Family Planning Choice Behavior of Women in Slums in Bangladesh: A Discriminant Analysis

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Why Study Family planning Choice Behavior in Slums?

In Bangladesh, the size of the urban population is growing at an alarming rate. Its urban population constituted only five % of the total population in 1961 but rose to 18 % by 1991. According to the latest population census report (1991) about 21 million people live in urban areas (Government of Bangladesh, 1994). By the end of this century, the urban population in Bangladesh will probably account for 26 % of the country's total population and this figure will increase to 37 % by 2015 (World Bank, 1985). The projected number of upeople in the urban areas in Bangladesh will exceed 80 million by 2020 - this is equivalent to the entire 1977 population of the country (Khuda and Barkat, 1994). The current annual average growth rate of the urban population is about six % in Bangladesh. In comparison to population growth in urban areas, the population in the rural areas of Bangladesh has a two % growth rate. The urban population growth rate in Bangladesh is one of the highest in Asia (UNICEF, 1993).

Even with roughly four % growth in production, agriculture, which is the most vital sector of the Bangladesh economy, can absorb no more than a quarter of the additional labor force (Osmani, 1987). Urbanization in Bangladesh is poverty-driven and caused by an unsustainable rural economy with extreme entitlement contraction among the majority-marginalized peasantry and landless poor (Barkat, 1997).

With urban population growth, the number of slums and the people who dwell in them are rapidly increasing. In 1993, UNICEF estimated that by the year 2000, 25 million poor people would be living in the slums, squatter settlements, and on the streets of Bangladesh (UNICEF, 1993). Dhaka alone has approximately 2,200 slums (CUS, 1992). In 2010, the population of Dhaka is projected to be 17.6 million - up from 7.4 million in 1992 (CUS, 1992), and nearly equal to the current population size of the world's second largest urban agglomeration, Sao Paulo, Brazil. At least 50 % of the urban population of Dhaka will be living in slums (Barkat et al., 1996).
Bangladesh's high rate of growth of slums and population living in slums has serious economic, social, and public health consequences. Although the government has a structured health and family planning service delivery system for the rural poor, it does not have any comparable infrastructure for the urban poor (Khuda et al, 1994). Non-governmental organizations (NGOs) are the primary service providers for the urban poor population. However, some studies report that "NGO services are often selective, less than optimum, and their coverage is incomplete" (Jamil, Baqui, and Paijor, 1993).

The informal sector in urban areas is not yet fully urbanized. Those who live in the slums are largely distressed migrants from rural areas, most of whom live below the poverty line (Haaga, 1992) and maintain the outlook and values of their rural heritage. They do not have sufficient access to the education, employment, and health facilities of the formal sector to attain any higher standard of living. As Haaga (1992) has observed, the health and nutritional status of the urban poor is even worse than that of the rural poor. Infant and maternal mortality rates are higher than the national rates, and around one-third of the people in the slum communities are thought to be ill at any time (Stalker, 1995). Also, more than 80 % of school-aged children in Dhaka slums do not attend school. All these factors are likely to adversely affect the contraceptive behavior of those who live in the slums. These factors possibly also help to explain why urbanization has had little effect on the declining fertility in Bangladesh.
In 1994, the contraceptive prevalence rate (CPR) in slums was 40 %. This figure is much lower than the national rate in urban areas of 54 %, and lower than the national rate in rural areas of 43 % (Barkat et al., 1995). With this trend continuing, even if the family planning program achieves its targeted objectives in the rural and urban formal sectors, the national CPR may not rise enough to attain the national goal of replacement level fertility (NRR=1) by 2005. Authors of a recent national family planning strategic document suggested that, the government must devote special efforts as soon as possible to raise CPR in the slums in order to attain the national goal within the stipulated period (Barkat et al., 1996). However, very little is currently known about reproductive behavior and family planning in the urban slums. To launch an effective family planning intervention, it is imperative to understand the determinants of

family planning practice for the people who live there. The main purpose of the analysis presented in this paper is to learn more about the determinants of family planning choice among women living in the slums in Bangladesh.

Methods and Variables

Sample Design

Of the 2,436 slums in the metropolitan areas, a representative sample of 91 slums was selected using an appropriate statistical formula. In order to reach the respondents - currently married women of reproductive age - a two-stage random sampling procedure was followed. In the first stage, slums were selected using probability proportionate to size according to the number of slums within each selected city. In the second stage, a determined number of households, within each selected slum were chosen using linear systematic sampling technique. This process led to a total of 1,551 married women of reproductive age being selected for the study.
One married woman of reproductive age was interviewed per selected household. For purposes of assessing association between family planning practice and its various determinants, interviewees were dichotomized into those currently practicing family planning and those currently not practicing family planning

Framework for Discriminant Analysis

The objective of discriminant analysis is to predict the likelihood of belonging to a particular group (category) on the basis of a set of independent (explanatory) variables. Such an analytic technique is appropriate for non-metric dependent variables - which applies to the present situation. This type of analysis reveals which specific variables in the profile account for the largest proportion of intergroup differences. Since there are two groups - one representing the respondents practicing family planning and the other representing those not practicing family planning, we construct the two-group model as follows:

$$Z_i = \beta_0 + \beta_1 X_{1i} + \beta_1 X_{2i} + \ldots + \beta_1 X_{ki}$$

where

Z_i = discriminant score of the i^{th} individual.
X_{ji} = value of the j^{th} independent variable for the i^{th} individual
β_j = discriminant coefficient of the j^{th} variable
i = 1, 2, ..., n
j = 1, 2, ..., k

There can be an n-group model, details of which are omitted. An individual was included in a particular group depending on whether her Z-score was greater than or smaller than the critical Z-score. The classification boundary is a 25-dimensional hyperplane in 26-space.

In order to judge the statistical significance between the two groups, we calculated the generalized distance between two groups given by Mahalanobis D^2, worked out as follows.

$$D^2 = (M_1 - M_2)\,\Sigma^{-1}\,(M_1 - M_2)'$$

Where,
M_1= mean vector of groups I using 26 variables

M_2= mean vector of group II using 26 variables

Σ = common variance matrix

D^2 follows the F distribution, which was used to assess whether the two groups were statistically different from each other.

Several qualitative variables were theorized to be closely associated with family planning choice behavior. Thus, it was decided to adopt the procedure outlined, with plausible sociocultural, economic, demographic, and programmatic variables.

Choice of Discriminating Factors

As shown in Figure 1, there are two broad categories of discriminating factors for family planning choice behavior:
Nonprogrammatic, which includes economic, sociocultural, and demographic factors
Programmatic, which includes service delivery mechanisms (home delivery or services at static centers), and service-related knowledge among the clientele population.

In this study, economic variables included family income group, employment status of women or women's involvement in income-generating activities, and husbands' occupation. Sociocultural variables included education of the respondent woman, education of her husband, religious status of the respondent, membership of respondent woman in community organizations, status of mass media exposure, and preference for son. Demographic variables included age group of woman and number of living children.

Programmatic variables (which included outcome of program activities on knowledge of family planning) were household visitation status by field-worker during last six months and receiving service from a satellite clinic. It should be noted that in the national family planning program both the field-workers and the satellite clinics contribute enormously to providing family planning services and supplies to the clients at the grassroots level. Variables showing program outcomes on knowledge included knowledge of modern methods of family planning and sources of contraceptive supplies. Unprompted knowledge about contraceptives and sources of supplies was taken into consideration. The variables included and their characterization is shown in Table 1.

Results and Analysis

Discriminant analysis was used to identify which variables contributed most to distinguishing between the two groups of respondents, those practicing family planning and those not practicing family planning.

Table 2 displays the discriminant analysis results. The results show that movement of a person from the hardcore poor category to the poor and not poor category is somewhat associated with practicing family planning. Centroids of hardcore poors differ greatly between groups practicing and not practicing family planning, which is not the case with the other two income groups. Fifty-three % of women not practicing family planning were hardcore poor. This finding implies that economic status indicated through household income has some influence on decision making about family planning.

Occupation of husbands of responding women is to some extent associated with use of contraception. Of the nonpracticing women, 45 % were day laborers and 26 % did low-grade activities. Involvement of women in income-generating activities has a noticeable impact on family planning practice. Women involved in income-generation activities have a higher centroid for the practicing group. Also, the higher the education level, the more likely the woman is to practice family planning. For example, among women having no education, the centroid is higher among the nonpracticing group, while the opposite is true with respondents having some level of education (primary and above). Seventy-seven % of nonpracticing women have no education. The effect of husbands' education is similar for those having secondary education and above. The centroid for the nonpracticing group with husbands not educated is much higher than that of the practicing group. The opposite scenario exists with husbands being educated up to secondary or higher level.

Religion does not appear to play an influential role while membership of women in community organizations remarkably influences family planning practice. The centroid for women practicing family planning who are members of community organizations is almost double that of the nonpracticing group. Preference for sons also considerably affects family planning practice. The centroid with respect to preference for son for the nonpracticing group is almost

double that of the practicing group. Such a high divergence clearly indicates that preference for son affects family planning practice. Age level, too, has some influence on family planning practice. For example, family planning practice differs remarkably for the middle-aged women. Among the nonpracticing women, 56 % are aged 20-29 years and 32 % are 30-39 years old.

To some extent, the number of living children affects family planning practice. Households visited by a family planning field-worker are more likely to practice family planning. Of those who received a household visit, forty-three % practice family planning. Knowledge of methods and sources of supplies positively affects family planning practice. Of the practicing women, 88 % have unprompted knowledge of modern methods. The case is similar for exposure to mass media.

Wilks' Lambda and F test

The test for Wilks's Lambda is also called the U-test. It is the ratio of the within-group sum of squares (SS) to the total SS. When all observed group means are equal, the value of lambda is unity. When most of the total variability is attributable to group means, or, in other words, when group means differ, lambda is close to 0. According to the results of the present study, 10 variables out of 26, namely, nonpoor, high and low grades of activities, primary and secondary education, religion, age groups 30-39 and 40-49 years, number of living children, and satellite clinic visitation show values of Wilks' Lambda over 0.9. This finding indicates minimal group difference related to these variables, but the remaining variables do show significant group differences. Considering the F-statistic values and the corresponding significance level with 1 and 1549 degrees of freedom, we can say that variables such as income, involvement in income-generating activities, membership in a community organization, preference for son, and the other variables discussed previously, play a significant role in distinguishing between the groups.

Discriminant Function Coefficient

The value of the discriminant function coefficient for a particular variable depends on other variables included in the function. Variables with large coefficients are thought to contribute more to the overall discriminant function. Since an unstandardized coefficient is not a good index of the relative importance of variables, standardized coefficient values have been used in this paper. Thus, adjustment for unequal means and standard deviation allows determination of which variable values contribute to large and small function values. Results presented in Table 2 indicate that values of discriminant function coefficients for different variables coincide with previous results. For example, we previously have argued that variables such as education, profession, and involvement in income-generating activities have a positive impact on family planning practice. For such variables discriminant coefficients are larger than others.
In terms of sociocultural determinants, results show that the educational status of a woman has significant impact on practicing family planning. Educated people are more likely to be conscious of the benefits of family planning. The results presented here appear to be statistically significant and to explain the reality in choice behavior. It also appears that the husband's educational status plays a significant role in family planning practice. One very important determinant of family planning among women living in the slums is the women's empowerment status, indicated by membership in a community organization. These factors play a highly significant role in influencing the use of family planning among women living in the slums.

Another important determinant of family planning practice is preference for son. The greater the preference for a son, the more negative is the attitude towards family planning. Preference for son arises from heredity perception as well as from economic considerations. The nonexistence of an old-age social security package plays a role in this connection. The test results also indicate a highly significant relationship between the age of the woman and family planning practices.

Generally the number of living children is considered to be an important determinant of the women's decision making about family planning practices. However, according to the present analysis, women living in the slums appear not to be inclined to family planning based on the number of living children.

Programmatic efforts encourage positive attitude towards family planning practice. Two important programmatic factors have been incorporated in the current study, visitation of households by a field-worker and use of services at a

satellite clinic. Both of these factors, as expected, appear to play a significant role in the family planning practices in the slums of Bangladesh, as evidenced by the F-statistic and significance level.

Acceptance of family planning largely depends on knowledge and awareness of family planning methods. Two knowledge variables, unprompted knowledge of modern family planning methods and sources of supply, were taken into consideration. These variables appear to be significantly related to family planning practices in the slums. These results are similar to those of other studies on Bangladesh. For example, the Bangladesh Demographic and Health Survey (BDHS, 1998) and a study on family planning in the slums conducted by University Research Corporation in 1996 report similar results.

Discussion

Discriminant analysis has been adopted in the current study on the grounds that it enables one to identify qualitative factors that clearly distinguish between groups.

Based on the analysis of relationships between family planning practice and its possible determinants, it is evident that Bangladesh's programmatic efforts alone will not be enough to expedite the fertility decline in Bangladesh's slums. It is more likely that women's empowerment efforts such as education and involvement in income-generating activities as also community organizations will accelerate the process of declines in fertility. The family planning program effort will theoretically work synergistically with the socioeconomic and cultural efforts discussed here. This analysis indicates that the population issue should be viewed as part of a broader development effort.

Several important short and long-run policy implications emerge from this analysis. For example, the economic status of responding women is positively related to their decision to practice family planning. However, it is unlikely that economic emancipation of those living in the slums and women's economic empowerment will be attained in the short run by implementing an integrated urban and rural development policy. These goals will be achieved only in the long run. From the population policy viewpoint, the creation of demand for family planning services through changes in economic policies is a long-term matter. Moreover, a two-way relationship exists between family planning and economic development. This situation is similar to that of making changes in the educational status of the slum-dwellers, which may be deemed a matter of medium to long-term national policy goals.

These results suggest that in order to attain the goal of lowering population growth in Bangladesh, both programmatic and nonprogrammatic factors need to be taken into account. An expansion of family planning practices is needed, with both horizontal (spatial) and vertical expansion strategies adopted for this purpose.

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