

This report deals with the behavior of school-age girls who receive family planning services. Such services cannot be provided in a vacuum and the study tries to define the factors influencing the relationship of the girls to the services and their reproductive behavior.

Factors Associated with Rapid Subsequent Pregnancies Among School-Age Mothers

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Introduction

Can family planning services be offered to school-age mothers in the same way as to other, older patients, or must new approaches be tried to overcome the special problems of this group? Preliminary findings from a larger study of multiservice programs for teenage pregnant girls suggest that contraceptive programs must be specifically tailored for this youthful group.

This report analyzes the reproductive performance of the participants in two such programs and relate this performance to: 1) the characteristics of the programs; 2) certain pre-existing characteristics of the participants; 3) the degree of their participation in one of the programs; and 4) other findings at 15 months postpartum.

Description of Programs

The two programs studied are compared in Table 1. Since they have both been described fully in an article in another journal, only those aspects relevant to family planning will be reviewed. The New Haven Young Mothers Program provided a special obstetrical clinic for teenage mothers where continuity of care was emphasized. After the 28th week, the obstetrician or nurse-midwife responsible for each case saw the patient each antepartum visit, in most cases was present at the delivery, and examined the new mother at her first postpartum visit, when contraceptive methods were considered. The obstetrician and nurse-midwives also participated in many of the group sessions conducted by social workers at the McCabe Center* during which topics of interest to the mothers-to-be, including family planning, were discussed. By contrast, Hartford's Interagency Service program did not provide any medical services, but did require its clients to receive obstetrical care, either at one of the

three local hospital clinics, or through a private obstetrician. Family planning received vigorous attention in both the medical and social service aspects of the YMP program. In Hartford, however, the hospital clinics and private physicians varied in their emphasis on family planning. Family planning education was provided within the school setting by a nurse assigned by the local visiting nurse association. According to the hospital records in Hartford, contraceptives were prescribed for 69% and 73% of those returning for 6 week postpartum checkups to the two non-Catholic hospitals in Hartford, and for only 3% in the Roman Catholic Hospital, which served about half of the program participants.

Method

One hundred and eighty girls were entered into the research project through the Young Mothers Clinic at the Yale-New Haven Hospital in New Haven, Connecticut (YMP group), and 160 through the special school operated by the Interagency Services Program in Hartford (IAS).

Two methodological problems caused modification of the original plans for data analysis. First, the high mobility of the populations caused delay in finding some of the mothers scheduled for the second of three waves of interviews, and, consequently, median times for the second interview (whose results are reported here) were 14 months in Hartford and 16 months in New Haven.† New Haven's completion rate, however, was 91%, or 164 completed interviews; Hartford's was 127, or 80%. For convenience these data are reported as 15 month postpartum findings.

Second, despite the fact that both study groups met the same research criteria (each participant had to be in the

*A multiservice center for pregnant girls of school age maintained with the cooperation of several New Haven agencies. Its principal component is a school operated by the Board of Education.

†Interviews originally were scheduled at 2, 13, and 24 months postpartum.

Table 1—Comparison of Services Provided by the Young Mothers Program (YMP) and Inter Agency Services Program (IAS)

	New Haven Young Mothers Program (YMP)	Hartford Inter Agency Service Program (IAS)
Medical Services	Special clinic for teenage mothers. Continuity of care emphasized. Some cases cared for by nurse-midwives.	Referred to one of 3 hospitals or to private physician.
Educational Services	Serves grades 7-12. Obstetricians & nurse-midwives participate in educational sessions led by social workers at McCabe Center.	Serves grades 9-12
Social Services	Only social workers with master's degrees employed Hospital based but much work done at Center Mixed casework-groupwork approach	Social workers with bachelor's degrees supervised by person with master's degree. School based Emphasis on informality and "non-prying" approach.
School Nursing Services	Provided by V.N.A.	Provided by V.N.A.

program and, at registration be under 18 years of age, unwed, and resident of New Haven or Hartford) and were demographically similar, differences between the two groups arose due to variations in the intake policies of the two programs. For example, since the Young Mothers Clinic accepted pregnant school girls of all ages, as did the school at the McCabe Center, there were some junior high school students in the New Haven sample. Intake into the Hartford study sample, however, was through the IAS school, which served only grades 9-12, and therefore this group did not include any junior high students. Moreover, some of the girls served by the Young Mothers Clinic did not attend the special school, whereas all IAS girls attended the special school since it was the source of intake. To eliminate the possible effect of these differences in the populations, a modified sample of YMP girls was created which met all of the intake criteria for the IAS school, namely, they attended the special school and were 9th grade or above. In addition, the few whites in each sample were removed to provide greater demographic homogeneity with only a small loss in sample size.

The results, and importance, of this modification are shown clearly by Table 2. Table 2a shows the 15 month status of the two study populations before they were made equivalent and suggests that the IAS mothers were more successful than those in the YMP in delaying subsequent pregnancies, staying in school, finding jobs, and becoming independent of welfare assistance. When the groups are compared after modification (Table 2b), the differences previously noted either have disappeared or been sharply diminished. This demonstrates the danger of drawing conclu-

sions about the relative effectiveness of different programs on the basis of end-result statistics, unless the groups served are closely similar.

Reproductive History at 15 Months Postpartum

Comparison of Two Programs

The similarity in rates of subsequent pregnancy and other short term outcome variables in the modified samples at 15 months postpartum suggests that the two different multiservice programs (YMP, IAS) provided similar opportunities for their clients (Table 2). At this point, neither program is clearly superior to the other. Perhaps the truth is that a variety of multiservice programs staffed by dedicated people can provide the needed opportunities, and that given quality programs, the differences in "outcomes" observed among programs are due more to differences in populations served than to program details.

*Association with Pre-existing Characteristics (YMP only)**

There were no statistical associations between the following demographic, economic, and educational characteristics of the girls at registration and whether or not they had a rapid subsequent pregnancy: age, number of years of residence in New Haven, number of parents in the household, total number of persons in the household, ordinal position,

*The following sections are based on a total of 164 young mothers interviewed at 15 months postpartum.

Table 2—Comparison of 15 Month Status, YMP and IAS Groups, Before and After Modification to Make Groups Equivalent on the Basis of Intake Criteria

	A. Before modification				B. After modification			
	YMP		IAS		YMP		IAS	
	No.	%	No.	%	No.	%	No.	%
Subsequent pregnancy								
No	125	(76)	104	(82)	87	(82)	99	(82)
Yes	39	(24)	23	(18)	19	(18)	22	(18)
Education								
In school or graduated	92	(56)	96	(76)	73	(69)	93	(77)
Dropped out	72	(44)	31	(24)	33	(31)	28	(23)
Employed at time of interview								
Yes	50	(30)	51	(40)	40	(38)	49	(40)
No	114	(70)	76	(60)	66	(62)	72	(60)
On welfare								
No	49	(30)	43	(34)	34	(32)	40	(33)
Yes	115	(70)	84	(66)	72	(68)	81	(67)

number of previous pregnancies, socioeconomic quartile, welfare status, educational goals, or whether or not they were in the appropriate grade. The lack of associations may be related to the homogeneity of the study group on many of these variables, which was partly due to the nature of the program (based in a hospital clinic) and partly to the research design (all who participated had to meet the study criteria.) Among the pre-existing characteristics, only school status at registration was correlated significantly with subsequent pregnancy ($p < .01$): those in school were less likely to become pregnant again by 15 months postpartum.

Association with Program Participation (YMP only)

The study also measured the girls' participation in the three major components of the YMP: obstetric, educational, and social service. The variables that measured participation in the obstetric clinic, such as the week of gestation they registered for care and the number and percentage of antepartum clinic visits kept, were not associated with avoiding a rapid subsequent pregnancy. However, the following variables were associated with delay of pregnancy beyond 15 months: attending McCabe ($p < .05$), attending McCabe regularly ($p < .01$), and attending a high number and percentage of the group sessions conducted by the social workers ($p < .05$).

Those who had delayed another pregnancy beyond 15 months postpartum tended to have participated actively both in the school program and in the social work component. The strongest association was with the percentage attendance at the school for those registered for credit (Table 3). Thirty percent of the 73 poor attenders (those who attended less than 60% of the time) were pregnant again by 15 months, whereas none of the 24 with good attendance (80% or better) were pregnant by that time.

Association with Other Outcome Variables (YMP only)

As can be seen from Table 4, the outcomes of interest to those serving teenage mothers are not independent of each other. School status at 15 months showed the strongest association with remaining non-pregnant (Table 5). Those in school or graduated were less likely to be pregnant. Those who were not married also were less at risk for an additional pregnancy.

The difference in reproductive performance by educational status is readily understandable when the use of birth control by 15 months postpartum is compared with school status at that time (Table 6). Information both on the prescription of birth control at an early postpartum clinic visit and on its use at the time of the 15 month postpartum interview is available for 147 girls from the YMP study group. At the postpartum visit, some form of birth control was prescribed

Table 3—Relationship Between Attendance at Special School and Additional Pregnancy Status by 15 Months Postpartum (Only for YMP Participants With 15 Month Postpartum Interview)

	Subsequent pregnancies by 15 months postpartum					
	Per cent of eligible days in attendance at special school			One or more		
	None	Total	None	One or more	Total	
Less than 60%	No. 51	% (70)	No. 22	% (30)	No. 73	% (100)
60-79%	No. 34	% (89)	No. 4	% (11)	No. 38	% (100)
80-100%	No. 24	% (100)	No. —	% —	No. 24	% (100)

χ^2 (d.f.=2)=13.02
 $P < .001$

Table 4—Associations Among Outcome Variables at 15 Months Postpartum, YMP Participants With 15 Month Postpartum Interview. N=164^a

Status at 15 months postpartum	Status at 15 months postpartum			
	In school or graduated	No subsequent pregnancy	Not married	Employed
No subsequent pregnancy	.01	—	—	—
Not married	.01	.01	—	—
Employed at interview	.05	.05	N.S.	—
Independent of welfare	N.S.	.05	-.01	.01

^a Numbers are the probability of the association being due to chance. The variables were dichotomized, and the column headings and stub are labeled so as to indicate the direction of the association.

Table 5—Subsequent Pregnancy Before 15 Months Postpartum by School Status and Marital Status (Only for YMP Participants With 15 Month Postpartum Interviews.)

Marital status and school status at 15 months postpartum	Pregnancy status at 15 months postpartum				
	No subsequent pregnancy		Subsequent pregnancy		Total
	No.	%	No.	%	No. %
In school or graduated					
Married	7	(78)	2	(22)	9 (100)
Unmarried	77	(93)	6	(7)	83 (100)
Total	84	(91)	8	(9)	92 (100)
Dropped out					
Married	13	(50)	13	(50)	26 (100)
Unmarried	28	(62)	17	(38)	45 (100)
Total	41	(58)	30	(42)	71 (100)

Statistical Tests

Total school status against pregnancy status: corrected X^2 (d.f.=1)=23.40; $p < .001$

Total marital status against pregnancy status: corrected X^2 (d.f.=1)=0.18; $p < .005$

for 132 (90%) of these young mothers. By the time of the interviews, however, of the 57 girls who had dropped out of school, only 18 (32%) were still using a method of birth control, and 25 (44%) were pregnant again. The remaining 14 were neither using birth control nor pregnant. In contrast, of the 75 who had been prescribed contraceptives and who were still in school or had graduated, 57 (76%) were still using birth control, and only 6 (8%) had become pregnant again. These highly significant differences strongly suggest the possibility that the mere prescription of birth control is not sufficient to prevent subsequent pregnancies. The motivation and/or ability needed to remain in school also may be a crucial factor in the continued use of oral contraceptives.

Moving since delivery also was associated with a higher risk of rapid subsequent pregnancy. Only 11% of the non-movers reported a subsequent pregnancy at 15 months,

compared to 37% of those who moved. The subsequent pregnancy rates are higher both for those who moved because they married and for those who, though unmarried, left their families.

Discussion

Rapid subsequent pregnancies among school-age mothers appear to be associated strongly with school status and with program participation. Since almost as strong an association was found between school status at two months and 15-month pregnancy status as between school status at 15 months and pregnancy, the association between pregnancy and school attendance was not due to the new pregnancy or baby keeping the mother at home. A later pregnancy could not have caused the school status more than a year earlier.

Table 6—Use of Contraceptive at 15 Months Postpartum by School Status (Only for YMP Participants for Whom Contraceptives Were Prescribed at a Postpartum Visit)

School status at 15 months postpartum	Use of contraceptive at 15 months postpartum							
	Using contraceptive		Not using contraceptive but not pregnant		Pregnant	Total		
	No.	%	No.	%	No.	%		
In school or graduated	57	(76)	12	(16)	6	(8)	75	(100)
Dropped out	18	(32)	14	(25)	25	(44)	57	(101)
Total	75	(57)	26	(20)	31	(23)	132	(100)

χ^2 (d.f. 2) 30.16; $p < .001$

Moreover, the girls who experienced another pregnancy were eligible to return to the McCabe Center if they desired. These findings suggest that either the motivation to achieve an education or the information and values received in school, or both, influence the girls toward avoiding an early additional pregnancy.

It is clear that the mere provision of contraceptives, even in a special clinic, cannot be equated with success in teenage girls. Effective use of an oral contraceptive requires continuous, active participation on the part of the user, which appears to be related to the motivation required of those who continue in school. The Lippe's loop had limited application in the Young Mothers Clinic since it proved unsatisfactory to most of its school-age users. More recently the obstetricians in the Clinic have used other intra-uterine devices which appear to have a higher degree of acceptance among the current program participants.

Another possible explanation for the association between school continuation and avoiding a rapid subsequent pregnancy is the level of sexual activity. Schofield found that in England, those girls who were in school had significantly less sexual activity than those who had dropped out.² It is not clear that his findings can be easily applied to the urban situation in this country, but this may be another explanation for the association reported here.

Finally, although marriage may be viewed as the causal factor in the case of having another baby and/or dropping out, it also is possible that this association is not strictly causal; rather it may be that the major alternatives in lifestyle for girls who become pregnant while still of school age are: 1) staying single and going to school; or 2) marrying and dropping out. Similarly, the new mother who chooses to leave her parents, in the absence of a husband, also may be pursuing a lifestyle which will lead to subsequent pregnancies, probably out-of-wedlock.

The findings in this paper are similar to those in several other studies, most recently that of Siegel et al.³ Their figures show a continuation rate for the pill at one year of only 48% for women who completed no more than the eighth grade. They found that surprisingly few factors assumed to be related to contraceptive use were actually predictive, other than demographic and educational variables. The demographic factors cited in Siegel's study were not relevant here because of the demographic homogeneity of the study group. Education, the other factor found important by Siegel's group, also emerged in this study as the most important pre-

dictor of contraceptive use and of avoidance of subsequent pregnancy.

Conclusions

Family planning services cannot be provided in a vacuum, especially to school-age girls. The prescribing physician must consider the motivation and life goals of each of his patients. These data suggest that the highly motivated, school-oriented girl will use oral contraceptives and will not become pregnant quickly, although an IUCD may be used if it is preferred by young mothers from this group. However, the young mother who is oriented toward marriage and/or is not interested in school probably will not continue to take the pill. In these cases the prescribing physician should consider inserting an IUCD if it is acceptable to her. Family planning for school-age girls must be part of a broadly based program of services that can assist these young mothers to define, and then achieve, both short and long term life goals, and effective prescribing must be based on a knowledge of such goals.

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