlled for family income, welfare receipt and the older daughter's age. Univariate follow-up tests were conducted on scores that reached statistical significance in those analyses.

At baseline, mothers with a never-pregnant teenager had higher achievement expectations for her and monitored all their children more closely than did mothers of adolescents in the other two groups (Table 1). In addition, compared with mothers of parenting adolescents, they were less accepting of teenage childbearing, ascribed less status to childbearing, perceived more problems associated with teenage childbearing and considered older ages as appropriate for life transitions. Mothers of pregnant teenagers and mothers of parenting adolescents did not vary significantly in their scores on any of the 10 scales.

At follow-up, compared with mothers with a teenage daughter who had been pregnant at the beginning of the study, mothers with a never-pregnant daughter had higher expectations for her, supervised their children more closely, saw teenage childbearing as more problematic and ascribed less status to childbearing. They had higher expectations for their daughter than did the mothers of teenagers who had been parenting at baseline, felt that women gained less status through childbearing and saw older ages as appropriate for life transitions. The mothers of adolescents who had been pregnant at the beginning of the study monitored their children less closely than did the mothers of parenting adolescents, had higher expectations for their older daughter and saw teenage childbearing as less problematic.

Comparisons between the baseline and follow-up scores indicate that over time, the mothers of never-pregnant adolescents monitored their children significantly less, had higher achievement expectations for their older daughter and communicated less with their younger children. Likewise, the mothers of adolescents who had been pregnant at the beginning of the study gave their children less supervision, communicated less with their younger children and became more accepting of teenage sexual activity. The attitudes and behaviors of mothers of teenagers who were parenting at baseline did not change significantly over time.

When asked how having a baby had affected their daughter's life, the mothers of parenting adolescents perceived more difficulty at follow-up than they had at baseline, both in general and in terms of finishing high school. Nevertheless, they reported greater permissiveness over time about how late their other children were allowed to stay out at night and about whom their other children dated. They were no more likely to indicate at follow-up that their daughter's pregnancy had made their other children want to have a baby, scared their younger children into being more careful about sex or affected the time the mothers could spend with their other children.

According to the investigator, her results reveal within-family factors associated with teenage childbearing and show how families may be affected when an adolescent becomes pregnant. Pointing out that mothers monitor their children less closely, communicate less easily and frequently with them about sex and contraception, and become more accepting of teenage sexuality after a daughter becomes pregnant, she notes that such changes may "create a prime context for younger siblings to en-

gage in delinquent or sexual behavior." She suggests that interventions that include all family members may help them deal with the daughter's pregnancy.—*F. Althaus*

Reference

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Women Who Are Sterilized At Age 30 or Younger Have Increased Odds of Regret

American women who undergo surgical sterilization typically express no regret about their decision, but the risk of regret is heightened for particular groups. Those who are aged 30 or younger when they choose the method and those who obtain the procedure postpartum are about twice as likely as others to say at some point during the next 14 years that sterilization was not the right choice for them. For women who are 30 or younger at the time of the procedure, the probability of regret declines steadily as the interval since the last birth increases. These are among the main findings of a prospective, multicenter study of women who underwent sterilization between 1978 and 1987.¹

The study, which was conducted at medical centers in nine cities throughout the country, involved an interview with each participant when she enrolled, five annual follow-up interviews and, for women sterilized between 1978 and 1983, a final interview 8-14 years after the operation. During the first interview, the woman provided information about her background characteristics; follow-up interviews included a question on whether she still thought that sterilization was "a good choice" for her and, if not, the reasons why. Using data on 11,232 women who had completed at least one follow-up interview and had answered the question about regret, the investigators conducted life-table analyses to assess the cumulative probability of regret and proportional hazards analyses to identify independent risk factors.

Participants were evenly divided between women who were aged 18-30 at sterilization and those who were older. The sample was racially mixed: Fifty-four percent of women were white, 34% black and 12% members of other racial groups. Two-thirds were married when they had their operation, and virtually all (96%) were sterilized for contraceptive reasons.

Some 16% of participants had postpartum operations, and 79% obtained interval procedures (i.e., the operation took place neither postpartum nor just after an abortion); 5% had never given birth.

Within three years after undergoing sterilization, 4% of women said the decision had not been right for them; the cumulative probability of regret rose to 8% at seven years and 13% at 14 years. Women who had been sterilized by age 30 had a high cumulative probability of regret (20% at 14 years); levels of regret were also elevated among black women, participants who had been unmarried at sterilization and those whose operation had taken place postpartum (16-22%). Overall, 10% of women who had had interval procedures said at some time during the next 14 years that they had made the wrong choice; the proportion was 18% among those whose surgery took place up to one year after their last birth and fell steadily to 5% among those whose surgery was eight or more years later.

Generally, similar patterns in the cumulative probability of regret were apparent regardless of women's age at sterilization, although levels of regret were consistently higher among those who had been 18-30 years old. In this group, the cumulative proportion expressing regret within 14 years was 30-31% among black women and those who had been unmarried at sterilization; it was 20-24% among women who had chosen sterilization for contraceptive purposes and those who had undergone the procedure postpartum or within a year after giving birth.

Women aged 18-30 at sterilization, but not older women, had a steadily declining cumulative probability of regret as the interval between the last birth and the surgery increased. The probability fell from 22% among those for whom this interval was one year or less to 8% among those for whom it was eight years or more. Regret was low (5-6%) among childless women, regardless of their age at sterilization.

Results of the proportional hazards analyses confirmed that age and timing of sterilization are important factors in the risk of regret. When potentially confounding factors were taken into account, women who were 18-30 years old at sterilization were twice as likely as those who were older to express regret (risk ratio, 1.9). Compared with women who had never given birth or had last delivered eight or more years before undergoing sterilization, participants who had the operation postpartum were 1.6-2.0 times as likely to regret the sterilization decision. More modest increases in risk were apparent among

nonwhite women, those who were married at the time of surgery and those who were sterilized within three years after their last birth (risk ratios, 1.3–1.4).

When asked why they felt that sterilization had not been the right choice for them, participants who were young at the time of the procedure were most likely to say that they wanted more children (33%) or they had divorced or remarried (24%). Women who were older than 30 most often cited subsequent gynecologic prob-

Women Who Have Trouble Conceiving Risk Losing An Infant Soon After Birth

Women who encounter difficulty in conceiving are three times as likely to experience a perinatal death as are those with no fertility problems, according to a case-control study conducted in the United Kingdom.¹ The risk is similar regardless of whether the woman undergoes infertility treatment to become pregnant. The investigators estimate that infertile women experience 18 per 1,000 more perinatal deaths than women in the general population.

The analyses are based on women in one health district who gave birth between 1990 and 1994. During this period, 542 women experienced 567 perinatal deaths (defined as stillbirths or deaths that occurred within the baby's first week of life); they were compared with a randomly selected group of 972 women whose infants survived the perinatal period. The researchers collected obstetric, medical and social data on both sets of mothers from medical notes and interviews. They classified a woman as having experienced infertility if this conception had been delayed or if she had received any treatment in order to conceive.

On average, pregnancies that ended in perinatal death were of shorter gestation (32 weeks) than those associated with surviving infants (39 weeks). The majority of perinatal deaths were attributed to stillbirth (45%) or prematurity (30%), and the remainder to congenital abnormalities or asphyxia during labor. Ten percent of women who experienced a perinatal death and 4% of those in the comparison group had difficulty becoming pregnant.

In bivariate analyses, a woman's odds of experiencing a perinatal death were somewhat elevated if she was Asian, if she was shorter than 158 cm or if her partner belonged to a low social class (odds ratios, 1.3–1.7), if she had had not previously had any children (odds ratio, 1.3) or if she had had more than three children (odds ratio,

29%) or the desire for more children (26%). Among women who regretted having had a sterilization, 48% of those in the younger group and 30% of those in the older group requested information about reversing the procedure.

While the investigators acknowledge that the sample was not representative of all women choosing sterilization, they conclude that "a surprisingly high percentage of women sterilized at a young age in the United States will regret their

1.3), and if she had an antepartum hemorrhage (odds ratio, 1.6); they were markedly higher if she had diabetes (4.8). Using unconditional logistic regression analysis, the investigators examined the effect of infertility on perinatal death while controlling for all of these factors. The analysis also controlled for maternal age, which was not significant at the bivariate level but is known to be associated with perinatal death.

Results of the regression analysis indicated that women who had experienced infertility were 2.9 times as likely as women with no fertility problems to experience perinatal death. The odds of this outcome were essentially the same for women who did not receive treatment for their infertility (3.3) as for those who were treated (2.7).

The investigators estimate that women in this health district who have difficulty conceiving will experience 27 perinatal deaths per 1,000 births, and those whose infertility is successfully treated will experience 23 such losses per 1,000. By comparison, the risk of perinatal death in the overall population is nine per 1,000 births. Therefore, infertility heightens a woman's risk of this outcome by approximately 18 per 1,000 births.

According to the researchers, "the knowledge that infertility, treated or untreated, is a risk factor for perinatal death is important if there are any avoidable or treatable factors." They recommend that health care providers counsel women who are considering treatment for infertility and advise them about the risk of perinatal death. They also suggest that prenatal care providers obtain information about women's history of infertility, to help them in the selection of an appropriate location for delivery for women at high risk of experiencing perinatal death.—*L. Gerstein*

Reference

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decision at some point." They note that preoperative counseling offers an opportunity for providers to discuss with women the risk factors associated with regret and to assure them that most women who opt to undergo sterilization do not regret the decision.—*D. Hollander*

Reference

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Sexual Network Patterns Contribute to Racial Disparities in Disease Risk

Racial and ethnic differences in sexual network patterns partly explain why black men and women are more likely than white and Hispanic people to have a history of sexually transmitted diseases (STDs). Among individuals who have had only one partner in the past year, black men and women are the most likely to have had intercourse with a member of their racial group who has had four or more partners, which increases the risk of infection. Further, because black men and women largely choose partners from their own racial group, STDs are more likely to stay within the black population than to spread to other groups. These are the major findings of an analysis of data from a nationally representative sample surveyed in 1992.¹

The National Health and Social Life Survey included data on 3,432 adults aged 18–59 living in the United States. Respondents were roughly evenly divided between men and women; 79% were white, 13% were black and 8% were Hispanic. In interviews that averaged 90 minutes, participants were questioned about their ethnicity, sexual activity and attitudes, history of STDs, and selected background and risk-related characteristics. The researchers used a variety of analytic techniques to assess individual risk factors for STDs and to examine the effects of sexual network patterns on that risk.

Some 18% of participants had ever had an STD—11% a bacterial infection and 8% a viral disease. Results of logistic regression analyses controlling for relevant risk factors indicated that compared with white respondents, black men and women were twice as likely to have had any STD (odds ratio, 2.2), while Hispanic participants had a significantly reduced risk (0.6). The odds of having had a bacterial STD were substantially elevated among black

respondents (4.6), but both blacks and Hispanics were less likely than whites to have a history of viral STDs (0.5 for each).

To examine sexual network patterns, the researchers divided each racial or ethnic group into three groups, according to their level of sexual activity during the previous 12 months: those who had had only one partner, and were considered safe from STD infection (the peripheral group); those who had had 2–3 partners (the adjacent group); and those who had had four or more partners, and bore most responsibility for STD transmission within the population (the core group). Respondents were also asked for information on the sexual activity of two of their partners; on the basis of this information, these partners were assigned to the appropriate sexual activity group. The investigators constructed a matrix indicating patterns of sexual contact among the nine subgroups. They then conducted a log-linear analysis to examine the effects of sexual network patterns within each racial or ethnic group, and used a simulation to estimate the effects of patterns between groups.

Results of the log-linear analysis revealed very large differences between racial or ethnic groups in patterns of sexual activity. Black men and women are the least likely to restrict their sexual activity to partners of the same sexual activity group. The odds that an individual from the peripheral group has a partner from the core group are 4–5 times as high among blacks as among whites or Hispanics. As a result, even after the number of partners (a major risk factor for STDs) is controlled for, the STD infection rate is higher among black people in the peripheral group than among their white and Hispanic counterparts. In other words, the investigators point out, infections among black respondents are not limited to those engaging in the risk-taking behavior of having a large number of partners, but are spread throughout the black population.

The analysis of interracial networks revealed that black men and women are the least likely to have sexual partners outside their racial group. Consequently, the researchers observe, black individuals infected with an STD are likely to spread the

infection within their community but not to other racial or ethnic groups. The analysts calculate that this factor alone makes black people 1.3 times as likely as whites to become infected with an STD.

According to the investigators, their findings regarding intraracial and interracial networks would not have been detected in a study of individual risk factors alone, but required a concentration on behavior patterns within populations and a focus on both infected and uninfected persons. An editorial accompanying the article noted that this approach represents “a paradigm shift for STD epidemiology...that may become predominant in the new millennium.”²—*M.L. O'Connor*

References

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Woman's Obstetric History Mitigates the Effects of Social Factors that Predict the Likelihood of Premature Delivery

Socioeconomic factors are related to the likelihood that a woman will give birth before 32 weeks' completed gestation, but their importance differs depending on the woman's obstetric history. For example, among European women who had never been pregnant before or whose only pregnancies had ended in a first-trimester abortion, those with the least education were twice as likely as those with the most schooling to deliver a very preterm infant. Among women whose previous pregnancies had all ended in full-term births, a low educational level nearly tripled the risk of having a very preterm birth, but for those who had had a second-trimester abortion or a preterm birth, educational level did not influence the risk. These are some of the findings of an analysis of data from a case-control survey conducted between 1994 and 1997.¹

The researchers collected data in 15 countries* by interviewing women after their delivery in a maternity unit and by reviewing medical records relating to their pregnancy. Very preterm births were defined as those that took place between 22

and 32 weeks' gestation, as determined through ultrasound examination, the date of the last menstrual period and an examination of the infant. The study included 1,675 women who had very preterm births and 7,965 women who delivered at full term (37 weeks or more gestation). The researchers compared the social factors, obstetric history and demographic characteristics of the two groups and calculated odds ratios regarding the likelihood of having a very preterm birth, adjusting for each woman's country of residence. They then conducted logistic regression analyses to determine the relationship between social factors and the risk of having a very preterm birth in the context of a variety of obstetric histories, and to test whether the relationship is the same for both spontaneous and induced deliveries.

Two social factors were included: a woman's educational level (based on her age at the time that she completed her schooling) and household social class (based on the occupational group of the woman or, if she was married, the child's father, whichever was higher). The researchers defined five social class groups: professional, intermediate, service worker, industrial worker and unemployed.

On the basis of women's obstetric history, the analysts distinguished three levels of risk for having a very preterm birth: Women who had been pregnant before and had had no adverse outcomes (preterm births or abortions) were considered to have a low obstetric risk for very preterm birth. Those who had never been pregnant before or whose previous pregnancies had ended in first-trimester abortion were considered to have an intermediate obstetric risk. Women who had had a second-trimester abortion or a preterm delivery were classified as having a high obstetric risk.

Participants' Characteristics

The majority of women in the study were aged 20–34. Six percent of women who delivered a very preterm infant and 5% of those in the comparison group were younger than age 20, and 20% and 12%, respectively, were 35 or older. Seventy-three percent of women who delivered very preterm infants were married, 18% were unmarried and living with their baby's father, and 8% were unmarried and living without a partner. Women in the comparison group were slightly more likely than those who delivered very early to

*Czech Republic, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Poland, Romania, Russia, Slovenia, Spain and Sweden.

be married (80%) and slightly less likely to be in either other living situation.

Roughly half of each group had remained in school until ages 16–20. However, women who had very preterm births were more likely than those who delivered at full term to have left school before age 16 (18% vs. 14%) and were less likely to have been in school beyond age 20 (20% vs. 28%). The two groups also differed slightly by social class: Those who delivered very preterm were predominantly in industrial households (31%), while women in the comparison group were most likely to be in professional households (34%); 11% and 7%, respectively, were unemployed.

About three-fifths of women in each group had an obstetric history that conferred an intermediate risk for very preterm birth. Women who had a very preterm birth were considerably less likely than those in the comparison group to have a low obstetric risk (18% vs. 29%) and were more likely to have a high obstetric risk (24% vs. 10%).

Risk of Preterm Birth

The odds that a woman would give birth to a very preterm infant decreased steadily as the age at which she stopped attending school rose. Compared with women who stopped attending school at age 21 or older, women who left school between the ages of 18 and 20 were significantly more likely to have a very preterm delivery (odds ratio, 1.4); the risk was nearly doubled for women who left school between the ages of 16 and 17 (1.6), and was even higher for women who left school before age 16 (2.1). There was a similar relationship between a woman's risk for having a very preterm delivery and the social class of her household. Women whose households were classified as service worker were 1.3 times as likely as those living in professional households to have a very preterm birth; the odds rose steadily as social class declined, to 2.1 among those living in households where no one was employed.

Obstetric history had a marked effect on the likelihood of very preterm birth. Compared with women who had had previous pregnancies and no adverse outcomes, women who were pregnant for the first time and those who had had a first-trimester abortion were almost twice as likely to have a very preterm delivery (odds ratios, 1.5 and 1.8, respectively). Women with at least one prior preterm delivery or second-trimester abortion had sharply higher odds of having a very preterm birth (5.4 and 3.7, respectively); the risk was further elevated for women who had had more than one of these events (8.5).

Compared with women aged 25–29, women aged 40 and older had more than twice the risk of very preterm delivery (2.3); the risk was also elevated among women aged 35–39 (1.7). Women aged 20–24 had a slightly reduced risk of very preterm delivery (odds ratio, 0.8). Unmarried women, regardless of whether they were living with a partner, had a higher risk of very preterm delivery than married women (1.5–1.9).

In the logistic regression analyses, which adjusted for marital status, maternal age and the country of the survey, the educational level of the mother and the social class of her household remained significantly related to the risk of a very preterm birth. Overall, women who had left school before turning 16 were 2.1 times as likely as women who stayed in school past age 20 to have a preterm birth. Similarly, those living in households classified as unemployed were 1.9 times as likely as women living in professional households to deliver a very preterm infant. However, these risks were mediated by a woman's obstetric history.

Leaving school before age 16 was a risk factor for a very preterm birth for both women with a low-risk obstetric history (2.7) and women with an intermediate obstetric risk (2.0). Among women with a high obstetric risk, low educational level was not related to the likelihood of very preterm birth, but the odds were signifi-

cantly lower than those observed for women who had not experienced negative outcomes in their previous pregnancies.

If no one in the household was employed, the likelihood of a very preterm delivery doubled for women with a low obstetric risk for this outcome (2.2), compared with that among professional women with a similar obstetric history. Likewise, among women with an intermediate obstetric risk, the likelihood of very preterm delivery doubled if no one was employed (2.0). Again, no significant effect was seen among women at high risk for very preterm birth because of their obstetric history.

The same pattern of associations was found for spontaneous and induced very preterm birth. A mother's low educational level was associated with both spontaneous (1.9) and induced (2.5) very preterm births for women with a low or intermediate obstetric risk. Unemployment was associated with similar odds (2.1 and 1.8, respectively). However, neither factor was significantly related to the likelihood of very preterm birth for women who had a high risk because of their obstetric history.

Conclusion

The researchers acknowledge that the study did not control for risky behaviors during pregnancy such as smoking, and there were missing data. However, they contend that the analysis demonstrates that "the risk of very preterm birth might be dominated by biomedical factors in the population of women with high obstetric risk," and that "underlying factors leading to very preterm birth may be different for women with lower obstetric risk and may more often involve intermediate factors, such as stress, behavioral factors, and living or working conditions."—*M. Moore*

Reference

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