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PN-AAQ-654

ISN 32934

Fecundity Among Teenagers in Bangladesh

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Prepared for the session on the
"Supply of Children Under Natural Fertility,"
PAA 1983 Annual Meeting

A separate study on menarche and adolescent subfecundity was conducted in other villages in Matlab Thana, and that study can be used to estimate fecundity rates among teenagers. The data consist of observations of 1618 women aged 10 to 20 who were first interviewed in March, 1976, and then followed prospectively for one year; the analysis presented here was drawn primarily from the retrospective information collected during the first interview.

The analysis was divided into two parts. First, we calculated current status estimates (as of the first interview) of the proportion of women having experienced an event (e.g., conception) at each age or duration since some other event, and second, we used a simple hazard model to measure variations in the fecundity of the married Bengali teenager.

Current status reports of the 1516 women who were interviewed in the initial round were used to find the percentages of women having experienced menarche, become married, and begun a first pregnancy by age. By fitting a logistic curve to these percentages a median age was calculated for each of the events of interest: median age at menarche was found to be 16.6, of marriage, 18.2, and of first pregnancy, 19.7. It is important to recognize that the delayed age at pregnancy may partly be a result of delayed age at marriage, and not just a result of adolescent subfecundity.

Table 1 illustrates the proportion married by completed years since menarche, and suggests a median menarche-mar-

riage interval of 2.2 years. This interval has been lengthening over time, however, a fact which must be kept in mind. Table 2 considers the marriage to pregnancy interval for all women, and the calculated logistic median is 2.4 years. If it were reasonable to assume a constant first pregnancy rate with time since menarche, then the 2.4 year marriage to pregnancy interval would suggest a fecundity of 0.035 per month. Under the assumption that there exists a period of adolescent subfecundity, however, it is not reasonable to assume that fecundity is constant with time since marriage: among girls married within one or two years of menarche an increase in fecundity with duration since menarche is expected.

In order to deal with this problem we calculated first pregnancy rates, a procedure which involved translating the retrospectively reported data into exposures and events. An exposure was assigned for each month that each woman was simultaneously married, post-menarcheal, and not pregnant, and an event was assigned in the month of conception (calculated as the 9th month preceding a pregnancy termination) for any woman who did in fact conceive. The results were then tabulated and analyzed through the use of a discrete-time hazard model.

Table 3 demonstrates the rising fecundity by time since marriage: first pregnancy rates rise from .0245 during the first year of marriage to .0427 during the fourth year. The

median waiting time to conception of individuals experiencing the hazards reported in Table 3 (and assuming a constant hazard within each year) is 2.2 years, which is reasonably close to the 2.4 years calculated from the current status information.

Hazard models were then used to test the effect on fecundity of a number of factors. First, if the rising hazard is due to adolescent subfecundity then the hazard should be more closely related to the time since menarche than to the time since marriage. The results supported this hypothesis: it was found that when time since menarche was included in the model, there was little variation in the first pregnancy rate with time since marriage. Second, how is the subfecundity interval affected by the age at menarche? Age at menarche was included as a continuous variable and it was found that the marital first pregnancy rate increased significantly with age at menarche, suggesting that late maturers have relatively short periods of subfecundity. Third, how does socio-economic status affect fecundity? No significant differences were noted in the first pregnancy rate by socio-economic status; despite the fact that a number of socio-economic variables were found to have a significant effect on menarche and adolescent growth.

Finally, first pregnancy rates were tabulated by months of the year. The results appear in Table 4 and Figure 1: the lowest rates are in the summer months (May-September),

while the highest are in February and April. Differences between the teenage seasonal effect and that of the adults may be attributed to (i) differences in temporary separation of older and younger couples and (ii) absence of lactational amenorrhea in nulliparae.

TABLE 1
Percentage of post menarcheal women having married by time since menarche

Completed years after menarche	Percentage Married %	N
0	24.8	133
1	37.4	83
2	54.7	53
3	66.2	65
4	86.8	38
5	85.7	28
6 +	72.2	18
Total	49.3	418

Logist:	
Const.	-1.25
Years since Menarche	.56
Median (years)	2.2
Likelihood Statistic	493

TABLE 2
Percentage of women having begun first pregnancy by years since marriage

Completed years after marriage	Percentage of all women having begun a first pregnancy %	N
0	15.0	80
1	36.0	50
2	66.7	27
3	62.9	35
4	79.4	34
5	86.7	15
6 +	100.0	16
Total	48.6	257

Logist:	
Const.	-1.69
Years since Marriage	.692
Median (years)	2.4
Likelihood Statistic	273

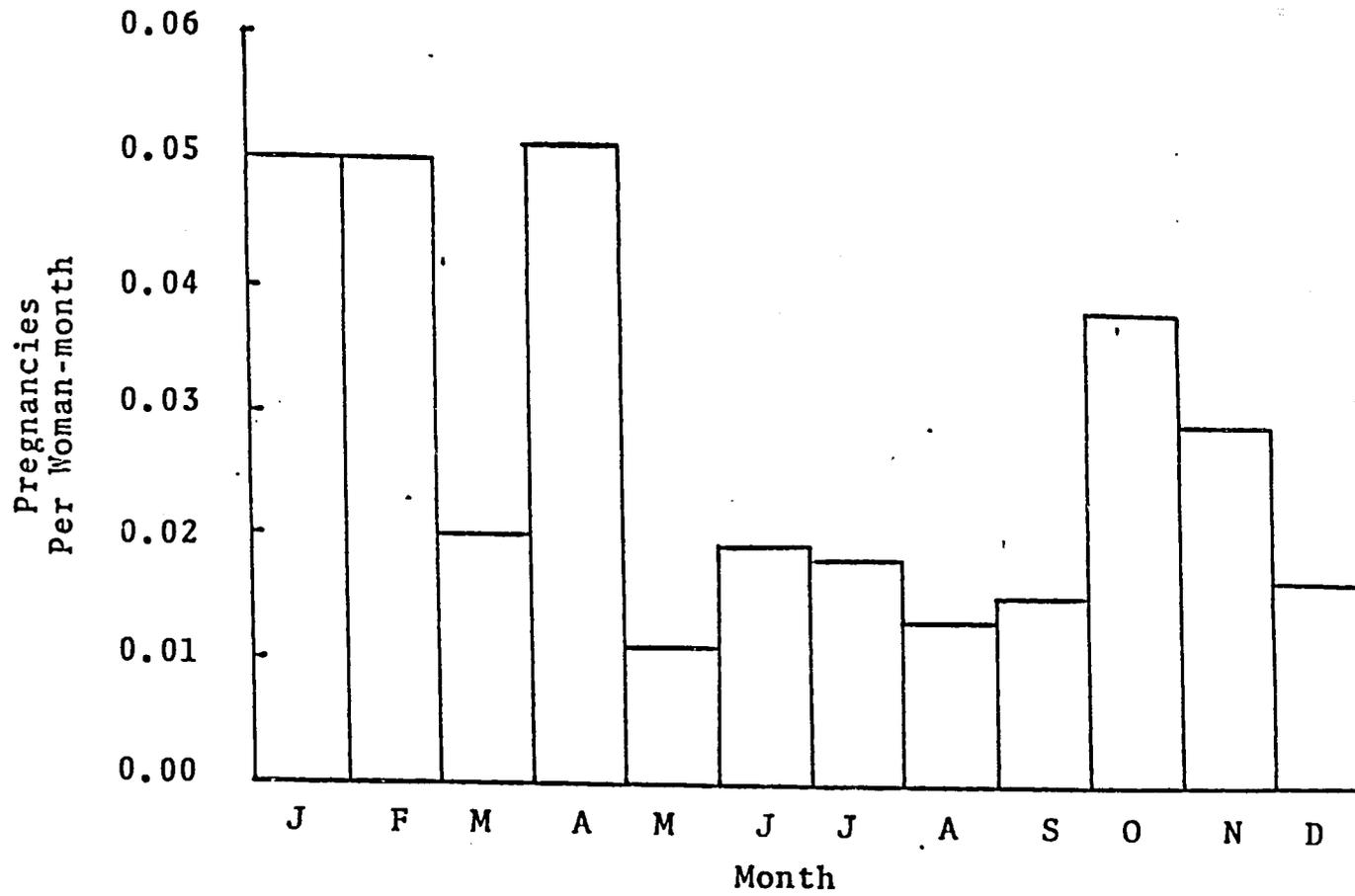
TABLE 3
Hazard rate calculations for married women by years since marriage

Years since marriage	Total Exposure in months	First Preg nancies	Monthly First Pregnancy Rates	1(π)
0	2372	58	.025	1.00
1	1314	36	.027	.74
2	667	20	.030	.53
3	356	14	.039	.37
4	117	5	.043	.23
5	25	2	.077	.14
6	--	--	--	.06
Total	4852	135	.028	--

TABLE 4
Monthly Hazard rate calculations for married women by month

Month of year	Total Exposure in months	First Preg nancies	First Pregnancy Rates
Jan	442	22	.050
Feb	440	22	.050
Mar	445	9	.020
Apr	354	18	.051
May	353	4	.011
Jun	367	7	.019
Jul	380	7	.018
Aug	398	5	.013
Sep	407	6	.015
Oct	417	16	.038
Nov	420	12	.029
Dec	429	7	.016
Total	4852	135	.028

MONTHLY FIRST PREGNANCY RATE
AMONG BENGALI TEENAGERS BY MONTH



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