Pregnancy Among High School Students

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THE NUMBER of high school girls becoming pregnant and subsequently discontinuing their education is of concern to local school and health administrators. In the study described here, girls who became pregnant were compared with their classmates in high school who did not. The purposes of the study were (*a*) to discover the extent to which pregnancy was a cause of girls dropping out of high school, (*b*) to determine the characteristics of girls who became pregnant, and (*c*) to compare these pregnant girls with nonpregnant girls, thereby trying to identify a "high risk of pregnancy" group. The information was obtained to aid in planning a future program of education, counseling, and health care designed to prevent unwanted pregnancies in high school girls.

Students at Bellingham High School, one of two high schools in Bellingham, Wash., the county seat of Whatcom County, were selected for this study. On April 30, 1970, the school had 995 students in the 10th, 11th, and 12th grades (470 boys and 525 girls). The ethnic background of most of the students was Anglo-American; a few were American Indian, Spanish-American, or oriental. In 1970 the population of Bellingham was 39,375 and of Whatcom County 81,950 (*1*).

Methods

Girls enrolled in the 10th, 11th, and 12th grades of Bellingham High School in the 1969–70 school year made up the study group. A list of all girls who had dropped out of school during the study year was obtained, and a public health nurse was assigned to locate each girl and ask

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her to participate in the study. Of the 32 girls listed, 27 (84 percent) were located. Of these, 11 were pregnant at the time they dropped out; three had been pregnant during a previous school year, had reentered school, and had subsequently dropped out to care for the child; and 13 had never been pregnant. The school counselor knew of five girls who were pregnant and still in school. These were asked by the counselor to participate in the study.

Additional names were obtained by random sampling of the enrollment lists by grade. Twenty-five percent of 12th graders (40 girls), 10 percent of 11th graders (15 girls), and 7 percent of 10th graders (15 girls) were asked to be in the study. Of the girls who participated as nonpregnant controls, 30 were in the 12th grade, 11 were in the 11th grade, and 12 were in the 10th grade. One girl from the random sample was pregnant and was included in the group of pregnant girls. The random sampling was weighted toward 12th graders because we anticipated more pregnancies among the older girls. This age difference was more than compensated. The mean age of all pregnant girls was found to be 16.2 years while the age of all nonpregnant girls was 17.0.

The girls were asked to complete an unsigned self-administered multiple-choice questionnaire. The dropouts completed their questionnaires in their homes at the time the public health nurse called. The pregnant girls known by the counselor completed their questionnaires individually in the counselor's office. The group selected randomly from the enrollment lists came to the health department individually, completed their questionnaires, and deposited them into a slotted box. In this way each girl was assured that the information she provided was anonymous.

The questionnaires used for the dropouts were intentionally different from the others since we wished to include questions on their reasons for dropping out. Through an error in the design of the questionnaire, dropouts who were not pregnant failed to answer certain questions concerning their socioeconomic background and dating practices and thus could not be included as nonpregnant controls in some of the analyses.

The dichotomy used for most of our analysis was "ever pregnant" (including currently pregnant) or "never pregnant." The ever pregnant group consisted of 14 dropouts and six girls in school, for a total of 20 ever-pregnant girls in the study. The never-pregnant control group consisted of 13 dropouts and 53 girls in school, a total of 66 never-pregnant girls.

Some girls failed to answer all questions, so that the total number available for each analysis varied with the type of question asked.

Results

Of the 27 girls who dropped out of high school, 11 (41 percent) left because they were pregnant, and three more girls left school for pregnancy-related reasons (to care for an infant born earlier); thus, 52 percent of the girls who dropped out of school during the study year did so for reasons related to pregnancy. The other 13 dropouts said they had left for reasons such as dislike of school and poor grades. Of the 14 girls who left for pregnancy or pregnancy-related reasons, four were in the 10th grade, five in the 11th grade, and five in the 12th grade; thus, 80 percent of the 10th, 39 percent of the 11th, and 56 percent of the 12th grade girls who dropped out of school did so for pregnancy or pregnancy-related reasons.

The 11 girls who stated they were pregnant when they dropped out of school missed an average of 4.5 months of the school year, with a range of 3–7 months. The average time that the girls stayed in school after becoming pregnant was 3.5 months, with a range of 1–6 months.

Several parts of the questionnaire dealt with family background. The racial distribution was similar in both groups. Eighty-five percent (17 of 20) of the ever-pregnant girls and 88 percent (58 of 66) of the controls were Anglo-American. Most of the others were American Indian. Seventy percent (12 of 20) of the pregnant girls and 74 percent (39 of 53) of the controls were living in homes with both natural parents. Twenty-nine percent (5 of 17) of the pregnant girls and 23 percent (12 of 53) of the controls were the oldest siblings in their families. Twenty-nine percent (5 of 17) of the pregnant girls and 30 percent (16 of 53) of the controls were the youngest siblings. Eighteen percent (3 of 17) of the pregnant girls and 8 percent (4 of 52) of the controls had older sisters who had been pregnant before marriage.

Sexual maturity and the age at entering high school were similar in the pregnant and the control groups: 45 percent (9 of 20) pregnant girls and 46 percent (30 of 65) of the controls had experienced menarche at age 12 or under; 65

percent (13 of 20) of the pregnant girls and 67 percent (44 of 66) of the controls entered 9th grade at 14 years of age. None of these observed differences were sufficiently large to be statistically significant (observed difference < 1.96 standard error of the proportion).

There were significant differences in estimated family income ($X^2 = 12.2$, $P < 0.005$). Of the pregnant girls, 24 percent (4 of 17) estimated their family incomes in the range of $5,000–$15,000. Seventy-two percent (30 of 42) of the controls made this estimate. Family incomes of more than $15,000 were estimated by 52 percent (9 of 17) of the pregnant girls and 21 percent (9 of 42) of the controls. Thus, pregnancy was associated with both high and low income levels (table 1).

To determine the girls' perception of their dating relationships, they were asked, if never pregnant, what their current dating status was or, if ever pregnant, their status at the time of their pregnancy. Striking differences appeared. All the ever-pregnant girls were dating at the time of their pregnancy. Seventy-five percent had been going steady or were engaged when they became pregnant (table 2). The dating status of ever-pregnant girls was significantly different statistically from that of the never-pregnant girls ($X^2 = 14.7$, $P < 0.001$). Among the ever-pregnant girls, 60 percent of the 10th graders, 80 percent of the 11th graders, and 86 percent of the 12th graders were going steady, were engaged, or were married (one girl) at the time they became pregnant, while none of the never-pregnant 10th graders, 45 percent of the 11th graders, and 30 percent of the 12th graders were engaged or going steady.

A question regarding the total number of boys the girls had ever dated showed that the ever-pregnant girls had dated more boys than had the never-pregnant girls. Seventeen percent (9 of 53) of the never-pregnant girls had never dated, although all the ever-pregnant girls had dated at least one boy. Of the ever-pregnant girls, 82 percent (14 of 17) had dated five or more boys, although only 53 percent (28 of 53) of the never-pregnant girls had dated five or more boys.

Greater total dating experience for the pregnant girls, however, need not imply promiscuity. A question on the number of boys dated in the last 2 months (or the 2 months before pregnancy) showed that when the girls became pregnant they were usually dating only one boy. Seventy-six percent (13 of 17) of the ever-pregnant girls had dated only one boy in the 2 months before they became pregnant. Thirty percent (16 of 53) of the never-pregnant girls had not dated during the previous 2 months, 36 percent (19 of 53) had dated only one boy, and 34 percent (18 of 53) had dated two or more boys during that time.

Only six of 53 nonpregnant controls had had intercourse. Of these six, four had had intercourse

Table 1. Number and percent of high schools girls, by pregnancy status and family income

Annual family income	Pregnant		Never pregnant		Total	
	Number	Percent	Number	Percent	Number	Percent
Under $5,000	4	24	3	7	7	12
$5,000–$15,000	4	24	30	72	34	58
Over $15,000	9	52	9	21	18	30
Total	17	100	42	100	59	100

NOTE: $X^2 = 12.2$, $P = < 0.005$.

Table 2. High school girls, by pregnancy status and dating relationship

Dating status	Ever pregnant		Never pregnant		Total	
	Number	Percent	Number	Percent	Number	Percent
Not dating	0	0	19	36	19	28
Dating but not going steady	4	25	20	38	24	35
Going steady or engaged	12	75	14	26	26	37
Total	16	100	53	100	69	100

NOTE: At time of pregnancy for ever-pregnant girls or at time of interview for never-pregnant girls $X^2 = 14.71$, $P = 0.001$.

from 2 to 10 times, and two had had intercourse 11 or more times. Of the ever-pregnant girls, 29 percent (5 of 17) claimed they became pregnant the first time they had intercourse, 41 percent (7 of 17) claimed that they became pregnant after 2 to 10 times, and 29 percent (5 of 17) claimed they became pregnant after 11 or more times. Of the ever-pregnant girls, 60 percent (3 of 5) in the 10th grade, 20 percent (1 of 5) in the 11th, and 14 percent (1 of 7) in the 12th claimed they became pregnant the first time they had intercourse.

To determine the attitude of the girls toward pregnancy, the nonvirgin girls were asked whether they had wanted to become pregnant at the time of intercourse. Seventy-one percent (12 of 17) of the ever-pregnant and 50 percent (3 of 6) of the never-pregnant nonvirgins said they had not wanted to become pregnant. Eighteen percent (3 of 17) of the pregnant girls and 17 percent (1 of 6) of the nonvirgin controls had wanted to become pregnant. The remainder of each group said they did not care if they became pregnant. Interestingly, even though we had not asked for reasons, three of the girls who said they had wanted to become pregnant wrote on the questionnaire that they had wanted the pregnancy to force marriage, either because of reluctant parents or because a boyfriend was reluctant.

The 23 girls who had had intercourse were asked what, if any, efforts had been made to prevent pregnancy. Three of the six never-pregnant nonvirgins had never used any contraceptives (although two of these "didn't care" if they became pregnant). The other three depended on the rhythm method and condoms, or both (table 3). Of the 17 ever-pregnant girls, 10 had never tried to prevent pregnancy (although only 2 of the 10 said they had wanted to become pregnant and one more "didn't care"). The rhythm method and condoms were the most frequently used methods of contraception, although only 4 of the 17 had ever used condoms, and 3 the rhythm method. One girl had used both foam and pills; she was the only one who had used any methods other than the rhythm method or condoms.

A 10-question quiz to test information on sex was completed by 18 girls of the pregnant group and 64 of the controls. The quiz was multiple choice with either three or four answers to each question. The number and percent of pregnant and never-pregnant girls answering each question correctly were as follows:

Question	*Pregnant*		*Never pregnant*	
	Number	*Percent*	*Number*	*Percent*
1. What glands produce the ovum?	14	78	55	86
2. What glands produce sperm?	14	78	47	74
3. How many times a month does a woman ovulate?	15	83	59	92
4. What is the time of ovulation (egg production) in women in relationship to their menstrual period?	11	61	31	48
5. Estimate what percentage of women become pregnant the first time they have intercourse, if they do not use an effective birth control method	14	78	30	47
6. Estimate what percentage of women become pregnant after 1 year of frequent sexual intercourse if no birth control is used	5	28	11	17
7. Which birth control method is most effective in the prevention of pregnancy?	13	72	50	78
8. Which birth control method is least effective in the prevention of pregnancy?	14	78	45	70
9. In order to become pregnant, a woman must	18	100	61	95
10. The word abortion means	18	100	61	95

Areas of greatest sexual ignorance are indicated by the low scores on those questions dealing with the risk of pregnancy and the timing of ovulation (Nos. 4–6). The only question in which

Table 3. Distribution of sexually active girls, by type of contraception used and pregnancy status

Contraceptive method	Ever pregnant		Never pregnant		Total	
	Number	Percent	Number	Percent	Number	Percent
Rhythm	2	12	2	33	4	17
Condom	3	18	0	0	3	13
Condom and rhythm	1	6	1	17	2	9
Pill and foam	1	6	0	0	1	4
Nothing	10	58	3	50	13	57
Total	17	100	6	100	23	100

there was a statistically significant difference between the pregnant and the nonpregnant girls was question 5, dealing with the risk of pregnancy following first intercourse. The pregnant girls scored higher. The experience of pregnancy may have been the reason for their extra knowledge.

Discussion

Pregnancy was the major single cause for girls dropping out of high school in this particular school, and it was the only health-related reason. That this situation is by no means unique is shown by a study made the same year of almost 300 Washington State school districts; the investigators estimated that 50 percent of the girls who dropped out of high school did so because of pregnancy (*2*). The results of a study made by the Maryland State Department of Education also showed that more than twice as many girls dropped out of school because of pregnancy than for all other physical or medical reasons (*3*).

Three girls in our study returned to school after delivery but dropped out again within the school year. One explanation for their leaving school may be that coping with school work and caring for an infant was too much for them. It appears, therefore, that pregnancy and childbirth often mean the termination of a girl's formal education, even though she is allowed to remain in school while pregnant and could in theory return after delivery. In fact in the Washington State study, it was estimated that fewer than 10 percent of the pregnant dropouts ever return to school (*2*).

Only one of the ever-pregnant girls was married when she became pregnant. By the time of the study, however, approximately two-thirds of the girls who had dropped out of school because of pregnancy and two-thirds of the girls who were pregnant but still in school were married. It is clear that pregnancy was rather quickly followed by marriage for most of the ever-pregnant girls participating in the study. The girls who were married were asked to indicate the dates of their marriages. Of those who did so, the average interval between conception and marriage was slightly more than 3 months, with a range of 2–7 months. The average interval of pregnancy to marriage was approximately the same as the average interval from conception to dropping out of high school.

Going steady is obviously associated with sexual intercourse and pregnancy. Within the limits of this study, going steady was the only characteristic by which a high-risk group could be identified. Family income would not seem to be useful because there was an associated excess of pregnancy in both the high and low income levels. A study in 1968 of students of a northwestern college also showed that a steady dating relationship is associated with a higher incidence of intercourse, especially for girls (*4*). Another study, of adolescent girls in Baltimore, showed the same pattern of confining sexual activity to a single boy (*5*).

The ineffectual use of contraceptives and the ambivalent attitude toward pregnancy of the sexually active girls makes it clear that any high school girl who is sexually active probably will become pregnant. The northwestern college study showed some parallels with our study in that the rhythm method and condoms were used frequently to prevent conception. The college girls, however, used more types of contraceptives than did the high school girls. Also, there was a considerable difference in the proportions not using contraception, since 57 percent of the girls in our study had never used any means of birth control, and 23 percent of the sample of college girls had not used contraceptives during intercourse the preceding year (*4*).

The results of the quiz used to gauge the girls' knowledge of sex demonstrated that about half of them did not know what the probability of pregnancy was should unprotected intercourse occur or what days of the monthly cycle were fertile days. These two points are critical for any girl to know if she wishes to have intercourse and not become pregnant.

The validity of the responses to our questionnaires was impossible to completely ascertain. We hoped that the method of using anonymous, self-administered, multiple-choice questionnaires which, after completion, were put in a large sealed box with other completed forms would allow the girls to feel that they could answer the questions truthfully without being identified. Nevertheless, we can assume that some of the answers were not completely accurate. For example, 29 percent of the ever-pregnant girls claimed they had become pregnant the first time they had intercourse.

This percentage would be a high conception rate even if all the girls had been trying to get pregnant, as shown by a study of British couples in which it was found that the maximum prob-

ability of conception was 30 percent if a single act of intercourse took place 2 days before ovulation (*6*). The next highest probability of conception was 20 percent if intercourse took place within 3 days of ovulation. Only in the 5 days preceding ovulation was the probability of conception as high as 10 percent from a single coitus. It is assumed, therefore, that some of the girls minimized their sexual activity before pregnancy.

On the other hand, girls tend to avoid intercourse during menstrual periods for esthetic or hygienic reasons. If they have no knowledge of ovulation times, they may simply have intercourse most frequently at exactly the most fertile period of each month.

Conclusions

Pregnancy was the only reason related to health given for leaving school by dropouts contacted at the time of the study. Socioeconomic factors that are readily available to school officials were not useful in identifying a high-risk group. The primary factors associated with pregnancy were the extent of dating experience, a steady dating relationship, and inadequate methods of contraception.

Any program seriously designed to reduce the number of pregnancies in teenage school girls would have to be directed toward those students who are going steady or are engaged and, if these are not identifiable by school officials, then the program would have to be directed toward all students.

If pregnancy, childbirth, and the resultant loss of a high school education is to be avoided, students must learn the facts as to the time of ovulation, the risk of pregnancy, and the use and availability of contraceptives and abortion and achieve a sense of their own motives and identity in the sexual role that leads to pregnancy. Further study is needed to see if educational efforts would be effective in reducing the incidence of pregnancy and childbirth among girls in high school.

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The results are given of a study of family characteristics and sexual knowledge and practice among high school girls in Bellingham, Wash., in the 1969–70 school year. Twenty-seven girls who had dropped out of school that year were interviewed. Pregnancy and pregnancy-related factors were the reasons for dropping out stated by more than half the girls. Additional students still in school completed questionnaires.

Comparisons of ever-pregnant girls and never-pregnant girls showed little difference in family background or socioeconomic factors with the exception of family income. Going steady was associated with sexual activity and pregnancy. Most pregnancies were unwanted, and contraceptives were not used effectively. The girls' knowledge of the risk of pregnancy and monthly periods of fertility was clearly deficient.

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