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Factors Associated with Adolescent Pregnancy in Rural Nigeria

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A community-based case-control study to determine the risk factors associated with adolescent pregnancy was conducted in the rural community of Gbongan in southwestern Nigeria. One hundred and thirty-two pregnant girls aged 20 years or less were compared with 131 nonpregnant girls of similar age. Information on their sociodemographic characteristics and those of their parents, their knowledge of reproductive health, and practice of contraception were obtained by household confidential interviews and by focus group discussions with parents and adolescents. Univariate analyses revealed a large number of potential risk factors, but after adjustment by logistic regression, only two factors remained significantly associated with pregnancy. These were being married (OR = 9.8) and doing an income job as opposed to being an apprentice (OR = 4.7). In turn, doing an income job was the only significant factor that predicted marriage in the logistic regression model (OR = 1.5). Both pregnant and nonpregnant adolescents had poor knowledge of, and negative attitude toward, contraception, and only a small percentage of them had ever used contraceptives. We conclude that pregnancy among adolescents in this community is mostly associated with completion of formal education at an early age by the girls and to their lack of knowledge of reproductive health. Measures that could reduce the high rate of pregnancies among adolescents in rural Nigeria include (1) a program to encourage adolescents to continue formal and informal education, (2) reproductive health education and services for adolescents, and (3) appropriate legislation to discourage early marriage and pregnancy in the community.

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INTRODUCTION

The rate of pregnancy among Nigerian adolescents is thought to be on the increase (Hofmann, 1984; Gyepi-Garbrah, 1985) and is causing major health and social problems. Recent demographic and health survey data (Nigerian Demographic and Health Survey, 1992; Population Reference Bureau, 1992) indicate that more than a quarter of Nigerian adolescents aged 15–19 years are pregnant or have had children, that 43% of the pregnancies occur in never married adolescents, and that about 12% of the pregnancies are unintended. Several reports also show that adolescents are more likely to resort to unsafe abortion, and therefore more likely to suffer abortion-related morbidity and mortality. Data from the leading teaching hospitals in the country (Unuigbe *et al.*, 1988; Archibong, 1991; Adetoro, 1989; Ogunniyi *et al.*, 1990; Megafu and Ozumba, 1991) indicate that the preponderant number of abortion-related hospital admissions in the country are to adolescents who have never been married. In a recent study of 74 women treated for complications of illegal abortion at the Obafemi Awolowo University in Nigeria, 9 of the 13 deaths were never-married adolescents (Okonofua *et al.*, 1991).

There is also evidence that adolescents who decide to carry their pregnancies to term are more likely to develop severe complications of pregnancy and delivery. The higher frequency of vesicovaginal fistulae in this age group is well known (Murphy, 1981; Tahzib, 1983; Harrison, 1989), but in addition, adolescents are also at greater risk of direct obstetric death from such complications as eclampsia, obstructed labor, and postpartum hemorrhage (Harrison *et al.*, 1985). Nearly 35% of the recent maternal deaths at the Obafemi Awolowo University (excluding abortions) were women aged 20 years or below (Okonofua *et al.*, 1992).

The social implications of early pregnancy in Nigerian adolescent females are equally serious. Most schools in Nigeria do not allow pregnant girls to remain enrolled and the resulting premature drop out from school reduces their opportunity for upward socioeconomic mobility. Several studies in Nigeria (Ayangade, 1982; Akingba and Gbajumo, 1969; Omu *et al.*, 1981) indicate that the desire to remain in school is the major reason given by adolescents for resorting to unsafe abortion.

Clearly, there is a need for programmatic intervention to reduce the high rate of pregnancies among adolescents in this population. Unfortunately, very few efforts have been made in this direction, with only a few nongovernmental organizations currently addressing the problem. Existing government and privately supported family planning programs are directed principally toward married couples and family life education is not taught in schools. Part of the reason for this state of affairs is the lack of proper

understanding of the level of sexuality in the adolescent population and the factors that encourage pregnancy in adolescents.

A number of factors have been postulated to explain the large number of pregnancies in Nigerian adolescents. These include early onset of menarche among females (Senderotwitz and Paxman, 1986), early initiation of sexual activity (Feyisetan and Pebley, 1989), early marriage (Harrison *et al.*, 1985), economic insecurity (Orubuloye *et al.*, 1991), low and ineffective use of contraception (Nichols *et al.*, 1989), and deterioration in the traditional African values (Feyisetan and Pebley, 1989). However, to date, there are no objective scientific studies that have evaluated the relative contribution of these and other factors to maintaining the high rate of adolescent pregnancy in Nigeria. This would be of utmost importance as it would provide a basis for devising an appropriate and effective primary prevention strategy in the community.

This article is a report of a community study of adolescent pregnancy in satellite villages near suburban Ile-Ife in southwestern Nigeria. The purposes of the investigation were threefold: (1) to determine the sociodemographic characteristics of pregnant adolescents and compare them with those of nonpregnant girls of similar age in the community, (2) to identify the most important social risk factors for pregnancy among the girls, and (3) to determine the attitudes of the community toward issues relating to adolescent reproductive health and their perceptions of the causes of adolescent pregnancy.

STUDY DESIGN AND METHODOLOGY

The study was cross-sectional and consisted of pregnant, and a comparable group of nonpregnant, young women (aged 20 years or less) living in the rural community of Gbongan, in Osun State of Nigeria. The area was chosen for the study because of its predominantly rural nature, as we wanted to be able to describe the rural peculiarities of the problem of adolescent pregnancy. Although data are presently not available, we believe that the problem is likely to be greater in rural areas because of the total absence of programs to reduce adolescent fertility in rural areas. The few clinics that provide contraceptives and counseling for adolescents in the area are located predominantly in nearby urban Ile-Ife. In addition, we wanted to use the opportunity to collect information on the reproductive health of out-of-school adolescents who reside principally in rural areas.

Focus group discussions were held at the beginning of the study to identify issues relating to reproductive health and adolescent pregnancy and to establish the research in the community. The discussions were held sepa-

rately with fathers and mothers of adolescents, and pregnant and nonpregnant adolescents. Each focus group consisted of up to 9 participants and the discussions took place in private homes, a school compound, and in a village square. Information from the focus group discussions were analyzed qualitatively and used to formulate questions for the survey.

Thereafter, a community survey was carried out with the aim of identifying all pregnant girls in the area, both married and unmarried. Four female adolescents of age and background comparable to the study population, and who could speak the local language, were recruited as interviewers. This was deemed necessary as a previous study in the area (Okonofua *et al.*, 1992) had shown that female adolescents prefer to talk to their peers on reproductive health matters. The peer interviewers were selected from outside the village in order to ensure confidentiality of information provided by the respondents. The interviewers had a period of training on the broad objectives of the study, on interviewing techniques, and on questionnaire completion. They were then divided into groups of two, with each group being assigned to a specific part of the village in order to become familiar with the local conditions and to establish themselves in the neighborhood.

The interviewers were requested to move from house to house in the villages to identify the pregnant adolescent girls. Once the process began, it was possible to identify knowledgeable individuals who acted as informants and who provided information on the residence of other pregnant girls in the community. When a pregnant girl was identified and interviewed, the next nonpregnant girl in a different household of similar age who agreed to participate in the fully informed project was chosen as the control. Pregnancy was confirmed by a physical examination as most of the girls were at least 20 weeks pregnant at the time of the interview. Nonpregnant status was verified by elicitation of the last normal menstrual period and only girls who were in the follicular phase of the menstrual cycle were included in the nonpregnant group.

The peer interviewers were asked to work in pairs, with one interviewer collecting information from pregnant adolescents, and the other one meeting with the nonpregnant adolescents. They worked at various times of the day, tailoring their schedules to the hours during which the adolescents were most likely to be found at home. This meant that adolescents who were not at home at the time of the initial visit were revisited on several occasions until they were successfully interviewed.

The questionnaire consisted of two sections. Section 1 elicited information on the sociodemographic background of the respondents and those of their parents—i.e., age, educational level, occupation, income status, and religious affiliation. This section also contained questions on their current

place of residence, the existence of modern facilities, the possession of modern appliances, and the socioeconomic characteristics of the husbands of married respondents. Section 2 of the questionnaire covered the respondent's reproductive history, eliciting information on menarcheal age, previous pregnancies and use of abortion, and knowledge and use of modern contraceptive methods.

Although the survey collected extensive information on the characteristics of the respondents and their knowledge and practices of reproductive health, no attempt was made to inquire about an individual respondent's beliefs concerning sexuality. This was thought to be too sensitive a topic in the area, to which correct answers were unlikely to be obtained by direct questioning. Thus, the interpretation of the causal factors underlying the observed differences between the study groups will be derived from informed speculation and also from the analysis of the focus group discussions that were carried out in the study area.

Data analysis was performed with STATA (Computing Resource Center, Santa Monica, CA 90401) and consisted of descriptive statistics and cross-tabulations that highlighted the characteristics of the pregnant and nonpregnant girls with respect to the studied variables. Any observed differences were compared with chi-square test or unpaired t test, as appropriate. Several variables were reduced to two categories and their strengths of prediction of pregnancy or early marriage were determined by calculation of crude odd ratios. A logistic regression analysis was carried out using pregnancy and marriage as the outcome variables, and adjusted odd ratios and confidence intervals were calculated for risk factors in the logistic regression model.

RESULTS

Characteristics of the Respondents

One hundred and forty-three pregnant and 143 nonpregnant girls were identified in the communities as meeting the criteria for inclusion into the study, but only 132 pregnant (92.3%) and 131 nonpregnant girls (93.6%) agreed to participate. The number and proportion of married girls in the sample was 101 (76.5%) for pregnant and 34 (26.0%) for nonpregnant girls ($p < 0.001$). The mean age at marriage of the pregnant girls was similar to that of the nonpregnant girls (16.5 vs. 16.7 years). The husbands of the nonpregnant girls were similar to those of pregnant girls in age, educational level, employment status, type of work, and religious affiliation. However, the husbands of both pregnant and nonpregnant girls were gen-

Table I. Comparison of Selected Characteristics of the Pregnant and Nonpregnant Girls in the Survey

	Pregnant			Nonpregnant		
	Married	Unmarried	Total	Married	Unmarried	Total
Number	101	31	132	34	97	131
Age(mean)	17.5	17.1	17.3	17.0	17.2	17.1
Mean menarcheal age	14.7	14.7	14.7	14.7	14.3	14.5
Categorical variables(%)						
Education						
None	9.9	3.2	6.6	2.9	4.1	3.5
Stopped schooling	90.1	90.3	90.2	97.1	79.4	88.3
Still in school	0.0	6.5	3.2	0.0	16.5	8.2
Employment status						
Not employed	23.8	58.1	41.0	5.9	28.9	17.4
Employed	76.2	41.9	59.0	94.1	71.1	82.6
Apprentice	8.9	30.8	19.9	31.3	56.9	44.1
Income job	91.1	69.2	80.1	68.7	43.1	55.9
Religious affiliation						
Catholic	3.0	32.3	17.6	2.9	1.0	2.0
Protestant	21.0	38.7	29.9	32.4	22.7	27.5
Other Christian	47.0	12.9	30.0	41.2	41.2	41.2
Islam	29.0	16.1	22.5	23.5	35.1	29.3
Residence						
Mother	0.0	29.0	14.5	0.0	14.4	7.2
Father	0.0	3.2	1.6	2.9	5.2	4.1
Both parents	1.0	58.1	29.5	5.9	61.9	33.9
Other relatives	1.0	0.0	0.5	0.0	3.1	1.5
Husband	93.0	6.5	49.8	2.9	6.2	4.6
Inlaws	3.0	0.0	1.5	82.4	0.0	41.2
Alone	2.0	3.2	2.6	5.9	9.2	7.5

erally older than the adolescent girls. Over 15% of the husbands in both groups were at least 40 years old and 84.7% were aged between 20 and 40 years. Only one married adolescent was of the same age as her husband and none was younger. In addition, 19 of the 31 pregnancies among the unmarried girls were due to relationships with men aged 35 years or more and only 4 were due to men of comparable age as the girls.

Over 80% of the unmarried girls said their pregnancies were unintended compared to only 6% of the married girls. However, among 13 of the married girls, it was determined that their marriage was due to the occurrence of a premarital pregnancy.

The other characteristics of the respondents stratified according to their marital status are presented in Table I. The subgroups of adolescents had identical ages and mean menarcheal ages. As shown, a large proportion of the girls had completed formal education. The proportion completing formal education was lowest among the unmarried nonpregnant girls. The level of educational attainment was also highest among the group of unmarried nonpregnant girls.

Among those not in school, a greater proportion of the nonpregnant girls were employed in a formal or informal job. However, more pregnant girls were doing income-generating jobs as compared to the nonpregnant girls who tended to be unpaid apprentices (i.e., learning a vocational trade). Nearly 57% of the unmarried nonpregnant adolescents were employed as apprentices compared to only 9% of married pregnant girls.

The religious affiliation of the respondents revealed that equal proportions of pregnant and nonpregnant girls were Muslims, Protestants, or other Christians. By contrast, more pregnant than nonpregnant girls were Catholics ($p < 0.01$). As shown in Table I, there was a disproportionate representation of Catholics among the group of unmarried pregnant girls as compared to the other groups.

The bottom row of Table I shows the place of residence of the girls at the time of the survey. Over 90% of the married pregnant girls were living with their husbands. By contrast, only 3% of the married nonpregnant girls were living with their husbands; the majority were living with their in-laws. Among the unmarried girls, more pregnant than nonpregnant girls were living with their mothers and comparatively less were living alone.

The sociodemographic characteristics of the parents of the pregnant and the nonpregnant girls are presented in Table II. Overall, the proportion of parents of adolescents who lived together was not significantly different between pregnant and nonpregnant girls. However, it was highest among the subgroup of unmarried pregnant girls and lowest among married pregnant girls. As shown in the table, the parents of unmarried nonpregnant girls were most likely to be living apart (within an existing marriage) when compared to the other groups. Also, the proportion of girls with single parents as a result of the death of one parent was higher among the pregnant girls. The difference was mostly due to a higher proportion of widows having pregnant married daughters. There was no significant difference between the groups in the proportions from polygamous households (40.9% of pregnant compared to 32.1% nonpregnant girls, $p > 0.05$).

A large proportion of the respondents did not know the age of their parents and this could not be verified because of the necessity to maintain the confidential nature of the interview. More pregnant than nonpregnant girls were able to recall the correct ages of their parents. Of those who

Table II. Percentages of Parents of Girls with Selected Sociodemographic Characteristics

	Pregnant			Nonpregnant		
	Married	Unmarried	Total	Married	Unmarried	Total
Number	101	31	132	34	97	131
Marital status of parents						
Never married	1.0	0.0	0.5	0.0	0.0	0.0
Living together	69.0	83.9	76.4	79.5	74.2	76.8
Living apart	1.0	3.2	2.1	2.9	10.3	6.6
Divorced	6.0	6.9	6.5	2.9	6.2	4.6
Widowed	20.0	6.0	13.0	11.8	8.2	10.0
Widower	3.0	0.0	1.5	2.9	1.1	2.0
Father's education						
None	49.5	72.4	61.0	61.3	42.0	51.6
Primary	39.4	24.1	31.7	25.8	31.2	28.5
Secondary	7.5	0.0	3.8	9.7	21.5	15.6
Postsecondary	3.6	3.5	3.6	3.2	5.3	4.3
Mother's education						
None	70.0	87.1	78.6	85.3	57.3	71.3
Primary	26.0	9.7	17.8	8.8	30.2	19.5
Secondary	3.0	0.0	1.5	2.9	10.4	6.7
Postsecondary	1.0	3.2	2.1	3.0	2.1	2.5
Father's employment status						
Unemployed	7.4	0.0	3.7	0.0	3.2	1.6
Employed	92.6	100.0	96.3	100.0	96.8	98.4
Mother's employment status						
Unemployed	2.0	69.0	35.5	0.0	2.1	1.0
Employed	98.0	31.0	64.5	100.0	97.9	99.0
Mother's religion						
Catholic	3.0	25.8	14.4	2.9	1.0	2.0
Protestant	24.0	45.2	34.6	29.4	28.2	28.8
Other Christian	38.4	12.9	25.5	29.4	35.4	32.5
Islam	34.6	16.1	25.5	38.3	35.4	36.7
Father's religion						
Catholic	3.4	34.5	19.0	3.2	1.1	2.2
Protestant	23.4	34.5	29.0	35.5	26.9	31.2
Other Christian	36.6	13.8	25.1	22.6	35.5	29.1
Islam	36.6	17.2	26.9	38.7	36.5	37.5
Household appliances						
None	21.0	71.0	46.0	23.5	28.9	26.2
One	35.0	16.1	25.5	29.4	22.7	26.1
Two	43.0	9.7	26.4	32.4	37.1	34.7
Three	1.0	3.2	2.1	14.7	11.3	13.0

recalled their parents' ages, no significant difference was found in parental age between the various subgroups.

The fathers of the nonpregnant girls were better educated than those of pregnant girls. More than 20% of fathers of nonpregnant girls had at least a secondary education compared to about 6% of the pregnant girls. In turn, the proportion of illiterate fathers was less among the nonpregnant girls as compared to the group of pregnant girls. The proportion of fathers completing secondary education was particularly high among the group of unmarried nonpregnant girls. Similarly, the mothers of nonpregnant girls were better educated, as 8.5% of them had at least a secondary education compared to 3.6% of the pregnant girls. The proportion of illiterate mothers was lowest and the proportion of mothers who had completed secondary education highest among unmarried nonpregnant adolescent girls.

No difference was found in the employment status of the fathers in the two groups. Similarly, equal proportions of mothers of girls in the different subgroups were employed; however, the mothers of nonpregnant girls were more likely to be traders compared to those of pregnant girls who were more likely to be farmers. There was a strong positive association in religious affiliation between the girls and their parents. Thus, the distribution of types of religion of the parents was similar to that of the girls. As shown in Table II, the proportion of Catholics among the parents of unmarried pregnant girls was higher than that for parents of the nonpregnant group and the proportion of Muslems was correspondingly lower.

A standard of living index was used as a proxy for socioeconomic status of the parents and was computed by determining whether they possessed modern household appliances. After deliberation, it was decided to limit these items to three—flush toilets, radios, and television sets—since these are the items that are reasonably predictive of social status within the rural context of the study. The parents were ranked into four groups according to whether they possessed none, one, two, or all of the items. The results (bottom row of Table II), indicate that the parents of the nonpregnant girls (both married and unmarried) possessed more household appliances as 13% of them had all the indicated items compared to only 2.1% of the pregnant group ($p < 0.05$).

Knowledge and Practice of Contraception

A major purpose of the study was to compare both groups of girls with regard to their knowledge and use of contraceptives. As shown in Table III, more nonpregnant girls claimed they knew ways to prevent pregnancy, although the difference was not statistically significant. When asked to list the methods they knew, more nonpregnant than pregnant girls were able to identify one or more modern methods. Again, the difference was

Table III. Knowledge and Practice of Contraception by the Pregnant and Nonpregnant Girls

	Pregnant			Nonpregnant		
	Married	Unmarried	Total	Married	Unmarried	Total
Number	98	31	129	34	95	129
Percent with knowledge of contraception	32.7	25.8	29.3	50.0	37.9	44.0
Percent with knowledge of one or more modern methods of contraception	21.6	25.8	23.7	41.2	28.4	34.8
Percent correctly identifying monthly fertile period	7.2	3.2	5.2	23.5	6.3	14.9
Percent ever using contraceptives	7.2	9.7	8.5	2.9	4.2	3.6
Percent with previous induced abortions	26.8	25.8	26.3	11.8	3.2	7.5

not statistically significant. However, the proportion correctly identifying modern contraceptives was highest among married nonpregnant girls and lowest among married pregnant girls.

In contrast to the relatively high proportion who state that they have knowledge of contraception and could list some modern methods, very few in each group were able to correctly identify the fertile period of a woman's menstrual cycle. Overall, there was no appreciable difference between pregnant and nonpregnant girls in the proportions giving correct responses to the question. However, married nonpregnant girls were the most likely and unmarried pregnant girls the least likely to answer the question correctly. Many of them were more likely to given incorrect responses such as "the same throughout the cycle," "immediately before menstruation," and "during menstruation," implying poor knowledge of reproductive health in both groups.

Pregnancy Predicting Variables

The results of the bivariate analyses in Table IV indicate that marriage, being Catholic and having Catholic parents, and knowing father's age were all positively associated with pregnancy, whereas learning a trade (apprenticeship), possession of all household items, mother's age less than

Table IV. Effect of Selected Variables on the Risk of Pregnancy in the Adolescent Girls

Variable[a]	Number (%) pregnant	Total	Crude odd ratio	95% CI
Marital status (unmarried)				
Married	101 (74.8)	135	8.1[b]	4.5–14.5
Education (none)				
Ever been	123 (48.6)	253	0.5	0.1–1.6
Primary	45 (50.0)	90	0.5	0.1–1.8
Secondary	77 (47.5)	162	0.45	0.1–1.5
Occupation (no employment)				
Being employed	91 (47.2)	193	0.68	0.4–1.3
Type of job (income job)				
Apprentice	9 (15.3)	59	0.11[b]	0.05–0.27
Religion (rest)				
Islam	34 (43.6)	78	0.71	0.4–1.3
Catholic	14 (87.5)	16	7.8[b]	1.7–50.9
Possession of modern household appliances (none)				
One item	40 (54.1)	74	0.99	0.5–2.0
Two items	48 (42.9)	112	0.84	0.4–1.6
Three items	2 (10.5)	19	0.1[b]	0.01–0.5
Age of parents (others)				
Father's age < 70 years	40 (60.6)	66	0.85	0.3–2.3
Mother's age < 60 years	36 (50.7)	71	0.3[b]	0.1–0.9
Father's education (none)				
Primary	44 (53.0)	83	0.95	0.5–1.7
Secondary	8 (25.0)	32	0.3[b]	0.1–0.7
Father's religion (rest)				
Catholic	14 (87.5)	16	7.9[b]	1.7–51.4
Islam	35 (42.7)	82	0.68	0.38–1.2
Mother's job (farming)				
Trading	78 (42.2)	185	0.3[b]	0.15–0.6
Mother's religion (rest)				
Catholic	12 (80.0)	15	4.4[b]	1.1–20.0
Islam	38 (44.2)	86	0.7	0.4–1.3
Marital status of parents (living apart/divorced)				
Living together	96 (48.2)	199	0.8	0.45–1.5
Polygamy (monogamy)	54 (56.3)	96	1.5	0.89–2.6

[a]The reference categories are in parentheses.
[b]Significant odd ratios.

60 years, attainment of secondary education, and having a mother who is a trader decreased the chances of pregnancy. However, a logistic regression

Table V. Logistic Regression Odd Ratio for the Likelihood of Being Pregnant at the Time of the Survey (Total Sample, Unmarried Subsample, and Married Subsample)

Variable[a]	Total	Unmarried	Married
Being married (unmarried)	9.8[c]		
Ever been to school (never been)	0.7		0.2
School level < secondary (> secondary)	1.5	16.9	1.0
Income job (apprentice)	4.7[b]	50.3[b]	2.7
Catholic religion (others)	1.2	1.7	0.8
Father's age < 70 years	0.7	9.9	0.9
Father's education, > secondary (others)	0.8	3.2	0.6
Catholic father (others)	1.0	4.8	1.0
Mother's age <60 years	1.3	0.1	1.1
Mother's education, < secondary (> secondary)	1.2	0.2	1.4
Parents not living together (living together)	1.4		1.4
Household appliances = 3 (<3)	0.9	0.3	0.9
Menarcheal age (< 14 years) (> 14 years)	1.2	3.6	1.3
No knowledge of family planning (has knowledge)	3.9	3.3	13.1

[a]The reference categories are in parentheses.
[b]$p < 0.05$.
[c]$p < 0.005$.

carried out to determine how the pregnancy differentials altered when the association was adjusted for the simultaneous effects of the various variables (Table V) showed that marital status and the type of work were the only significant predictors of pregnancy. The model indicates that marriage (OR = 9.8; CI = 3.4, 32.5) and doing an income-generating job (as opposed to apprenticeship; OR = 4.7; CI = 1.5, 16.2) significantly increased the risk of pregnancy. Income job was a significant predictor only if the girl was married.

Table VI. Crude Odd Ratio (OR) with Confidence Intervals (CI) for Selected Factors Influencing Marriage in the Sample

Variable	No. married (%)	Total	OR	CI
Characteristics of respondents				
Education				
Never been to school	10 (66.7)	15	2.0	0.6–6.8
Stopped schooling	125 (54.3)	230	2.7[a]	1.2–6.5
Still in school	0 (0.0)	18	0.0	
Religion				
Catholic	4 (26.7)	15	0.3	0.1–1.1
Protestant	32 (47.8)	67	0.9	0.5–1.6
Islam	37 (49.3)	75	0.9	0.5–1.5
Occupation				
Employed	109 (57.7)	189	2.5[a]	1.4–4.6
Apprentice	17 (29.3)	58	0.2[a]	0.08–0.3
Trader	55 (79.7)	69	4.5[a]	2.2–9.5
Characteristic of father				
Father's age < 70 years	25 (39.1)	64	0.6	0.2–1.8
≥ 70 years	18 (66.7)	27	2.1	0.8–5.2
Illiterate	65 (52.0)	125	1.1	0.7–1.9
Primary educated	45 (55.6)	81	1.2	0.6–2.1
Employed	118 (49.6)	238	0.5	0.1–2.9
Catholic	4 (26.7)	15	0.3	0.1–1.2
Protestant	32 (47.1)	68	0.8	0.5–1.5
Other Christian	41 (52.3)	78	1.2	0.7–2.2
Islam	40 (50.6)	79	1.0	0.6–1.8
Characteristics of mother				
< 60 years	26 (41.9)	62	0.9	0.3–2.3
≥ 60 years	17 (65.4)	26	2.6	0.6–2.1
Employed	131 (51.0)	257	0.8	0.1–4.2
Farming	33 (55.9)	59	1.3	0.7–2.4
Trading	92 (51.7)	178	1.1	0.6–1.9
Catholic	4 (30.8)	13	0.4	0.1–1.5
Protestant	33 (44.0)	75	0.7	0.4–1.2
Islam	44 (53.0)	83	1.1	0.7–2.0
Parent's marital status				
Married (living together)	96 (49.5)	194	0.8	0.4–1.4
Married (living apart)	10 (50.0)	20	1.3	0.7–2.3
Widowed	24 (70.6)	34	2.6[a]	1.1–6.1
Widower	4 (80.0)	5	3.9	0.4–93.8

[a]Significant odd ratios.

As marriage had the most predictive effect on pregnancy, we sought to evaluate how the various explanatory variables predicted marriage. The results of the bivariate analyses presented in Table VI indicate that stopping schooling, employment in an income-generating job, trading, working in the farm, and having a widowed parent were all positively associated with marriage, whereas learning a trade (apprenticeship) and having a fa-

ther with at least a secondary education were negatively associated with marriage. However, when the results were adjusted for the simultaneous effects of all the variables, the positive association with an income-generating job remained significant (OR = 1.5; CI = 1.1, 5.6, $p < 0.02$). Thus, learning a trade protected adolescent girls who had completed schooling from both marriage and pregnancy. Also, the absence of induced abortions was associated with a reduced risk of marriage (OR = 0.6; CI = 0.2, 0.9, $p < 0.02$) in the logistic regression model.

Focus Group Discussions

To determine perceptions regarding the causes of adolescent pregnancy in the community, a series of focus group discussions were conducted separately with parents and pregnant and nonpregnant adolescents. The topics covered during the discussions were perceptions about teenage pregnancy, exposure to sex education, attitudes toward family planning and abortion, and perceptions about marriage. The general conclusions that emerged from the focus groups can be summarized as follows:

Most adults interviewed expressed the view that pregnancy among rural adolescents was now more common than previously. They attributed this to the effects of modernization, specifically because youths now attend "disco parties" and are exposed to pornographic materials. When asked whether this was also the case with married adolescents, most participants answered yes, explaining that most girls who get married do so because of an unexpected pregnancy. When asked about the ideal age of marriage, neither the parents nor the adolescents mentioned a specific age, but said this was after the girl has completed schooling. The parents explained that girls in the communities were now marrying early because of lack of funds to proceed with further formal education after they complete primary and secondary education.

From the interviews, it was clear that there is a high degree of shame associated with premarital pregnancies in the communities. This is illustrated by what one father said during one of the focus groups: "there is a custom in this village that if a lady gets pregnant before she is married, the shame that accompanies such an act will always be on her . . . . Everybody looks down on the person with shame; hence, nobody wants to do the shameful act." It was also evident from the discussions that one of the commonest methods of resolving a premarital pregnancy in the villages is to encourage the partners to get married before the pregnancy becomes obvious.

On sex education, most parents said they did not think it was proper to discuss sexual matters with their children. Both pregnant and nonpregnant girls denied receiving sex education from their parents and said they felt more comfortable talking to their friends or reading magazines. However, the nonpregnant girls said they were advised by their parents not to get pregnant until they had completed schooling whereas the pregnant girls said they were not given such advice.

On contraception, the adults said it was not good for a young girl to use contraceptives. They believed that such early use of contraceptives could lead to infertility in later life. The adolescents also had similar misconceptions about contraceptives. Many of them thought that contraception could interfere with later reproductive function and lead to infertility. A few adolescents mentioned other constraints to using contraceptives, such as not knowing where to go, the fear of their parents, and religious obligations. Most of them felt it was easier to procure abortion than to practice contraception on a regular basis.

DISCUSSION

The study was designed to identify factors that are associated with adolescent pregnancy in rural Nigeria through analysis of background variables in cases and controls. Our primary focus was on term pregnancy and our study design excluded adolescents who may have resolved their pregnancies through early induced abortion. The results of the study indicate that marriage was the most important explanation for term pregnancy among the rural adolescents sampled. However, the role of marriage was not completely unidirectional since a substantial proportion of the girls married because they had an unintentional premarital pregnancy. Premarital pregnancy is an important reason for marriage of young girls in southern Nigeria (Orubuloye, 1981; Okore, 1987) and the fear of it could lead parents to seek early marriage for their daughters.

A major determinant of marriage and pregnancy in the adolescent girls was their schooling and occupational status. A high proportion of the girls in the study had completed formal education and only a small fraction had never been to school. As a result of the educational revolution that took place in southern Nigeria in the 1970s, it is now quite common for female adolescents to complete primary education at a relatively early age. In 1983, up to 70% of female adolescents were enrolled in primary schools in southern Nigeria (Gyepi-Garbrah, 1985). The average age of completion of primary education has fallen over the years and is now approximately 12 years. According to the 1983 World Bank report, only about 16% of

the adolescents subsequently go on to secondary schools. Most of the girls who complete primary and secondary education are subsequently unable to continue further education for three major reasons: (1) many rural parents do not have the economic means to support the education of their children at the postprimary or postsecondary level, (2) the preferential support given to male children by some parents, and (3) the lack of will among rural folks to aspire to higher educational achievement.

Marriage and pregnancy become ready options to those who complete formal education unless they become involved in some vocational training. Our results indicate that being an apprentice (i.e., being involved in a vocational training) protects rural adolescents girls from early marriage and childbearing. The finding that a greater proportion of premarital and marital pregnancies resulted from relationships with older men is in conformity with this analysis, and suggests that girls who are not in vocational training may be getting into such relationships in order to improve their economic situation. In a recent study of teenage pregnancy in Nigeria (Rich and Barker, 1990), the role of older men was brought to light. It was revealed during focus group discussions with several teenagers that older men frequently lure economically disadvantaged teenage girls to sex by offering to pay their school fees or provide other expensive gifts. This point was further highlighted in a recent review of marriage and fertility in sub-Saharan Africa by Bledsoe (1990), who attributed the trend to national economic crises and the perceptions of women that creating links with older men would increase their economic opportunities.

Early age of menarche has been postulated to be an important factor in adolescent pregnancy. Helm and Lidegaard (1990) found that among a group of 585 Danish women, those with earlier age of menarche had earlier onset of sexual activity. While this may be true of many contemporary societies, the present results show no association between the age of menarche of Nigerian rural adolescents and the risks of marriage and pregnancy. Thus, it is plausible that for the adolescent in rural Nigeria, the progressive decline in menarcheal age that has been observed in other societies is yet to be seen and that this may not yet be an important factor in early teenage sexuality.

Similarly, we were surprised that neither the structure of the family nor the occupational status of the parents were important determinants of marriage or pregnancy in the girls. Specifically, we examined the hypothesis that polygamous households and households with parents living apart will have higher rates of marriage and pregnancy. This turned out not to be the case, although having only a mother as a result of the death of a father (single parenthood) significantly increased the risk of marriage. This is as expected because unsupported mothers are more likely to seek marriage

for their daughters as a way of resolving the economic problems engendered by the loss of their husbands.

Also, adolescent girls with parents from higher socioeconomic backgrounds (as judged by the possession of household items) were less likely to be married or to be pregnant. This may be due to availability of more family resources to allow girls to continue education or to a higher level of motivation for educational attainment among girls from higher social classes.

An important issue that was addressed in this study was the role of religion in determining pregnancy and marriage in the girls. Fortunately, our study population was fairly uniformly divided among the four major religious groups in the country and it was therefore ideal for investigating the important relationship. The results of the bivariate analyses showed that Catholics were more likely to be pregnant than the other religious groups. This was not due to marriage since the Catholics were less likely to be married than the other groups and most of the pregnancies among the Catholics were premarital pregnancies. Since the relationship disappeared after controlling for various confounding variables, it is possible that religion may be operating through a complex set of proximate factors in the rural communities studied. However, Feyisetan and Pebley (1989), in a study of premarital sexuality in urban Nigeria, showed that Catholics are more likely than non-Catholics to have had premarital sex. Thus, our results may be explained by this phenomenon, in addition to the well-known fact that Catholics are less likely to practice induced abortion. An interesting finding was that Muslims had martial status comparable with other religious groups, which negates the widespread opinion in Nigeria that Muslims are more likely to marry at younger ages. Certainly, Muslims in northern Nigeria marry early (Harrison *et al.*, 1985) and our observation may mean that southern Muslims differ from northern Muslims in their attitudes toward marriage.

The study also finds that a large proportion of the younger girls have poor and inappropriate knowledge of contraception and family life education. In particular, the study shows that the nonpregnant girls have better knowledge of contraception and reproductive health than the pregnant girls but are less likely to use contraceptives. These findings suggest that the pregnant girls may be more sexually active and may be using contraceptives inappropriately and that the married nonpregnant girls may be wanting to become pregnant. Furthermore, the unmarried nonpregnant girls may not see the need to use contraceptives, since up to 56% of those not using contraceptives said they were not sexually active. The nonpregnant girls may also be different in that although they may not be practicing contraception they may have better orientation toward reproductive health issues.

In conclusion, it would appear that early completion of formal education is the most important risk factor for early marriage and pregnancy among adolescents in rural Nigeria. The problem is particularly acute in households of low socioeconomic status and exposes youths to sexual relations with older men who are perceived to be better able to provide for the economics needs of the adolescents. Pregnancy in and outside marriage then become widespread in a community with little accurate information on reproductive health. These findings suggest that an intervention program that provides counseling and opportunities for vocational and professional training to adolescents, and in addition, offers comprehensive health information stands the greatest chance of immediate success in rural communities in Nigeria. The overall objective of such a program will be to encourage youths to proceed with some vocational training after they have completed primary and secondary education and for them to see early marriage and pregnancy as impediments to their success in life. Within this broad objective, a structured reproductive health education package can be provided for both in and out of school adolescents and contraceptives made available to those who need them to prevent unwanted pregnancies. However, since some sexual partners of female adolescents are also male adolescents, it is important that such educational and service delivery programs be offered to both males and females. The specific issue of the older male will be more difficult to address but can probably also be countered with policies designed to improve the social support available to unemployed youths and those that will increase the legal age of entry into marriage and sexual relationships.

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