

who smoked 1–9 cigarettes per day did not have a significantly elevated risk, but those who smoked 10 or more cigarettes daily had 87.0 times the risk of women who neither used the pill nor smoked. In the developing countries, light smokers had a risk of 10.7, and those who smoked more heavily had a risk of 22.6.

Analyses of data on women with no medical risk factors for cardiovascular disease demonstrated the impact of smoking and blood pressure screening on the odds of acute myocardial infarction. Whereas pill users who did not smoke and had had their blood pressure checked were not at increased risk, those whose blood pressure had not been checked had elevated odds of acute myocardial infarction, particularly if they smoked (71.4 in Europe and 31.0 in the developing countries).

Implications

The researchers acknowledge that because approximately 35% of patients with acute myocardial infarction die within 24 hours,

the women included in their sample—all of whom survived for at least 24 hours—may not have been representative of all patients who have had an acute myocardial infarction. However, the study group concludes that its findings are applicable to most women who have an acute myocardial infarction that does not end quickly in death.

Noting that few cases of acute myocardial infarction occurred among pill users who had no risk factors and who had had their blood pressure checked before beginning their current course of oral contraception, the investigators attribute the elevated odds among pill users to the influence of other risk factors for cardiovascular disease and to a lack of screening for hypertension. After adjustments for confounding variables, they found that a high body-mass index and a history of hypertension were the largest contributors to the risk among pill users in Europe; among those in the developing countries, the most important factors were smoking

and a history of hypertension.

On the basis of data from the Oxford region of England, the researchers estimate that for European women, the risk of acute myocardial infarction attributable to oral contraceptive use is only three per million woman-years among nonsmokers who are younger than 35. The risk probably is even lower if women have their blood pressure checked before beginning to use the pill, and it rises appreciably (to about 400 per million woman-years) only among older women who smoke. The investigators recommend that the small risk attributable to pill use be balanced against the benefits of this form of contraception, as well as the risks and benefits of other contraceptive methods.—*P. Marsteller*

Reference

1. WHO Collaborative Study of Cardiovascular Disease and Steroid Hormone Contraception. "Acute Myocardial Infarction and Combined Oral Contraceptives: Results of an International Multicentre Case-Control Study." *Lancet*. 349:1202–1209, 1997.

Women Who Were Born to Teenage Mothers Have Nearly Double the Risk of Early Childbearing

Daughters of teenage mothers are at greater risk than other women of giving birth while in their teens and early 20s, according to an analysis of nationally representative British data.¹ Family, school and individual characteristics contribute to the risk, but even after these factors are controlled for, women whose mothers gave birth to them as teenagers are nearly twice as likely as daughters of older mothers to begin childbearing early.

The investigation was based on data from the British National Child Development Study, which initially gathered information on 17,733 children born in 1958; during follow-up interviews conducted in 1965, 1969 and 1981, information was collected from parents, teachers, health interviewers and the children themselves. To study mechanisms through which fertility patterns might be repeated from one generation to the next, the investigator focused on 2,183 firstborn women for whom information was available on their mother's age at their birth.

The analysis tested several hypothesized mechanisms to explain how early motherhood is reproduced across generations: Daughters of teenage mothers come from disadvantaged family environments; they have inherited an early age at menarche, which leads to longer exposure to the risk

of pregnancy; they receive less educational support, attend schools with fewer resources and achieve less academically than other teenagers; and they are more likely than other teenagers to want to have a baby at a young age. These hypotheses were tested through bivariate analyses and proportional hazards models.

Results of the bivariate analyses showed that while only 9% of all young women in the sample had given birth as teenagers, the daughters of teenage mothers were significantly more likely than others to have done so (20% vs. 8%). They also were more likely to have given birth between ages 20 and 23 (30% vs. 19%).

A wide range of socioeconomic indicators revealed that daughters of teenage mothers grew up in significantly more disadvantaged circumstances than their peers whose mothers were older. In addition, their mothers provided less cognitive stimulation during their early childhood years, were perceived by the daughters' teachers to be less involved in their education and were less educated themselves than older mothers.

Educational measures for daughters of teenagers and daughters of older mothers also differed sharply. For example, the first group had lower test scores, lower ability ratings from teachers and more be-

havior problems. They were less academically oriented than were daughters of older mothers and were more likely to leave school at the minimum age of 16.

Contrary to the investigator's hypothesis, daughters of teenage mothers were not more likely than other daughters to have an early age at menarche. However, they were more likely to consider ages 16–21 the ideal time to begin childbearing.

For the proportional hazards analyses, independent variables were entered into five models in steps to test the four hypotheses. The base model took into account only mother's age at first birth, and the subsequent models added daughter's family background and home environment, age at menarche, education, and attitudes toward school and family formation. Results of the base model indicated that daughters of teenage mothers were 2.8 times as likely as daughters of older mothers to have given birth before age 21; they were only 1.6 times as likely to have done so between ages 21 and 23.

While some family background and home environment factors included in the second set of analyses were associated with a reduced risk of early childbearing, others increased the odds. Young women who had grown up in intact families,

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whose families had been of a higher social class, whose mothers had remained in school past the minimum age for leaving or who had more stimulating home environments were less likely than others to have given birth by age 23 (odds ratios, 0.7-0.9). However, those who had lived in subsidized housing as children, who had had a larger number of siblings or whose mothers had worked when the daughters were young or had been described as showing little interest in their schooling were more likely to have begun childbearing early (1.2-1.7). In the model controlling for these factors, the odds that the daughter of a teenager had given birth by age 21 declined from 2.8 to 1.9; the odds that she had had a child by age 23 were no longer statistically significant.

Results of the third model indicated that young women who experienced menarche before age 12 had increased odds of early childbearing (1.3), and those in whom menarche occurred after age 14 had reduced odds (0.7). However, these variables did not alter the likelihood that daughters of teenage mothers had had an early first birth.

The calculations including factors related to the young women's education

showed that these had varying effects on the likelihood of early childbearing. The odds were reduced among daughters who had attended academically oriented schools and those who at age 16 scored higher on mathematics tests, had passed a greater number of exams necessary for further schooling or were described by their teachers as having high academic potential (0.6-0.97). Unexpectedly, however, high oral ability at age 11 was associated with an increased likelihood that a young woman had given birth (1.2). The odds of early childbearing doubled among those who had left school at age 16 (2.0) and rose gradually with increasing scores on a scale measuring behavior problems at age 11. Controlling for the educational variables further reduced the odds of a first birth by age 21 among daughters of teenage mothers from 1.9 to 1.7.

The last stage of the analysis took into account attitudes toward school and toward the ideal age at which to start a family. While attitudes toward school had no significant effect on the timing of first birth, young women who had reported wanting to have a child in their teens or early 20s were 1.6 times as likely to have done so as those who had not considered this the ideal time to begin childbearing. Adding the attitudinal variables lowered

the odds that a teenager's daughter had had an early first birth from 1.7 to 1.6.

Commenting on her findings, the investigator points out that other variables not measured in the study—for example, the influence of adult role models, girls' perceptions of their opportunities or the effect of living in a disadvantaged neighborhood—could also play a part in determining the fertility experiences of daughters of teenage mothers. She further notes that because her study was based on a largely white, non-Hispanic sample of women born in 1958, the findings must be applied cautiously to the current U.S. context.

Nevertheless, the investigator concludes, the data support all of the hypothesized mechanisms through which intergenerational trends in fertility may be established except an inherited early age at menarche. Moreover, they demonstrate that even when all other measured factors are taken into account, daughters of teenage mothers run a considerable risk of beginning childbearing early themselves.—*M.L. O'Connor*

Reference

1. J. Manlove, "Early Motherhood in an Intergenerational Perspective: The Experiences of a British Cohort," *Journal of Marriage and the Family*, 59:263-279, 1997.