Education and Nonuse of Contraceptives Among Poor Women in Chiapas, Mexico

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Context: *Relatively little is known about how poverty and illiteracy affect women's decisions to adopt contraception, specifically their likelihood of never having practiced contraception.*

Methods: *A random sample of 883 women in union aged 15–49 living in the Border Region of the Mexican state of Chiapas were interviewed in 1994 as part of a regional survey of reproductive health. Multivariate logistic regression analyses were performed for the sample as a whole and for individual age-groups to determine the relationship between socioeconomic variables and the likelihood that a woman had never practiced contraception.*

Results: *The lack of any schooling at all was independently associated with the likelihood of nonuse of contraceptives, as illiterate women were 1.6 times as likely as those who attended secondary school to have never practiced contraception. Other socioeconomic variables that also independently raised the likelihood of nonuse were delivering at home, having experienced the death of at least two children and not having paid employment at the time of the survey. The effect of schooling on the likelihood of nonuse varied by age: While never having been to school increased that likelihood among both the youngest and oldest women, the magnitude of the effect lessened over time. Moreover, among younger women, socioeconomic variables other than school attendance were more important in explaining nonuse.*

Conclusions: *The increased availability of family planning services in the Border Region of Chiapas over the last 20 years has weakened the direct effect of schooling on contraceptive practice. However, having never been to school remains a strong predictor of never-use of contraceptives in this population.*

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For several decades, researchers have sought to uncover the factors that influence women to adopt contraception. Area of residence, levels of schooling and socioeconomic status have been shown to identify women who are most likely to use—or not to use—contraceptive methods. For example, survey data from developing countries in Asia, Africa and Latin America have consistently shown that rural women with few economic resources and little schooling have especially low levels of contraceptive use.[1] The resulting efforts to promote contraceptive use among these underserved women are based on the belief that fertility rates can be reduced by increasing both information about contraception and access to it.

Relatively few studies, however, have attempted to explain how rural environments, low levels of schooling and poor socioeconomic conditions affect contraceptive practice. In fact, most research that has dealt with these factors has sought to explain how they interact with changes in family size desires or in infant and child mortality rates.[2]

In this article, by contrast, we explore variables related to the nonuse of contraceptives among potential users. We hope to better understand the circumstances, in particular the socioeconomic conditions, that affect decisions to practice contraception in populations that have been targeted for family planning interventions.

We chose to study the determinants of never-use in the Border Region of Chiapas, one of the nine economic and health regions of the southeastern Mexican state of Chiapas. Our analysis centers on the role of schooling in the decision to adopt contraception in the context of other socioeconomic variables; it addresses the impact of these variables on contraceptive decisions over time by looking at women in different stages of their reproductive lives.

Background

The eastern region of the state of Chiapas, which forms part of the Mexico-Guatemala border, has a population of roughly 300,000; in relation both to the entire state of Chiapas and to Mexico as a whole, the region is especially poor.[3] For example, 72% of homes lack a sewage system, compared with 59% for the state as a whole and 36% for all of Mexico.[4] Moreover, the regional and state-level illiteracy rates are both far higher than the national illiteracy rate; 28% of the population aged 15 and older in the border region (and 30% in the state overall) cannot read or write, compared with only 12% in Mexico as a whole.

This border region has been the target of intensive family planning programs over the last few years.[5] Although these programs offer a variety of methods, they especially promote long-term reversible methods (such as the IUD and hormonal methods including the pill and injectables), as well as tubal ligation.

As of 1990, there were 64,000 women of reproductive age living in the Border Region of Chiapas; in 1994, their total fertility rate was 3.7 lifetime births per woman, and 52% were currently practicing contraception at the time of the survey (with 58% ever having done so); among these users, the most popular method was female sterilization (43%), followed by the pill (16%), the IUD (16%), injectables (13%) and "other methods," such as rhythm, withdrawal, the condom and traditional herbal methods (12%).[6]

Data and Methods
Study Sample
The data for the analysis come from a cross-sectional regional survey on reproductive health (the Encuesta Regional de Salud Reproductiva, or ERSREP), which was carried out in 1994. This epidemiologic survey was designed to collect data on all aspects of women's reproductive health, including reproductive morbidity, and to uncover patterns of health care–seeking behavior and the factors underlying such behavior.

The random survey of households, se-

lected through multistage sampling based on census bureau units, yielded an original sample of 1,822 women aged 12–55, which was distributed proportionally among the 17 communities in the random sample. Four subgroups of women to be interviewed from these households were established—those who said they had never had a partner; those who had had a partner but who had never been pregnant; those who had been pregnant at least once, but not in the year before the survey; and those who had recently been pregnant (within the past year).

Data on the proportional distribution of women into these groups were estimated from an earlier pilot study and then used to set quotas for each subgroup; participants were recruited until the quotas were filled. Women from each community had the same probability of being interviewed, and only one woman per household was selected, to prevent overrepresentation of specific household conditions.

To eliminate language problems that could arise from the administration of the Spanish-language survey, only mestizo women—i.e., those of mixed Spanish and Indian descent who speak Spanish only—were eligible for the survey.* Nearly one-third (31%) of the women in the sample lived in sparsely inhabited areas (fewer than 2,500 people), 40% were from medium-sized localities (2,500–10,000 people) and 29% resided in urban areas of more than 10,000 inhabitants.

Data were collected by female social workers who had been trained for more than four weeks in interviewing techniques. The interviews were conducted from June through September 1994. A single, general survey instrument gathered data on the characteristics of the family and dwelling, and the remaining data were obtained

through specific questionnaires administered to women in each of the four subgroups. The language and structure of each questionnaire had been revised using the results of the earlier pilot study. Our analysis considers only currently nonpregnant women of reproductive age (15–49) who were living with a partner at the time of the survey and who were at risk of pregnancy (i.e., potential users of contraceptive methods). These criteria yielded a final sample for analysis of 883 women.

Dependent Variable
The dependent variable was never having used any contraceptive method; we designated "nonuse" rather than "use" as the outcome to avoid the methodological problem caused by having to separate current use from ever-use.

We defined "nonuse" (or never-use) as a "no" response to the item worded "Have you or your partner ever done anything to not have children or to avoid a pregnancy?" The comparison group consisted of women who reported having used at least one contraceptive method, either modern or traditional, including tubal ligation and male methods (such as condoms or vasectomy).

Explanatory Variables
We divided the independent variables considered in the analysis into five categories. Demographic factors consisted of age, type of union (consensual or formal) and type of family structure (nuclear or extended). Socioeconomic factors were area of residence, level of schooling, paid employment outside the home and type of flooring† in the home. Factors affecting access to health services included distance from the home to the nearest medical center and type of insurance coverage. Reproductive history variables were age at first union, age at first pregnancy, number of live births and place of most recent delivery.‡ Finally, as a measure of child mortality, respondents were asked the number of their children who had died.§

Analytic Techniques
We conducted bivariate and multivariate analyses to measure the association between the explanatory variables and never-use of contraception. With the bivariate analysis, we calculated the probability of nonuse associated with each independent variable, as given by the Wald odds ratios (with Wald confidence intervals of 95%). We used the Wald test of statistical significance for the individual and group coefficients, and used likelihood ratio statistics[7] to determine the significant

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*Approximately 87% of the population of the Border Region of Chiapas are mestizo and speak Spanish only.

†We chose having dirt floors (i.e., no concrete covering) as an indicator of household socioeconomic status because it better explained that status than did the availability of public services (water, electricity and a sewage system), the number of rooms, the number of bedrooms, and wall and roofing materials.

‡Although we originally established three categories of place of delivery—for the respondent's first birth, the majority of her births and her most recent one—we noted a strong correlation between all three categories. We ultimately decided to consider the place of the most recent birth only, since of the three, it best differentiated between women who ever used a method and those who never did so.

§We considered the respondent's total number of children who had died, no matter the age, since we thought that experiencing any death of a child creates certain expectations of child survival that can substantially influence decisions on whether to limit family size.

Table 1. Percentage distribution of reproductive-age women in union, by selected characteristics, Border Region of Chiapas, Mexico, ERSREP, 1994 (N=883)

Characteristic	%
Age	
15–24	24.9
25–39	55.8
40–49	19.3
Type of union	
Consensual	30.1
Formal	69.9
Family structure	
Extended	16.3
Nuclear	83.7
Area of residence	
Urban (≥2,500 inhabitants)	55.8
Rural (<2,500 inhabitants)	44.2
Education	
None	18.8
Some primary	46.3
Complete primary	23.4
≥secondary	11.4
Currently employed	
Yes	12.7
No	87.3
Type of floors	
Mud	34.2
Covered	65.8
Distance to nearest clinic	
<1 km	55.8
1–5 km	34.3
≥6 km	9.9
Has social security health insurance	
Yes	11.6
No	88.4
Age at first union	
≤16	38.0
17–19	38.0
≥20	24.0
Age at first pregnancy	
≤16	25.0
17–19	44.5
≥20	30.5
No. of live births	
0–1	18.0
2–3	42.7
4–5	24.6
≥6	14.7
Place of last delivery	
Home	54.8
Medical facility	45.2
No. of children who died	
0	78.7
1	12.9
≥2	8.4
Contraceptive use	
Ever used method	64.2
Never used method	35.8
Total	100.0

Note: In this and the following table, Ns vary slightly because of missing data for five variables—place of last delivery (12 missing values), child mortality (10 missing values), age at first union and first pregnancy (3 missing values for each) and number of live births (10 missing values).

variables (p<.05) to be included in the multivariate analysis.

We then performed unconditional binomial logistic regression analyses using the forward procedure for predictors of nonuse,[8] using two types of models. The first covered all women in the sample and controlled for all explanatory variables that were significant in the bivariate analysis.* Spearman rank correlation coefficients[9] were also calculated to identify the associations between schooling and the other variables that explained nonuse from the initial model.

To further control the effects of age, we constructed a model based on the woman's age-group and performed three separate logistic regressions predicting the likelihood of nonuse for each of three age-groups—15–24-year-olds, 25–39-year-olds and 40–49-year-olds.

Results

Bivariate Analyses
A majority of the women (56%) were aged 25–39, nearly two-thirds had not finished primary school (65%) and 70% were formally married (Table 1, page 133). In addition, most women were not covered by any health insurance (88%) and did not have paid employment (87%). Overall, 36% of the sample had never practiced contraception.

Table 2 presents data on never-use of contraceptives, broken down by social, demographic and reproductive characteristics. The likelihood of nonuse was higher among the least educated women (and increased with decreasing education, a finding echoed in other research[10]). For example, the proportion who had never used a method was far higher among illiterate women than among those who had completed secondary schooling (49% vs. 31%). Rural women were also more likely to have never practiced contraception than urban women (43% vs. 30%). Similarly, the proportions who had never practiced contraception were elevated among women who had experienced the death of at least two children (58%), among those who had had at least six live-born children (56%) and among those who were aged 40–49 (54%).

Results of the bivariate analysis indicated a statistically significant relationship between nonuse and 12 of the 14 individual variables studied. For example, illiterate women were 2.2 times as likely as secondary school–educated women to have never practiced contraception. When the relationship between nonuse and education was examined by area of residence, the same negative association—i.e., that nonuse increased with decreasing education—was evident in both rural and urban areas (Figure 1).

The odds of nonuse were also significant and elevated among women who had lost at least two children, compared with those who never experienced the death of a child (unadjusted odds ratio of 2.8), and among women whose most recent delivery occurred at home compared with those who delivered at a medical facility (2.7). Moreover, women who were not working outside the home were 2.1 times as likely as those who were to have never practiced contraception. Similarly, women whose homes had uncovered mud floors were nearly twice as likely as those whose homes had some type of floor covering to be nonusers.

The probability of nonuse was 83% higher among women who lived in an extended family than among those in a nuclear family, and it was 73% greater among women living in rural areas than among urban areas. Women not covered by social security health insurance were 63% more likely to have never used a method than were those who were covered by such insurance. Moreover, nonuse was 59% more likely among women who first became pregnant at age 20 or older than among those whose first pregnancy occurred at age 16 or younger.

Finally, a U-shaped rather than linear trend was observed for the association between the woman's age and the likelihood of nonuse, as both the youngest women (who had not yet reached their desired

Table 2. Percentage of married women of reproductive age who never used a contraceptive method, and odds ratios for nonuse (and 95% confidence intervals), all by selected characteristics

Characteristic	% never used	Odds ratio	χ^2	p
Age	**na**	**na**	**7.16†**	**.007**
15–24	42.7	2.08 (1.47–2.95)	18.89	.0001
25–39	26.4	1.00	na	na
40–49	54.1	3.29 (2.26–4.81)	43.70	.0001
Type of union				
Consensual	40.6	1.34 (1.00–1.81)	3.84	.050
Formal	33.7	1.00	na	na
Family structure				
Extended	47.9	1.83 (1.28–2.62)	11.01	.001
Nuclear	33.4	1.00	na	na
Area of residence				
Urban (≥2,500)	30.2	1.00	na	na
Rural (<2,500)	42.8	1.73 (1.31–2.28)	15.04	.001
Education	**na**	**na**	**8.82†**	**.003**
None	48.8	2.15 (1.24–3.76)	8.45	.003
Some primary	33.3	1.12 (0.69–1.87)	0.24	.623
Complete primary	32.9	1.10 (0.64–1.92)	0.14	.704
≥secondary	30.7	1.00	na	na
Currently employed				
Yes	22.3	1.00	na	na
No	37.7	2.11 (1.33–3.34)	10.12	.001
Type of floors				
Mud	45.7	1.91 (1.43–2.53)	19.61	.001
Covered	30.6	1.00	na	na
Distance to nearest clinic	**na**	**na**	**0.76†**	**.383**
<1 km	33.9	1.00	na	na
1–5 km	39.3	1.23 (0.07–2.09)	0.66	.418
≥6 km	34.5	1.03 (0.62–1.70)	0.01	.910
Has social security health insurance				
Yes	26.5	1.00	na	na
No	37.0	1.63 (1.03–2.59)	4.36	.037
Age at first union	**na**	**na**	**0.45†**	**.503**
≤16	34.6	1.00	na	na
17–19	35.9	1.06 (0.76–1.47)	0.12	.724
≥20	37.4	1.13 (0.78–1.64)	0.45	.504
Age at first pregnancy	**na**	**na**	**5.55†**	**.019**
≤16	29.1	1.00	na	na
17–19	36.7	1.42 (0.98–2.05)	3.67	.055
≥20	39.6	1.59 (1.07–2.38)	5.82	.016
No. of live births	**na**	**na**	**1.76†**	**.185**
0–1	45.9	2.41 (1.52–3.82)	15.78	.0001
2–3	28.7	1.14 (0.77–1.70)	0.47	.491
4–5	26.1	1.00	na	na
≥6	56.3	3.65 (2.24–5.96)	31.29	.0001
Place of last delivery				
Home	45.1	2.73 (2.04–3.66)	45.73	.001
Medical facility	23.1	1.00	na	na
No. of children who died	**na**	**na**	**16.28†**	**.001**
0	32.5	1.00	na	na
1	37.2	1.23 (0.80–1.90)	0.97	.324
≥2	57.5	2.82 (1.68–4.74)	18.27	.0001

†Mantel-Haenszel chi-square for trend. *Note:* na= not applicable.

*In this case, the unconditional logistic model specifies that the probability of contraceptive nonuse depends on a set of variables x_i (for i=1 to n), in the following way: $Pr(y=1|x) = 1/\{1+\exp[-\beta_0 + \beta_1 x_1 + \beta_2 x_2 \ldots + \beta_j x_{ij}]\}$, where i = 1, 2, . . . n individuals, and j = 1, 2, . . . parameters. The variables denote either the presence (p=1) or absence (y=0) of nonuse, and x denotes a set of n independent variables—$x_i = (x_{i1}, x_{i2}, \ldots, x_{ik})$—that represent any potential factor explaining nonuse.

family size) and the oldest women (who had limited access to contraception in their early childbearing years) were more likely than those aged 25–39 to have never practiced contraception (unadjusted odds ratios of 2.1 and 3.3, respectively). The trend was also U-shaped rather than linear for the association between the woman's number of live births and her likelihood of nonuse. Women who had had at least six children were almost 3.7 times as likely as those who had had 4–5 to have never used contraception, while those who had had only 0–1 live births were 2.4 times as likely to have never practiced contraception.

The bivariate analysis uncovered no significant association between the likelihood of nonuse and the distance from the woman's residence to the nearest medical clinic, however, or between nonuse and age at first union.

Multivariate Analyses

Since the bivariate analysis suggested that many other background factors besides education might explain the likelihood of nonuse, we controlled for all significant variables in a multivariate analysis (Table 3). Seven of the 12 variables that were significant in the bivariate analysis retained their significance in the multivariate analysis. All seven explanatory variables independently raised the probability of nonuse by factors ranging from 1.6 to 2.8. These were, in the order of the magnitude of the odds ratios, the number of children who died (in the comparison between more than two deaths and no deaths only), the age at first pregnancy, family structure, the place of the most recent delivery, paid employment, type of flooring and education—but only in the comparison between illiterate women and those who had completed a secondary education. (As in the bivariate analysis, the multivariate analysis revealed no significant difference in the likelihood of nonuse when women who had some primary school or had finished primary school were compared with those who had had at least a secondary education.)

As the multivariate model suggested that schooling affected nonuse indirectly, we calculated Spearman rank correlation coefficients to identify those explanatory variables through which education would act. Schooling was significantly correlated with all of the other explanatory variables for nonuse, especially the place of last delivery (rho=0.2618, p<.0001), the number of children who died (rho=–0.2505, p<.0001) and age at first pregnancy (rho=0.2014, p<.0001). The association between education and family structure was slightly less strong (rho=0.1434, p<.0001), while that between education and current employment was relatively weak (rho=–0.0826, p=.0154).

Although we considered age in our initial multivariate model, the fact that women have different contraceptive needs and desires over the course of the reproductive life cycle led us to conduct additional multivariate analyses among women of three distinct age-groups— 15–24-year-olds, 25–39-year-olds and 40–49-year-olds. Further, because such a large proportion of the entire sample was younger than age 40 (81%), these initial results were clearly biased toward explanations that relate primarily to women younger than 40 years of age.

In the separate multivariate analyses conducted with 40–49-year-olds (Table 4, page 136), no schooling at all (p=.0036) emerged as a strong predictor of nonuse: Among these oldest women, those who never attended school were more than three times as likely as those who attended secondary school to have never practiced contraception (adjusted odds ratio of 3.1).*

The other variables that independently affected the likelihood of never-use among the oldest women were where they last delivered (with those who delivered

Table 3. Linear logistic regression coefficients and adjusted odds ratios (and 95% confidence intervals) indicating the likelihood of nonuse of contraceptives

Variable	Coefficient	Standard error	p	Adjusted odds ratio
Place of last delivery				
Home	0.8309	0.1611	.0001	2.30 (1.67–3.15)
Medical facility	na	na	na	1.00
Age at first pregnancy				
≤16	na	na	na	1.00
17–19	0.5422	0.1945	.0053	1.72 (1.18–2.52)
≥20	1.0134	0.2175	.0001	2.76 (1.80–4.22)
No. of children who died				
0	na	na	na	1.00
1	0.1453	0.2280	.5239	1.16 (0.74–1.81)
≥2	1.0367	0.2743	.0002	2.82 (1.65–4.83)
Family structure				
Extended	0.8979	0.1987	.0001	2.45 (1.66–3.62)
Nuclear	na	na	na	1.00
Currently employed				
Yes	na	na	na	1.00
No	0.7831	0.2581	.0024	2.19 (1.32–3.63)
Type of floors				
Mud	0.4874	0.1601	.0023	1.63 (1.19–2.23)
Covered	na	na	na	1.00
Education				
None	0.4371	0.1930	.0236	1.55 (1.06–2.26)
Some primary	–0.2601	0.2755	.3451	0.77 (0.45–1.32)
Complete primary	–0.1525	0.2869	.5951	0.86 (0.49–1.51)
≥secondary	na	na	na	1.00
Intercept	*–2.8619*	*0.3249*	*.0001*	*na*

Notes: All variables have a .05 significance level for entry into the model, except two education variables and one child mortality variable. Data are missing for 15 women (N=868). na=not applicable.

Figure 1. Odds of nonuse of contraception, by woman's level of schooling, according to urban or rural residence

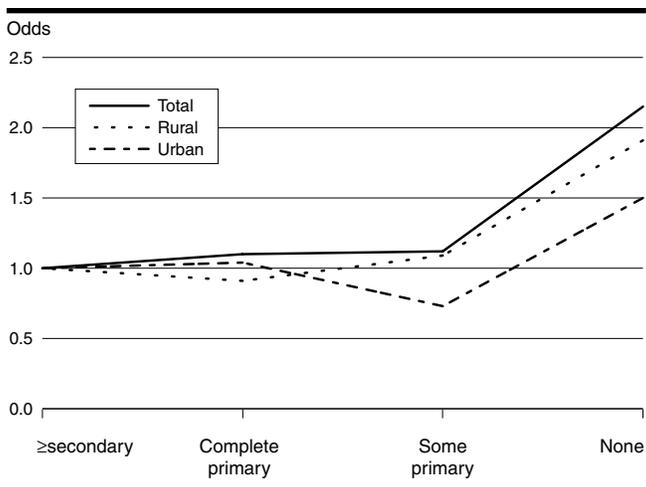*Note:* Mantel-Haenszel chi-square for trend = 8.821, p=.003.

*The analysis also showed no significant association when older women with incomplete primary school were compared with those who had completed secondary school. However, the association was significant, but unexpected and in the opposite direction, when the likelihood of nonuse among older women who had finished primary school was compared with that among older women who had finished secondary school (adjusted odds ratio of 0.10). We believe that this inconsistency can be explained by the interaction between the schooling, family structure and nonuse variables, which we evaluated using a hierarchical log linear model (with three degrees of freedom, χ^2lr= 8.749, p=.0328).

in their homes being 4.5 times as likely as those who delivered in a medical facility to never use contraceptives), their type of union (with women in consensual unions being nearly three times as likely as formally married women to be nonusers) and family structure (with the odds of nonuse being about 80% lower among 40–49-year-olds living in extended families, compared with those living in nuclear families).

Three of these four factors—schooling, place of last delivery and family structure—also independently affected the probability of nonuse among the youngest women in the sample. However, marital status had no effect on the likelihood of nonuse. Instead, age at first pregnancy predicted nonuse among 15–24-year-olds. For example, those who first became pregnant at age 17 or later were 2.1–4.1 times as likely as those who became pregnant at age 16 or younger to have never practiced contraception.

Among women in the middle age-group (25–39 years)—relatively few of whom had never practiced contraception, but who make up the largest part of the overall sample—variables other than education (which did not reach statistical significance) appeared to explain contraceptive nonuse. For example, not working outside the home, becoming pregnant for the first time at age 20 or older, experiencing the death of at least two children, living in an extended family, living in a home with dirt floors and giving birth at home each independently raised the likelihood of contraceptive nonuse among 25–39-year-olds. Most of these variables correspond to impoverished socioeconomic conditions.

Discussion

Although the trend data indicated that education was strongly linked to the likelihood of nonuse in the bivariate analysis (p<.003), only no education at all independently predicted nonuse in the multivariate analysis using the overall sample. In addition, delivering at home, giving birth for the first time at age 20 or older, experiencing the death of at least two children, living in an extended family, not working outside the home and living in a home with uncovered floors all independently raised the likelihood of nonuse among women in the Border Region of

Chiapas. In turn, each of these variables was correlated with schooling.

What is behind this strong and consistent association between late first birth and never-use in the Border Region of Chiapas? In this region, children are highly valued and contraceptives are used primarily to limit rather than to space births. We speculate that women who are older when they first become pregnant are more likely than others to never practice contraception because they have fewer years to accomplish their reproductive goals, and thus are more likely to have reached the end of their reproductive lives without adopting a method.

The results for several variables were not consistent by age-group. Among the youngest women, those aged 15–24, no schooling at all emerged as an explanatory variable, along with the place of last delivery, family structure and age at first pregnancy. Among the 25–39-year-olds, the factors that explained nonuse were family structure, place of last birth, type of flooring in the home, employment, child mortality and age at first pregnancy. Finally, among the 40–49-year-olds, no schooling also played an important role, together with where the last delivery occurred, type of union and family structure.

The opposite results in the family structure variable by age-group—in which living in a nuclear family predicted nonuse among women aged 40–49, but residing in an extended family predicted nonuse among younger women—are probably explained by the

Table 4. Regression coefficients and adjusted odds ratios (and 95% confidence intervals) indicating the likelihood of nonuse of contraceptives, by age-group

Age-group and variable	Coefficient	Standard error	p	Adjusted odds ratio
WOMEN AGED 15–24 (N=209)				
Place of last delivery				
Home	0.9058	0.3057	.0030	2.47 (1.36–4.50)
Medical facility	na	na	na	1.00
Family structure				
Extended	0.8685	0.3094	.0050	2.38 (1.30–4.37)
Nuclear	na	na	na	1.00
Age at first pregnancy				
≤16	na	na	na	1.00
17–19	0.7585	0.3451	.0280	2.14 (1.09–4.20)
≥20	1.3976	0.4520	.0020	4.05 (1.67–9.81)
Education				
None	0.9475	0.4705	.0440	2.58 (1.03–6.49)
Some primary	−0.2506	0.4575	.5838	0.78 (0.32–1.91)
Complete primary	0.1108	0.4685	.8130	1.12 (0.45–2.80)
≥secondary	na	na	na	1.00
Intercept	*−1.8375*	*0.2851*	*na*	*na*
WOMEN AGED 25–39 (N=487)				
Family structure				
Extended	1.1686	0.3192	.0003	3.22 (1.72–6.02)
Nuclear	na	na	na	1.00
Place of last delivery				
Home	0.6058	0.2284	.0080	1.83 (1.17–2.87)
Medical facility	na	na	na	1.00
Type of floors				
Mud	0.5199	0.2281	.0227	1.68 (1.08–2.63)
Covered	na	na	na	1.00
Currently employed				
Yes	na	na	na	1.00
No	1.0011	0.3676	.0065	2.72 (1.32–5.59)
No. of children who died				
0	na	na	na	1.00
1	0.3745	0.3111	.2286	1.45 (0.79–2.68)
≥2	1.0045	0.2943	.0093	2.73 (1.28–5.82)
Age at first pregnancy				
≤16	na	na	na	1.00
17–19	0.4433	0.2943	.1320	1.56 (0.88–2.77)
≥20	0.6130	0.2367	.0096	1.85 (1.16–2.94)
Intercept	*−2.8488*	*0.4037*	*na*	*na*
WOMEN AGED 40–49 (N=170)				
Place of last delivery				
Home	1.5103	0.3911	.0001	4.53 (2.10–9.75)
Medical facility	na	na	na	1.00
Education				
None	1.1364	0.3898	.0036	3.12 (1.45–6.69)
Some primary	−1.2123	0.9461	.2001	0.30 (0.05–1.90)
Complete primary	−2.3359	1.1373	.0400	0.10 (0.01–0.90)
≥secondary	na	na	na	1.00
Type of union				
Consensual	1.0265	0.3911	.0160	2.79 (1.21–6.44)
Formal	na	na	na	1.00
Family structure				
Extended	−1.6582	0.7493	.0269	0.19 (0.04–0.83)
Nuclear	na	na	na	1.00
Intercept	*−2.8488*	*0.4037*	*na*	*na*

Notes: Data are missing for 17 women (N=866). na=not applicable.

40–49, but residing in an extended family predicted nonuse among younger women—are probably explained by the

changes in family living arrangements that occur over the life cycle in this region.* That is, many of the older women who were liv-

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*For example, the cycle begins when a couple marries and starts out by living with the husband's family. When the couple has acquired enough financial resources to live on their own and when their parents die, they move on to form a nuclear family. Finally, when a couple's own children reach marriage age, these children bring their spouses into the home, and thus form an extended family once again.

ing in nuclear families at the time of their interview had, in fact, been living in extended families when they were younger, and the dependent variable—nonuse of contraceptives—refers to that earlier time.

Thus, while the data do not permit us to disregard the direct effect of education on the likelihood of nonuse, other socioeconomic factors had a greater combined explanatory effect. Indeed, lack of education acted together with other socioeconomic factors, so that illiterate women who were living in the poorest social and economic conditions were the most likely to have never practiced contraception at any point in their lives.

It is worth noting that the magnitude of the relationship between no instruction and nonuse was smaller among the youngest women than the oldest (an odds ratio of 2.6 versus one of 3.1) and that the association was less statistically significant among the youngest women, suggesting a lessening of the impact of no schooling over time. What might explain this finding? Two decades ago, when the 40–49-year-olds in the sample were at an age when they were most likely to have children, the family planning program in Mexico was in its infancy and schooling was a key element in having access to both family planning knowledge and services, so women who never attended school were far more likely than those who did to never adopt contraception. By the time the survey was conducted, however, the family planning program had achieved such extensive coverage* that education had become less important in influencing contraceptive use among the youngest women. It is important to note, however, that illiteracy remained an important predictor of women's

never-use of contraceptive methods.

The Border Region of Chiapas, a traditionally poor region immersed in severe poverty, is the target of a massive and largely effective family planning program. Any further increases in prevalence are likely to occur only when the region's entrenched poverty is addressed—that is, when rates of infant and child mortality decline, better housing is available, access to health services improves and women have more opportunities for paid work.

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Resumen

Contexto: *Se conoce relativamente poco acerca del impacto que producen la pobreza y el analfabetismo en la toma de decisiones de la mujer respecto a la anticoncepción, específicamente sobre la probabilidad de nunca haberla practicado.*

Métodos: *En 1994, como parte de una encuesta regional de salud reproductiva, se obtuvo una muestra aleatoria de 883 mujeres en unión, de 15 a 49 años, residentes en la Región Fronteriza del estado mexicano de Chiapas. Se realizó análisis de regresión logística para la muestra en general y para cada grupo de edad en particular para determinar la relación que existe entre las variables socioeconómicas y la probabilidad de que una mujer nunca haya practicado la anticoncepción.*

Resultados: *La falta total de escolaridad estuvo independientemente relacionada con la probabilidad de nunca haber usado anticonceptivos; las mujeres analfabetas tenían 1,5 veces más probabilidad de no haber practicado nunca la anticoncepción que aquellas que habían cursado estudios secundarios. Otras variables socioeconómicas que independientemente incrementaron la probabilidad de nunca haber usado anticonceptivos fueron: haber dado a luz en su casa, que se le hubieran muerto por lo menos dos hijos y no tener empleo remunerado en el momento en que se realizó la encuesta. El impacto de la educación sobre la probabilidad de nunca haber usado anticonceptivos varió de acuerdo con la edad: en tanto que la ausencia total de escolaridad aumentó esta probabilidad entre las más jóvenes y las de más edad, la magnitud de este efecto fue menos pronunciada a través del tiempo. Además, entre las mujeres más jóvenes, otras variables socioeconómicas fueron más importantes que la escolaridad para explicar la falta de uso.*

Conclusiones: *La mayor disponibilidad de servicios de planificación familiar en la Región Fronteriza del estado de Chiapas durante los últimos 20 años, ha disminuido el efecto que tiene la educación sobre la práctica anticonceptiva. Sin embargo, en esta población, no haber asistido a la escuela permanece como una sólida variable predictiva de nunca haber usado anticonceptivos.*

Résumé

Contexte: *L'on en sait peu sur la manière dont la pauvreté et l'analphabétisme affectent les décisions des femmes quant à l'adoption de la*

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*In 1974, Mexico's General Population Law and the General Health Law were modified to more actively promote fertility regulation, and a national family planning program was adopted in 1976. (See: Zavala de Cosio MA, *Cambios de Fecundidad en México y Políticas de Población,* Mexico City: Colegio de México, Fondo de Cultura Económica, Economía Latinoamericana, 1992.) During the 1980s, the program achieved wide coverage throughout Mexico, and in the Border Region of Chiapas in particular. Currently, the government considers family planning to be a very important part of its strategy for social development in poor rural and urban areas and it is actively promoted (see: Poder Ejecutivo Federal, 1995, op. cit., reference 5). As a result of this strong effort, rural and urban health posts are now generally well stocked with contraceptives. (See: Servicios Estatales de Salud en Chiapas, 1996, op. cit., reference 5; Dirección General de Planificación Familiar, 1992, op. cit., reference 5; and Herrera Gutiérrez AA, Evaluación de conocimientos y opiniones sobre métodos anticonceptivos de los prestadores de servicios de Salud Reproductiva en la Región Fronteriza de Chiapas, de marzo a noviembre de 1996, unpublished dissertation, Facultad de Medicina, Universidad Autónoma de Chiapas, Tuxtla Gutiérrez, Chiapas, Mexico, 1996, p. 89.)

contraception, et plus spécifiquement la probabilité qu'elles ne l'aient jamais pratiquée.

Méthodes: *Un échantillon aléatoire de 883 femmes de 15 à 49 ans vivant en couple dans la région frontalière de l'état mexicain de Chiapas a été interviewé en 1994 dans le cadre d'une enquête régionale sur la santé de la reproduction. Des analyses de régression logistiques multivariées ont été effectuées sur l'échantillon au complet et sur les groupes d'âges individuels afin de déterminer le rapport entre les variables socioéconomiques et la probabilité pour une femme de n'avoir jamais pratiqué la contraception.*

Résultats: *L'absence totale de scolarisation*

s'est révélée associée, de manière indépendante, à la probabilité d'absence de contraception, les femmes analphabètes étant 1,5 fois plus susceptibles que celles qui avaient fréquenté un établissement d'enseignement secondaire de n'avoir jamais pratiqué la contraception. Parmi les autres variables socioéconomiques, l'accouchement à domicile, le décès d'au moins deux enfants et l'absence d'emploi rémunéré au moment de l'enquête augmentaient également cette probabilité de manière indépendante. L'effet de la scolarisation sur cette probabilité variait en fonction de l'âge: si l'absence totale de scolarisation accroissait la probabilité d'absence de contraception parmi les

femmes les plus jeunes et les plus âgées, l'importance de cet effet diminuait avec le temps. Parmi les femmes plus jeunes, les variables socioéconomiques autres que la scolarisation expliquaient davantage l'absence de pratique contraceptive.

Conclusions: *La disponibilité accrue de services de planning familial dans la région frontalière de l'état de Chiapas au cours de ces 20 dernières années a affaibli l'effet direct de la scolarisation sur la pratique contraceptive. L'absence totale de scolarisation n'en demeure pas moins un facteur de prédiction puissant d'absence absolue de contraception au sein de cette population.*