

Trends and Differentials in Contraceptive Practice in Rural and Urban Egypt, 1988-2005

by

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Abstract

This paper examines the trends and differentials in contraceptive use in rural and urban Egypt. We use data from the 1988, 1995, 2000 and 2005 Egypt Demographic and Health Surveys. By comparing the contraceptive practice levels of rural women to those of urban women, we will be able to see whether these differences can be explained by differing compositional characteristics with respect to socioeconomic development and the status of women in rural and urban populations. We will also be able to see whether the differences in contraceptive use of rural and urban women are diverging, converging or remaining the same.

A substantial increase in contraceptive use has occurred both in rural and urban Egypt since 1988. The contraceptive practice rate has increased from almost 30 percent in 1988 to 59.2 percent in 2005. In rural areas in 1988, 24.5 percent of women were using contraceptive compared with 51.8 percent in urban areas. In 1992, 38.4 percent of women in rural areas were using contraceptive method compared with 57.0 percent in urban areas. In 2005, the proportion of women using contraception has increased significantly in rural areas, 56.8 percent compared with 62.6 percent in urban areas. The gap between rural and urban areas in Egypt was narrower in 2005 than in 1988.

An analytical model composed of socioeconomic development, status of women, and family planning variables is tested using logistic regression. The analysis demonstrates clearly that socioeconomic development and women's status significantly impact the use of contraceptive methods in rural and urban Egypt. In 1988, rural-urban differences in contraceptive use were significant, but in 2005 area of residence was not significant. This suggests that family planning programs may have played an important role in providing contraceptive information

and technology to rural areas. Decomposition analysis suggests that the shift in population structure favored increased contraceptive use in Egypt.

Introduction

Data from Egypt Demographic and Health Surveys show that contraceptive practice rate has increased substantially since 1980. Contraceptive use, which had a prevalence rate of 24 percent in 1980, reached almost double in 1992 (47 percent). This represents an extraordinary change nationwide in only 12 years. The fertility rate has fallen to 3.9 births per woman from a level of more than 5 births in 1980. Numerous studies have investigated contraceptive use among Egyptian women, but none has focused on the trends and differentials in contraceptive use in rural and urban Egypt.

The purpose of this paper is to examine the trends and differentials of contraceptive use among currently married nonpregnant women 15-49 years of age living in rural and urban areas in Egypt. By comparing the contraceptive practice levels of the rural women to those of urban women, we will be able to see whether these differences can be explained by differing compositional characteristics with respect to socioeconomic development and the status of women in rural and urban populations. We will also be able to see whether the differences in contraceptive use of rural and urban women are diverging, converging or remaining the same.

In the process we seek to ascertain whether shifts in population composition per se could account for the observed increase in contraceptive use in rural and urban Egypt. Decomposition procedures are used to delineate factors that may have contributed to the observed rural-urban differences in contraceptive use in Egypt.

This study is different from previous studies in many ways. First, nearly all previous studies of Egypt contraceptive use have concentrated on the country as a whole. As a result, the potential effects of rural-urban differences have not been adequately examined. Secondly, although Egypt Demographic and Health Surveys data have been available since 1988, as far as we can determine, no previous study has examined trends and differentials in contraceptive use in rural and urban Egypt. This paper is thus unique because it represents the first attempt to examine trends and differentials in contraceptive use between rural and urban Egypt. This is particularly important because the data cover a period of substantial social and economic change in Egypt. During this period, Egypt made substantial progress in educational attainment and in the reduction of infant mortality rates. Women's participation in the labor force and age at first marriage also increased considerably during this period.

In addition, knowledge of rural-urban differentials in fertility is important for policy purposes. With such knowledge, the design and location of development projects, which indirectly have an impact on fertility, as well as family planning programs which directly affect contraceptive practice, can be chosen and when appropriate, adjusted to suit policy objectives (United Nations, 1987).

Prior empirical studies have yielded various results concerning the pattern and magnitude of rural-urban differences in fertility. Rural fertility consistently has been found to be higher than urban fertility in European and other developed countries. Results for developing countries have not been as consistent. In Latin American and Caribbean countries, a pattern similar to that of developed countries has been observed, where urban fertility is lower than rural fertility (United Nations 1987). In Africa and Asia, however, several patterns have

been observed. In some countries, higher rural fertility has been reported; in other countries, higher urban fertility. In still other countries, no significant differences by place of residence have been reported. However, urbanization in many developing countries has often been associated with higher levels of education, better access to medical care and family planning services, and other social services. Consequently, rates of contraceptive use are expected to be higher in urban than in rural areas. This implies that changes in the residence patterns of a population can lead to changes in fertility. Apart from this, many social trends may begin in urban areas and later spread to rural areas. Thus in predicting fertility levels and trends, it is useful to take into account the magnitude of rural-urban differences in fertility.

Data and Methodology

This study is based on 1988 and 1992 Egypt Demographic and Health Surveys (DHS-I and DHS-II) data. The Demographic and Health Surveys obtained detailed data on contraceptive use and on background information for large, nationally representative samples of 8,012 women of ages 15-49 in 1988 and 9,153 women of ages 15-49 in 1992. Both of the surveys used the same type of questions on contraceptive use and employed the same methodology using female interviewers to administer questionnaires in local languages.

Empirical Model

The empirical model uses a logit equation to evaluate the effect of a select group of variables on the probability of using modern contraceptive methods. The logit model is

appropriate because the dependent variable is dichotomous (Demaris 1992). The logistic regression model for the log odds of contraceptive use is

$$\text{Ln}[P_i / 1 - P_i] = \beta_0 + \beta_1 X_1 + \dots + \beta_n X_n$$

where $\text{Ln}[P_i / 1 - P_i]$ is simply the conditional odds of using contraceptive method, given the explanatory variables (x_i).

Two multivariate logit models are used for this analysis, one for rural areas and the other one for urban areas. We examine the results for differences across areas in terms of the significance of coefficients, as well as in direction and magnitude of the effects of selected variables. Decomposition procedures are also used to delineate factors that may have contributed to the observed difference in contraceptive use. Regression decomposition techniques were used to decompose difference in contraceptive use into its constituent parts (i.e., composition, rates and interaction components). This technique is similar to one developed by Clogg and Eliason (1986), Coombs and Sun (1981), and Iams and Thornton (1975).

The equation for the rural area is

$$\text{Ln}[P_i / 1 - P_i]_{(r)} = \beta_{0(r)} + \beta_1 X_{1(r)} + \dots + \beta_n X_{n(r)}$$

the equation for the urban area is

$$\text{Ln}[P_i / 1 - P_i]_{(u)} = \beta_{0(u)} + \beta_1 X_{1(u)} + \dots + \beta_n X_{n(u)}$$

The difference in $\text{Ln}[P_i / 1 - P_i]_{(r)} - \text{Ln}[P_i / 1 - P_i]_{(u)}$ then is decomposed by using the following equation:

$$\text{logit}_{(u)} - \text{logit}_{(r)} = \beta_{0(r)} - \beta_{0(u)} + \sum P_{i,j(r)} (\beta_{ij(u)} - \beta_{ij(r)}) + \sum \beta_{ij(r)} (P_{ij(u)} - P_{ij(r)}) + \sum P_{ij(u)} - P_{ij(r)} (\beta_{ij(u)} - \beta_{ij(r)})$$

where

$$\text{logit}_{(r)} = \text{Ln}[P_i / (1 - P_i)] \text{ in rural areas;}$$

$\text{logit}_{(u)} = \text{Ln}[P_i/(1-P_i)]$ in urban areas;

$P_{ij(r)}$ = Proportion in the jth category of the ith explanatory variable in rural areas;

$P_{ij(u)}$ = Proportion in the jth category of the ith explanatory variable in urban areas;

$\beta_{o(r)}$ = regression intercepts for rural areas;

$\beta_{o(u)}$ = regression intercepts for urban areas;

$\beta_{ij(r)}$ = the coefficient for the jth category of the ith explanatory variable for rural areas;

$\beta_{ij(u)}$ = the coefficient for the jth category of the ith explanatory variable for urban areas;

This procedure results in four components: 1) the intercept component reflects the difference in the intercepts of the equations for the rural and urban areas; 2) the rates or coefficient component indicates the differences between the slopes; 3) the composition component, indicates the part of the overall differences produced by the independent variables; and 4) the interaction component, which is the covariation or collinearity between the means and the coefficients for the rural and urban areas. This last component can be interpreted as the effect of changing both means and regression coefficients together versus the effects of changing them one at a time (Iams and Thornton 1975).

Explanatory Variables

The dependent variable in this analysis is current use of modern methods of contraception coded 1 for current use and 0 otherwise. We focus on modern methods of contraception because they account for most of the contraceptive use in Egypt. To trace contraceptive use trends, we include several independent variables to control for factors that are incorporated frequently in models of fertility behavior in Egypt and elsewhere (United Nations

1987). Independent variables are grouped into three categories. These are socioeconomic development variables, women's status variables, and the family planning variables that have been shown in earlier studies to be influential in accounting for fertility decline and increases in contraceptive use. Other variables also affect contraceptive use and may have contributed to change over time, but they have been excluded from the analysis, either because they were not adequately measured or they were not included in the data sets. For example, this study excludes variables describing the expansion of family planning services because community-level data on availability and/or accessibility of family planning were not obtained in both surveys.

The importance of women's education as a variable influencing fertility behavior has been documented in several studies both in developed and developing countries (Bellew, Raney and Subbarao 1992; Greenspan 1992; Gomes 1984; Cochrane 1979). Education is expected to influence women's access to modern knowledge and desires for a new ways of life, and hence the extent to which they are familiar with and approve of contraception, know how to acquire and correctly use contraceptive methods and can engage in such new forms of behavior as contraception. In addition, women's education tends to break down barriers to communication about contraception between spouses. As a result of the diminished costs associated with fertility regulation, as well as the motivation arising from their potentially higher supply of and lower demand for children, better educated women are more likely to practice contraception.

The evidence available from developing countries indicates that the fertility enhancing effects of education are strong in societies that are in the early stages of the fertility transition but that, as the process continues, these effects are gradually overtaken by the fertility reducing

effects characteristic of modern societies. For example, an analysis of the relationship between education and fertility in over 30 developing countries concluded that the more developed of these countries often reveal a negative association, whereas the less developed countries were likely to exhibit a curvilinear or positive association (United Nations, 1987). In the present study, respondent's education is a categorical variable indicating whether she has no formal education, primary education (one to five years), secondary education (six to ten years), or a college or university level of education (eleven years or more).

Increased labor force participation of women has been proposed repeatedly in both the demographic literature and population policy statements as a means of promoting development and reducing fertility in developing countries (Miah and Mizan 1992; United Nations 1985). It has been argued that women who work may be more independent and enjoy a more egalitarian marital relationship, which allows them to exercise more control over fertility decisions (Oppong 1983). In addition, some evidence indicates that with increasing education and greater participation of women in the labor force, domestic labor becomes more equally divided between husband and wife. Although women still perform the majority of domestic labor, this change may precipitate a shift to lower desired family sizes among men. Fertility may also be related to the timing of work. Women who work prior to marriage may marry later than women with no pre-marital work experience. They may also develop greater work commitment and motivation to work, thereby raising the opportunity costs of children during marriage.

Substantial empirical work has been carried out which examines the relationship between women's employment and fertility in developing countries. The assertion that

women's employment is negatively related to fertility receives support from most empirical studies. Nevertheless the claim that work is causally related to fertility is, as yet, inadequately examined for Egypt. In this analysis, a woman's employment status is a categorical variable indicating whether she is working outside for money or not.

Region of residence has received increasing attention as a macro structural factor affecting contraceptive use in many developing countries (Haque 1992; Poston and Gu 1987). Studies with this emphasis propose two major explanations for regional differentials in contraceptive use. The socioeconomic hypothesis suggests that regions whose women have low education, limited formal-sector employment, and limited access to health and family outlets may be expected to have low rates of contraceptive use. A second explanation for the importance of region of residence is that it may be as a proxy for ethnic and cultural boundaries that are related to acceptance of contraceptive methods. The important mechanisms through which ethnicity may affect the use of modern contraceptives are norms and customs affecting age at marriage, type of marital unions, postpartum abstinence, breast-feeding, and resilience in the face of innovation (Lesthaeghe 1989; Murty and De Vos 1984). Regions of residence in this study is coded into four categories representing the administrative divisions that were covered by both surveys.

Studies of the relationship between contraceptive use and child mortality yield contradictory findings. Most studies suggest that couples who have experienced the death of one or more children are less likely to use a contraceptive method than those who have not. Yet Van de Walle and Knodel (1980) argue that prior child death may be a sign of an unmet need for contraception. In their opinion child deaths often may be caused by intentional neglect

because the births were unwanted. Consequently, women with prior child deaths may be more highly motivated to practice contraception than those without. Child loss in this study is coded as a dummy variable indicating whether or not the mother has experienced the loss of a child.

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