The Rural-Urban Difference in Contraceptive Use In Pakistan: The Effects of Women's Literacy and Desired Fertility

by

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and

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Abstract

The 1984-85 Pakistan Contraceptive Prevalence Survey showed that urban women were more than twice as likely to be literate than rural women. In urban areas, literate women were more likely than illiterate women to have reached or exceeded the number of children they desired. Women whose fertility was sufficient or excessive were more likely to use contraception presumably to avert future pregnancies. Therefore, greater literacy among urban women explained an important part of the higher contraceptive prevalence among urbanites for averting future unwanted conceptions.

There is no rural-urban gap in contraception for spacing purposes by literate women. Thus, the rural-urban gap in contraceptive prevalence would vanish more quickly if the national family-planning program emphasized contraceptive methods suitable to spacing births. This emphasis would seem particularly important, as most rural and urban women in our study had not yet reached their desired number of children. This report details the Pakistan Contraceptive prevalence and makes recommendations for family-planning policies.

About the Authors

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THE RURAL-URBAN DIFFERENCE IN CONTRACEPTIVE USE IN PAKISTAN: THE EFFECTS OF WOMEN'S LITERACY AND DESIRED FERTILITY[1]

Introduction

With a population size of 117.5 million, Pakistan is the ninth most populous nation in the world. This population is growing at an annual rate of three percent which, in the absence of any substantial out-migration, will double the population size in 23 years. The main reason for the rapid growth rate is a high birth rate, which the Government of Pakistan has sought to curb with a national family-planning program (FPP). The strategy followed by the FPP in the 1960s and 1970s was to saturate the population with contraceptive supplies and information on their use (Robinson 1978). This strategy, however, has failed, because by the mid-1980s less than 10 percent of eligible couples were using any method of contraception (Population Welfare Division 1986).

The identification of factors that motivate couples to prefer fewer children and to use contraception has been neglected. The present study hypothesizes that two such (interrelated) factors are women's literacy and their desired number of children. This investigation explores how these factors may explain the much lower usage of contraceptives by the rural majority than by the urban minority.

Background

Easterlin (1975) has argued that fertility rates will decline only if couples are motivated to use fertility-control methods and if their market and psychic costs are affordable. As long as couples have fewer surviving children than they desire, however, they will have "deficit fertility" and will lack the motivation to contracept in order to stop bearing children. The motivation to use contraception should be strongest when couples have more surviving children than they desire. Yet motivation is not a necessary condition for the adoption of birth control. Birth control will not be used unless its market and pychic costs are lower than the costs of having more children.

Women's literacy ought to effect not only their desired number of children but also the market and psychic costs of their fertility regulation. In developing countries formal educational systems use primers to teach people how to read. These primers (often published in the West) tell stories about nuclear families wherein husbands and wives are monogamously wed, live apart from the husband's parents, and invest resources in their children while expecting little in return (Caldwell 1980). The type of family system is one in which inter-generational net flow of wealth is greater from the older to the younger generations than the reverse; thus, it makes children expensive. To the extent that literate people in developing countries try to replicate this type of family system, it would be expected that they will desire fewer children

than the illiterate. Perhaps for this reason, female literacy has been generally associated with lower fertility and higher contraceptive usage (Caldwell 1987; Cochrane 1979).

It is not considered important for women to be literate in Pakistan. Because daughters marry and leave their parental homes to live with their husbands' families, the investment in educating girls is viewed as an ultimate loss to parents, even if an ultimate gain to parents-in-law. Because sons will not leave their father's household but will bring brides into it, an educational investment in sons is perceived as yielding dividends in the future. Thus, when Pakistani parents can afford to educate their children, they favor their sons over their daughters. As such, the school enrollment rate for girls is below that for boys; and because the government allocates fewer funds to rural than to urban schools (Sarmad et al. 1988; Tsang and Zaki 1989), the literacy rate of rural females falls below that of their urban counterparts.

These relationships suggest the following hypotheses:

1. Rural women will have a lower literacy rate than will urban women;

2. Illiterate women are more likely than literate ones to have fewer surviving children than they desire;

3. Women with fewer surviving children than they desire are less likely to use contraception so as to avert future childbearing;

4. Therefore, the lower rate of female literacy accounts for much of the lower prevalence rate of current contraception in rural Pakistan, ceteris paribus.

Data and Methods

Data to test the hypotheses were obtained from the 1984-85 Pakistan Contraceptive Prevalence Survey (PCPS), a national stratified random sample of 7,405 currently-married women aged 15-49 years (for details on the sample deign, see Population Welfare Division of Pakistan 1986; for analyses of coverage and errors, see Zaki 1991). As urbanites comprise only 30 percent of the national populations, urban households were over-sampled to yield 40 percent of the survey respondents; this was done to afford a large enough number of cases for multivariate analyses of urban women. Therefore, this survey was particularly well-suited to an analysis of factors discriminating current contraceptive usage by rural and urban residence.

The key variables of our hypotheses were measured as follows. The rurality/urbanity of the respondent's current residence (the independent variable) was judged on the basis of administrative criteria and scored: (1) urban; (2) rural.

Women's literacy (an intervening variable) was gauged with the question: "Can you read a newspaper and write a simple letter?" Those replying affirmatively were scored "1" (literate); otherwise, they were scored "2" (illiterate). In this way, women who had attended school but never learned how to read and write, or who had forgotten how to read and write, were labelled "illiterate," as were women who could only read or only write. This conservative measure of female literacy insured that any of its associations with other study variables would probably be understated.

Another intervening variable was whether the women felt they had a deficient number of surviving children. They were asked: "In your opinion, what is the appropriate number children for a family like yours?" They were also asked: "How many of your children are living now?" The current number of living children was subtracted from the number reported to be appropriate. If the difference was positive, then the woman had a deficit of living children and was scored "0." If the difference was zero or negative, then the respondent had an excess of living children, and was scored "1."

The dependent variable was current usage of contraception. The women were asked: "Are you or your husband currently using some family-planning method or doing something to avoid a pregnancy?" A "yes" response was coded "1," and a "no" was coded "2." Note that this liberal definition acknowledged contraception not only with physician-administered methods but also with traditional or indigenous methods. We characterized women who had an excess of living children and who had contraceptive protection as "the stoppers;" i.e., those who were probably acting on a motive to avert any future pregnancies. If women had too few living children but had contraceptive protection, we called them "the spacers;" i.e., those who were probably using family-planning methods to lengthen the intervals between wanted pregnancies.

Because rural Pakistani women generally marry at a younger age than do urban women and are less likely to divorce, we reasoned that the duration of marriage might be longer, on average, for rural women. The longer duration of marriage might conceal the inhibiting effects of rurality, per se, on contraception, because women who have been married for longer periods have had more opportunity to reach or exceed their desired number of living children. Thus, to evaluate the independent effect of rurality on contraception through the hypothesized intervening paths, we controlled women's duration of marriage with the following scoring: (1) 0-8 years; (2) 9-17 years; or (3) 18 or more years. The length or marriage in years was computed by subtracting the women's reported age at marriage from their reported age at interview.

Findings

Rural women had borne fewer children than urbanites (4.20 and 4.40, respectively) and had fewer surviving children (3.36 and 3.83, respectively) (Table 1). Nevertheless, because rural women reported a larger number of children to be appropriate (5.03 and 4.79, respectively), they had a larger gap between the number of children they wanted and the number they actually had (-1.67 and -0.96, respectively) (Table 1). We named the gap "deficit fertility" and reasoned that women would be discouraged from using contraception until they bore their desired number of children. Hypothesis 1 was accepted because the percentage of literate women was much lower for rural women than for urban women (4.45% and 9.79%, respectively) (Table 1). All these relationships provided a rationale for testing Hypotheses 2 to 4.

Regardless of literacy status, rural women were more likely than urban women to have deficit fertility (Table 2). Consistent with Hypothesis 2, illiteracy increased the likelihood of having fewer surviving children than the number desired by urban women (46.8% of illiterate urban women and 40.0% of literate urban women had deficit fertility [Table 2]). Yet in rural areas, the illiterate were <u>less</u> likely than the literate to have deficit fertility (55.9% and 67.1%, respectively). Hypothesis 2 was thus rejected for the rural population, making it less likely that the lower literacy rate in rural Pakistan would explain a significant part of the lower contraceptive prevalence there.

Regardless of whether they had more or fewer living children than desired, or whether they lived in a rural or urban area, the majority of non-pregnant Pakistani women of child-bearing age was not currently using contraception (Table 3). But were Pakistanis with fewer children than desired less likely to contracept? The data in Table 3 suggest that they were. Among urban women, 25.7 percent of those without a shortage of children were protected by contraception, whereas only 7.9 percent of those with a shortage were protected; odds of contraception if there was no shortage of children = 3.67 = 25.7%/7.0%. Among rural women 9.4 percent of those without a shortage of children were contraceptively-protected from pregnancy compared to only 2.1 percent of those with a shortage; odds of contraception if there were no shortage of children = 4.48 = 9.4%/2.1%. Thus, the odds of contraception by satisfied mothers were actually higher in rural than urban areas. These results did provide support for Hypothesis 3.

It is important for a Pakistani woman to bear the desired number of children as quickly as possible after her marriage begins. Her ability to do so depends not only on how many children she wants but also on how long she has been married. Not surprisingly, the average age at marriage was younger among rural women than it was among urban women (17.21 and 17.65 years, respectively [Table 1]). The average duration of marriage,

however, was shorter for rural than for urban women (13.09 and 13.38 years, respectively) which could be because the average age at interview was younger for rural than for urban women (30.30 and 31.03 years, respectively [Table 1]). Therefore, to evaluate how a greater level of illiteracy might reduce the prevalence of contraception in rural areas below the reduction expected from the shorter average duration of rural marriages, we performed a multiple regression analysis. Because women were not equally divided between those who used contraception and those who did not, the assumption of homoscedasticity fundamental to Ordinary Least Squares regression may not have been met. Thus, we executed a logit regression analysis.

The first logit regression model of current contraception status was estimated for women who claimed to have no deficit in fertility (i.e., women who would presumably use contraception only to avoid future pregnancies). The almost exact correspondence between the likelihood ratio chi-square of this model (4.88) and its degrees of freedom (4) indicated an excellent fit between observed and expected cell means (Table 4). A literate woman had much greater odds of using contraception than an illiterate women (1.447; z-value = 3.415, p < 0.05). The fact that the interaction term between literacy and residence was not statistically significant means that the effect of literacy on current contraception for avoiding future pregnancies was similar for rural and urban residents. But independent of the effect of literacy, the odds of a woman being protected by contraception were even greater if she was from an urban rather than rural area (odds = 1.927). These results show that the lower level of literacy in rural Pakistan does explain a statistically-significant portion of the rural-urban gap in contraceptive prevalence but factors other than literacy explain larger portions. The findings support Hypothesis 4.

A second logit regression revealed that literacy explained a significant and even larger portion of the rural-urban gap in contraception used to space births (Table 5). In fact, among literate women, the rural-urban gap in the percentage of users (spacers) differed only appreciably (4.5% and 5.7%; Table 6), although it remained wide among the illiterate (7.3% of urban-illiterate women used contraception to space births as compared to only 1.9% of the rural-illiterate women). This set of relationships represents a statistically-significant interaction term between residence and literacy (z-value = 2.623, p < 0.05; see Table 5). These results, compatible with Hypothesis 4, imply that raising the literacy rate among rural women will help close the rural-urban gap in current contraceptive use.

Discussion

In the present study, we suggest that maternal literacy in Pakistan should raise the costs and lower the benefits of children to women and should reduce the costs women incur in seeking birth control. We hypothesize that literate women will desire fewer children, will have them earlier, and will be more likely to use contraception to avoid future pregnancies. The 1984-85 Pakistan Contraceptive Prevalence Survey, however, showed that only in urban areas was literacy associated with a greater likelihood of having reached a sufficient or surplus number of living children because women who had reached or exceeded their desired number of children were more likely to be using contraceptives at the time of the survey. A higher literacy rate did account for a statistically-significant portion of the higher prevalence of contraception in urban Pakistan.

According to Easterlin (1975), a sufficient condition for a couple's deliberate regulation of reproductive behavior is that their potential production of surviving children (shaped by environmental impacts on health, as well as by cultural practices affecting the frequency of intercourse, and ovulation) must exceed the number of children desired. A limitation of his theory is a concern with only contraceptive regulation to stop childbearing after the desired number of children has been reached. An innovation of the present study is its analysis of the effect of literacy on rural-urban differences in contraception to space desired births. We found no rural-urban gap in contraception for spacing purposes by literate wives. The findings suggest that the rural-urban disparity in contraceptive prevalence would vanish more quickly if the national family-planning program emphasized contraceptive methods suitable to spacing births. This emphasis seems particularly important because more rural and urban women in our study had not yet reached their desired number of children, although [most] of those who were using contraception were doing so to avoid unwanted births. The modal method of contraception was surgical sterilization of women (30.6% for rural women and 28.7% for urban women; data not in tables), probably because the social and psychological penalties for having mis-timed births are outweighed by those for having more births than one wants.

We found that illiterate urban women were more likely to use contraception in order to space births than were literate rural women (Table 6), a result which highlighted the psychological, financial, and/or physical barriers against contraception, even for rural women advantaged by the ability to read and write. One of these barriers was the time spent travelling to physician-attended clinics, especially by those who must walk long distances or find transport. The distances were longer for rural than for urban women, because a greater percentage of the former than the latter reported riding to a family planning source (74.1% and 61.5%). Another factor that contributed to rural women's greater difficulty

in getting to family-planning clinics was that a much greater percentage of rural than urban women reported bad roads as their number-one transportation problem (16.7% and 1%, respectively). Apparently, a larger percentage of couples would use contraception to space or limit births if contraceptives could be more easily obtained by the 70 percent majority of the population who live in rural areas. It will be easier for rural women to visit physician-attended facilities if transportation routes are improved and more public transportation (such as buses) is provide.

Nevertheless, roads and motorized vehicles will not be enough to increase the demand for family planning in a society where contraception connotes a women's abdication of her moral imperative to be a wife and mother. In such a cultural context, discussing family planning risks a social stigma. As such, if more Pakistani women are able to read, they will not have to depend so much on informal discussions to obtain information on birth control. Policies that facilitate literacy of Pakistani women are therefore vital to successful family-planning campaigns.

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Notes and Acknowledgments

1. The data presented in this paper are part of a larger set in Zaki's Ph.D. dissertation.

Table 1

Some Selected Characteristics of Pakistani Women Based
on the Pakistan Contraceptive Prevalence Survey 1984-1985

Characteristic	Rural (N=3706)	Urban (N=2432)
Mean number of children ever born	4.20	4.40
Mean number of surviving children	3.36	3.83
Mean number of appropriate children	5.03	4.79
Deficit fertility*	-1.67	-0.96
Mean age	30.30 yrs.	31.03 yrs.
Mean age at marriage	17.21 "	17.65 "
Percent literate wives	4.45	9.79
Percent current users	4.20	13.70

Source: Pakistan Contraceptive Prevalence Survey 1984-85.

aThe Total study sample size = 6138 cases after excluding 1212
pregnant women and 44 missing cases.

*Denotes a shortage in the desired number of children:
    (=number surviving - number appropriate).

Table 2

Deficit Fertility by Literacy by Residence for All
Nonpregnant Women in Pakistan, 1984-1985[a]

Deficit Fertility	Urban* %		Rural* %	
	Literate	Illiterate	Literate	Illiterate
Yes=1	40.0	46.8	67.1	55.9
No=2	60.0	53.2	32.9	44.1
Total	100% (N=220)	100% (N=2056)	100% (N=158)	100% (N=3281)

aStudy sample size = 5715.

*Chi-square Urban = 3.68, D.F. = 1, P < 0.05.

*Chi-square Rural = 7.71, D.F. = 1, P < 0.05.

Table 3

Percent Contraceptive Use Among Women by Deficit Fertility
Status and by Place of Residence in Pakistan, PCPS 1985-1985[a]

| Contraceptive Use | Deficit Fertility / Place of Residence | | | |
| | Urban* % | | Rural* % | |
	Yes Deficit	No Deficit	Yes Deficit	No Deficit
Yes=1	7.0	25.7	2.1	9.4
No=2	93.0	74.3	97.9	90.6
Total	100% (N=1050)	100% (N=1226)	100% (N=1937)	100% (N=1500)

aStudy sample size = 5713.

*Chi-square Urban = 138.767, D.F = 1, P < 5 %.

*Chi-Square Rural = 89.421, D.F = 1, P < 5 %.

Table 4

Logit Regression of Current Contraceptive Use (1=Yes; 2=No)
Upon Women's Residence, Literacy and Control Variables,
Among Women Having No Deficit Fertility

Variables	Coefficients (x 2)	Antilogarithm	Z-Value
Intercept	-1.568	0.208	-11.078*
Main Effects			
Residence (1=Urban; 2=Rural)	0.656	1.927	4.634*
Literacy (1=Yes; 2=No)	0.369	1.447	3.415*
Duration of Marriage (1=0-8 years, omitted category; 2=9-17 years;	-0.474	0.622	-2.195*
3=18+ years)	0.203	1.259	1.598
Interaction Effects			
Literacy By Residence	-0.065	0.937	-0.603
Duration of Marriage By Residence (1=0-8 years, omitted category; 2=9-17 years;	0.230	1.259	1.065
3=18+ years)	-0.037	0.964	1.349

Likelihood Ratio Chi-square = 4.88, D.F. = 4, P = .300.

*p < 0.05 (statistically significant).

Table 5

Logit Regression of Current Contraceptive Use (1=Yes; 2=No)
Upon Women's Residence, Literacy and Control Variables,
Among Women Having (Yes) Deficit Fertility

Variables	Coefficients (x 2)	Antilogarithm	Z-Value
Intercept	-3.274	0.038	-12.311*
Main Effects			
Residence (1=Urban; 2=Rural)	-0.030	0.970	-0.141
Literacy (1=Yes; 2=No)	0.112	1.119	0.461
Duration of Marriage (1=0-8 years, omitted category;			
2=9-17 years;	0.084	1.088	0.295
3=18+)	0.132	1.141	0.392
Interaction Effects			
Literacy By Residence	-0.482	0.618	-2.623*
Duration of Marriage By Residence (1=0-8 years, omitted category;			
2=9-17 years;	0.470	1.599	2.643*
3=18+ years)	0.458	1.581	2.479*
Duration of marriage By Residence _Literacy_ (1=0-8 years, omitted category;			
2=9-17 years;	0.184	1.202	0.682
3=18+ years)	-0.150	0.861	-0.467

Likelihood Ratio Chi-square = 4.33, D.F. = 2, P = .115

*p < 0.05 (statistically significant).

Table 6

Contraceptive Use Among Currently Non-Pregnant Women Having (Yes)
Deficit Fertility by Literacy by Residence in Pakistan, 1984-1985[a]

Contraceptive Use	Literate* %		Illiterate* %	
	Urban	Rural	Urban	Rural
Yes=1	4.5	5.7	7.3	1.9
No=2	95.5	94.3	92.7	98.1
Total	100% (N=88)	100% (N=106)	100% (N=962)	100% (N=1831)

aStudy sample size = 2987.

*Chi-square Literate = 0.12, D.F. = 1, P > 0.05.

*Chi-square Illiterate = 50.17, D.F. = 1, P < 0.05.

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