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Family Planning Choice Behaviour in Urban Slums of Bangladesh: An Econometric Approach

By Abul Barkat, Mati Ur Rahman and Manik Lal Bose *

** The authors of this article are Abul Barkat, Professor, Department of Economics, and Mati Ur Rahman, Associate Professor, Department of Statistics, both from the University of Dhaka, and Manik Lal Bose, Systems Analyst, University Research Corporation (Bangladesh), Dhaka, Bangladesh.*

Policy measures, in their dimensions, urgency and intensity, should differ between Bangladesh's metrocities

Urban centres in Bangladesh are burgeoning in terms of their population size. While the country's urban population constituted only 5 per cent of the total population in 1961, it rose to 18 per cent of the total in 1991 (GOB, 1993). It is expected that the urban population will account for 26 per cent of the total population of the country by the end of the present decade (UNICEF, 1987) and 37 per cent in 2015 (World Bank, 1985). Just as the percentages are large, so is the absolute size of this segment of the total population. According to the 1991 Bangladesh census report, about 21 million people out of a total population of about 111.5 million were at that time living in urban areas (GOB, 1994). The current average growth rate of the urban population -- at about 6 per cent annually compared with 2 per cent for the rural population -- is one of the highest in Asia (UNICEF, 1993). To put the situation into even more dramatic perspective in terms of the future, the number of people living in urban areas is projected to exceed 80 million in 2020, which is equivalent to the 1977 population of the entire country (Khuda and Barkat, 1994).

Urbanization in Bangladesh is prompted mainly by "push" rather than "pull" factors. Estimates show that during the remainder of this decade the rural labour force will grow at the rate of 3 per cent per annum. However, even with an estimated 4-per-cent-per-year growth in production, agriculture, which is the most important sector in the Bangladesh economy, can absorb no more than a quarter of the additional labour force (Osmani, 1987). Thus, urbanization in Bangladesh will remain poverty-driven -- caused by an unsustainable rural economy characterized by extreme entitlement contraction among the majority of marginalized peasantry.

With the expansion of urban centres and the increase in the urban population, the number of slums and slum dwellers is also rapidly increasing. If current trends continue, by the year 2000 there will be 25 million poor people in Bangladesh who will be living in slums, squatter settlements, on streets and pavements (UNICEF, 1993). In Dhaka City alone, there are already about 2,200 individual slums (CUS, 1992). In 2010 the Dhaka population will be 17.6 million, more than double its 1992 population of 7.4 million. This projected population is almost equivalent to the current population size of the world's second largest urban agglomeration, Sao Paulo in Brazil. The nature of Dhaka's urbanization is such that at least half of this city's population will be living in slums. In view of all these facts, the alarming increase in the slum population of Bangladesh demands special attention and calls for immediate policy interventions.

The size of the slum population being so large and the rate of growth of slums being so high are factors that have serious demographic implications -- not to mention important economic, social and public health implications -- which impact negatively on the country's development process. Although the Government has structured the health and family planning service delivery system for the benefit of the rural poor, it does not have a comparable infrastructure for the urban poor (Khuda and others, 1994). NGOs are the primary service providers for the urban slum population. However, as noted by one study: "NGO services are often selective, less than optimum, and their coverage is incomplete" (Jamil and others, 1993).

Furthermore, the informal sector in the urban areas is by definition an "unurbanized" sector (or at least this sector has yet to become fully urbanized). Slum dwellers comprise largely distressed migrants from rural areas; more importantly, most of them live below the poverty line (Haaga, 1992). Therefore, they still cherish the outlook and values of the rural poor. Further, even though they live in urban areas slum dwellers are not really capable of attaining the cultural standard of urban life, nor do they have sufficient access to the education, employment and health facilities of the formal sector. Consequently, as Haaga (1992) has observed, the health and nutritional status of the urban poor is even worse than that of the rural poor. She also found that less than 20 per cent of the school-aged children in Dhaka's slums attend school. The infant mortality rate (IMR) and maternal mortality rate (MMR) in the slums are also quite high compared with the national rates. Although the IMR for Bangladesh may seem to be more favourable for urban areas than for rural areas, once the rate is disaggregated, the urban slums not only account for the highest IMR in the country but also demonstrate important gender differentials (Tanner and Harpham, 1995). Also, around one-third of the people in slum communities are thought to be ill at any given time (Stalker, 1995). All these factors are likely to adversely affect the contraceptive behaviour of slum dwellers. Among others, these might be the factors that explain why urbanization has had little effect on Bangladesh's remarkable fertility decline.

In 1994, the contraceptive prevalence rate (CPR) in urban slums was 40.5 per cent, which was much lower than the national urban CPR of 54.4 per cent, and even lower than the national rural rate, 43.3 per cent (Barkat and others, 1995). If this trend continues, it should be a matter of serious programmatic and policy concern for the future owing to the fact that the low CPR in slums may drastically pull down the national figure. Therefore, even if the family planning programme achieves targeted objectives in the rural areas and the urban formal sector, the national CPR may not rise to the expected level to attain the national demographic goal of replacement level fertility (about 2.1 children per woman) by 2005. Considering the above

concerns, a recent national family planning strategic document has suggested that the Government should devote special efforts as early as possible to raise the CPR in the urban slums in order to attain the aforementioned national demographic goal within the stipulated period (Barkat and others, 1996). However, in order to launch any effective family planning intervention in the urban slums, it is imperative to know the determinants of family planning practice in those slums. Unfortunately very little is known currently about reproductive behaviour and family planning in urban slums. Therefore, the present study purports to fulfil this urgent need and fill in the gap in knowledge about the determinants of fertility regulation in the urban slums of Bangladesh.

Methodology

Sample design

From a total of 2,436 slums distributed in different proportions in three metropolitan areas, namely Dhaka, Chittagong and Khulna, a representative sample of 91 slums was selected, using an appropriate statistical formula. In order to reach the respondents, i.e. currently married women of reproductive age (MWRA), a two-stage random sampling procedure was followed. At the first stage, slums were selected using probability proportional to size (PPS) according to the number of slums within each selected city. At the second stage, a number of households within each selected slum were chosen using linear systematic sampling technique. The distribution of slum households surveyed in each city is shown in table 1.

Within each selected household, one MWRA was interviewed. Interviewees were dichotomized as "currently practising family planning" and "currently not practising family planning" for the purpose of constructing the econometric model.

Table 1: Sample size of married women of reproductive age (MWRAs) by slums in the metropolitan cities of Bangladesh

Name of metropolitan area	Total slum households	Proportion of total households	No. of households surveyed (=MWRAs surveyed)	No. of MWRAs practising family planning
Dhaka	126,392	0.76	1,179	533 (45.2)
Chittagong	29,049	0.18	279	92 (33.0)
Khulna	10,399	0.06	93	48 (51.6)
Total	165,840	1.00	1,551	673 (43.4)

Note: Figures in parentheses indicate contraceptive prevalence rates.

Construction of econometric model

The econometric model was constructed to reflect the fact that a person has an inherent attitude and intensity of desire that motivates him or her to choose a particular course of action. Such a desire may be denoted by a latent variable, y * , which is influenced by a set of factors characterized by economic, socio-cultural and community conditions. Such factors may be denoted by a vector, x. Beyond the assignable factors included in x, there are some random factors which supposedly have some impact on y * . All those random factors are included in a term called "random error" denoted by ε. Thus, the desired model in the latent variable framework has been formulated as follows:

$$y_n^* = X_n^1 \beta + \varepsilon_n$$

where y * is the latent variable indicating the desire of a person to practise family planning, ß is the kx1 vector of parameters to be estimated, and such parameters provide the marginal contributions of the corresponding factors to y * . In reality however, y * is not observable but there is an observable indicator variable, Yn, which is given a value, either 1 or 0, as follows:

$$Y_n = \begin{pmatrix} 1 \ if \ y^* > 0 \\ 1 \ if \ y^* \geq 0 \end{pmatrix}$$

Yn = 1 means that a particular person has made a choice, whereas Yn = 0 indicates just the opposite. Yn = 1 can happen only when the intensity of desire y * has exceeded some threshold value which, without loss of generality, can be taken to be 0. Owing to the combined impact of x, a person will be represented by 1 or 0. In our case, Yn = 1 indicates the relative

desire for practising family planning compared with not doing so. Because this model resembles a dichotomous choice model, it may be safely estimated in the framework of a binary probit or logit model. In the current situation, the authors opted for the former.

Choice of regressors

A brief discussion on the regressors included in our model is presented below. The variables included in the model, with relevant symbol, characterization and percentage distribution of the respondents by selected characteristics, is depicted in table 2.

Table 2: Symbol and characterization of the variables

Name of variables	Symbol	Characterization of the symbol
Economic variables		
Income group of the family (monthly income in *Taka* [US$1=43 taka in 1996])	*I*1	1 Hardcore poor: <2,027 Taka (51.4%); 0 otherwise
	*I*2	1 Poor: 2,027-2,701 Taka (16.0%); 0 otherwise
	*I*3	1 Not poor: 2,702+ Taka (32.6%); 0 otherwise
	*Ho*1	1 Better activities (28.7%); 0 otherwise
Occupation of the husband	*Ho*2	1 Low-grade activities (28.6%); 0 otherwise
	*Ho*3	1 Day-labourer (42.7%); 0 otherwise
Employment status of women	*We*	1 Women involved in IGA (16.9%); 0 otherwise
Possession of electronic devices	*Em*	1 Having radio/TV (21.4%); 0 otherwise
Socio-cultural variables		
	*Ew*1	1 No education (74.2%); 0 otherwise
Education of women	*Ew*2	1 Primary education (20.5%); 0 otherwise
	*Ew*3	1 Secondary and above (5.3%); 0 otherwise
	*Eh*1	1 No education (50.5%); 0 otherwise
Education of husband	*Eh*2	1 Primary education (29.6%); 0 otherwise
	*Eh*3	1 Secondary and above (19.8%); 0 otherwise
Religion	*Re*	1 If a Muslim (95.9%); 0 otherwise
Women's membership	*Mw*	1 Member of a community organization (11.2%); 0 otherwise
Demographic variables		
	*Aw*1	1 Age $\leq$ 19 years (9.1%); 0 otherwise
Age group of women	*Aw*2	1 Age 20-29 years (57.6%); 0 otherwise
	*Aw*3	1 Age 30-49 years (33.3%); 0 therwise
Number of living children	*Lc*	Exact number of living children
Son preference	*Sp*	1 Want son (22.8%); 0 otherwise
Years spent living in the same slum	*Yr*	Exact number of years
Programmatic variables		
Household visitation by field worker	*FW*	1 Visited during previous 2 months (38.8%); 0 otherwise
Obtaining services from satellite clinic	*SC*	1 Obtaining services (19.5%); 0 otherwise
Knowledge variables		
Knowledge about family planning methods	*Km*	1 Knowledgeable (83.5%); 0 otherwise
Knowledge about source of supply	*Ks*	1 Knowledgeable (70.6%); 0 otherwise
Knowledge about side-effects	*Ke*	1 Knowledgeable (50.2%); 0 otherwise

Notes: Figures in parentheses indicate percentage distribution of samples by relevant indicator. See text for meaning of abbreviations.

Economic variables: In this category we have included family income group, women's involvement in income-generating activities (IGA), husbands' occupation and possession of certain electronic devices denoted by dummy variables I, We, Ho and Em, respectively. In the context of Bangladesh, these economic variables supposedly influence the choice behaviour of family planning.

Socio-cultural variables: This group of variables comprises three parts, namely education of both husband and wife, religious status of the respondent, and membership of the respondent in a community organization. These variables are indicated by Eh, Ew, Re and Mw, respectively, all of which socio-cultural variables are supposed to have an influence on family planning practice in Bangladesh, as evidenced by the findings of the national Contraceptive Prevalence Surveys, Demographic and Health Surveys, and Health and Demographic Surveys.

Demographic variables: Demographic factors undoubtedly bear a close relation to choice of family planning practices. In this category, age-group of the woman, son preference, number of living children and number of years living in the same slum have been included. These variables are denoted by Aw, Sp, Lc and Yr, respectively.

Programmatic variables: There are several programmatic factors which have an impact on motivating people towards practising family planning. In this category, household visitation status by a field worker during the previous two months and obtaining services from a satellite clinic have been considered. These variables are represented by FW and SC, respectively. It should be noted here that in the national family planning programme both the field workers (through interpersonnel communication and linkages) and the satellite clinics (as the decentralized form of the lowest tier static centre) contribute enormously in the provision of family planning services and supplies to the clients at the grass-roots level.

Knowledge variables: Use-continuation and use-effectiveness of family planning depend largely on the state of informed choice of family planning, which in turn is a function of various knowledge variables. Thus, under this category, knowledge about family planning methods, sources of contraceptive supplies and side-effects have been included. These are denoted by Km, Ks, and Ke, respectively. Only unprompted knowledge about clinical and non-clinical (modern) contraceptives, source of supplies and side-effects have been taken into consideration. Since the status of these knowledge variables is mostly the outcome of programme implementation, they could be grouped under the programmatic variables. However, in view of the multiple sources of knowledge (including that of the family planning programme), relative independence of knowledge variables and the need for designing variable-specific programme interventions, the knowledge variables are treated as an independent set.

Results and analyses

The estimation results of the choice model are presented in table 3. The estimation results show that progression of a person from the categories of "hard-core poor" and "poor" to the "not poor" category bring about a positive attitude towards practising family planning. The households in the "not poor" category, by definition, are those having an income higher than the per capita national income; couples in these households possess a highly positive attitude towards family planning practice. This implies that the economic status indicated by household income has considerable influence on people's decisions concerning family planning practices. This is true not only for the sample as a whole but also across the metropolitan areas. This factor is seen as playing a significant role in this regard, although not equally in all three cities. A similar interpretation is also true for the occupational status of husbands. Respondents by husband's occupation, except under the category "labour", responded positively about the use of a family planning method. Involvement of the respondents in income- generating activities has a significant positive impact on family planning practice. The same is true with regard to possession of electronic devices; a considerable amount of IEC (information, education and communication) messages on family planning are transmitted through electronic media and those messages appear to have a significant positive impact on those having a radio and/or television.

In terms of the socio-cultural determinants, it is evident from the estimation results that upliftment of the educational status of a woman prompts her to practise family planning. Progression of a woman from having "no education" to having attained a "primary and above" education preserves the positive impact on continuation of the practice of family planning. Educated people are more conscious of the beneficial consequences of family planning than are their non-educated peers. The above results appear to be statistically significant and explain the reality involved in choice behaviour. However, it appears that husband's educational status has a less significant impact on family planning practice compared with that of the female respondent.

Table 3: Results of model estimation

Name of variables	Symbol	Characterization of the symbol
Economic variables		
	*I*1	1 Hardcore poor: <2,027 Taka (51.4%); 0 otherwise
Income group of the family (monthly income in *Taka* [US$1=43 taka in 1996])	*I*2	1 Poor: 2,027-2,701 Taka (16.0%); 0 otherwise

	*I*3	1 Not poor: 2,702+ Taka (32.6%); 0 otherwise
	*Ho*1	1 Better activities (28.7%); 0 otherwise
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	*Aw*3	1 Age 30-49 years (33.3%); 0 therwise
Number of living children	*Lc*	Exact number of living children
Son preference	*Sp*	1 Want son (22.8%); 0 otherwise
Years spent living in the same slum	*Yr*	Exact number of years
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Knowledge variables		
Knowledge about family planning methods	*Km*	1 Knowledgeable (83.5%); 0 otherwise
Knowledge about source of supply	*Ks*	1 Knowledgeable (70.6%); 0 otherwise
Knowledge about side-effects	*Ke*	1 Knowledgeable (50.2%); 0 otherwise

Note: The level of significance considered is 5 per cent.

One interesting feature of family planning choice behaviour is related to the role of a respondent's religious affiliation. This study shows that change of a person from the non-Muslim to Muslim category has only an insignificant, although positive, impact on family planning practice, which contravenes the usual notion that "Muslim women are reluctant to practise family planning". This finding is true for the whole sample as well as for the metrocities. One spectacularly important determinant of family planning behaviour among slum women is a woman's empowerment status as indicated by membership in a community organization. This factor plays a positive and significant role in the practice of family planning and this is true across individual metrocities and for the whole sample.

Young women in the age group of 19 years or younger were found to possess a negative attitude towards family planning practice, whereas for women in the age group 20-29 years just the opposite notion is true. Women in the age group 20-29 years respond highly significantly and this scenario prevails in all three metrocities. Women in the still higher reproductive age group (40-49 years) also show a positive attitude, although not significantly. Up to 19 years of age, women generally have few children and thus their tendency to practise family planning is less pronounced than for women already having a number of children. Moreover, because consciousness and awareness also play a role here, teenagers are less likely to be informed about family planning benefits than older women.

The number of living children is an important determinant of a woman's decision about the practice of family planning.

According to the present study, slum women appear to be very sensitive about family planning depending on the number of their living children. For every increase of a living child, the women were found to respond to family planning positively and significantly. This was true for the whole sample as well as for each metrocity. The higher the number of living children, the greater is the practice of family planning.

Another important determinant of family planning practice is son preference. The greater is son preference, the higher is the negative attitude towards family planning acceptance. Son preference arises from biased cultural perceptions as well as from economic considerations. In this connection, the non-existence of an old-age social security package plays a role in Bangladesh society and slum dwellers are no exception. Women living in a slum who desire to have a son show significantly negative attitudes towards family planning.

The length of stay in the current slum bears an insignificant but positive impact on family planning practices, and this bears some relation to urban influence. The current results provide only feeble support for the common NGO assertion that, owing to high inter-slum movement of slum dwellers, vigorous family planning activities cannot be launched or followed up. In our study, such movement was found to play a very insignificant role in the practice of family planning.

Among programmatic factors two important ones have been incorporated in this study, namely the visitation status of households by field workers and the obtaining of services at a satellite clinic. Both of these factors have turned out to have played a significant and positive role in the volume of family planning practice in the urban slums of Bangladesh.

The status of family planning acceptance depends largely on the knowledge and awareness of the persons concerned. Three knowledge variables, namely knowledge about family planning methods and their sources of supply as well as knowledge about the possible side-effects of various family planning methods, were taken into consideration. All these variables appear to have made a positive contribution towards the practice of family planning in urban slums. However, the impact of each of them across metrocities is not equally significant.

Discussion

The research methodology in the framework of the econometric model (choice model) has been adopted in the current study on the ground that such an approach enables one to identify in an elegant way the relative importance of the factors affecting a phenomenon. The parameter estimates of the constructed model exhibit consistency with the findings of other studies, although some of the estimates appear to be statistically insignificant.

Several important policy implications emerge from the analysis presented in this article. Some of the policy implications are short-run (immediate) and some are long-run. For example, the choice model analysis shows that a higher economic status among respondents has a strong positive relationship with people's decision to practise family planning. However, in the context of Bangladesh it is most unlikely that slum dwellers' economic emancipation and women's economic empowerment will be attained in the short-run through the implementation of an integrated urbanization and rural development policy; such events might be achieved only in the long-run. Thus, from the population policy viewpoint, demand creation for family planning services through changes in economic policies is a matter of exogenous shocks. Quite similar is the case of changes in the educational status of slum dwellers, which may be deemed as a matter of medium- to long-term national policy goals.

The factors which will accelerate the process of "ideational change" through a reduction in the widespread perceptional changes for practising family planning, enhancing knowledge about population issues and family planning methods, increasing knowledge about availability of family planning services at the various types of health and family planning facilities, as well as widening the spatial coverage of family planning services can be encompassed within a well-designed short-term family planning and social policy framework. In the short-run, the factors noted above can be effectively tackled, with the purposeful utilization of resources, through the following:

The undertaking of concerted IEC efforts by various inter-sectoral agencies, health and family planning field workers of the Government and non-governmental organizations (NGOs). Also, in order to ensure more effective IEC, the development of innovative NGO service-delivery models and innovative use of the mass media, especially radio, should be considered actively by the relevant policy makers and planners;
Deploying FP-MCH (family planning and maternal and child health) service providers in those slums which are not yet covered by such services;

Establishing satellite clinics in all slums and providing more good quality FP-MCH services;
Ensuring regular visitation and effective counselling by field workers of low-parity young couples and non-users;
Improving the quality of FP-MCH services and supplies, which in turn will ensure informed choice, and ultimately increase both continuation and use-effectiveness of all family planning methods; and
Encouraging male participation in population activities.

The long-term policy interventions should be pursued along with short-term ones for attaining a sustained family planning programme. "Beyond family planning" measures such as creation of job opportunities for women, involving women in community organizations and undertaking literacy programmes need to be implemented in order to generate a higher demand

for and acceptance of family planning among slum couples.

The findings presented in this article lead us to conclude also that policy measures, in their dimensions, urgency and intensity, should differ between Bangladesh's metrocities. In this respect, programmatic factors such as the visitation status of field workers, services at satellite clinics and knowledge of respondents about sources of method supplies appear to be weaker in Khulna's slums compared with those of the other two cities.

Among all policy implications emerging from the foregoing analysis of the choice behaviour model, the most crucial is that the programmatic factors dealing with short-term policy measures should be viewed as the "torch-bearer" for paving the way to widen family planning use and thereby to reduce substantially the unbridled growth in size of Bangladesh's slum population. It is evident from the findings that informed choice is very effective in promoting family planning, and slum dwellers' choice is very elastic as it relates to knowledge about individual modern methods, source(s) of supplies and side-effects. Analysis of the model estimates also suggests that younger slum dwellers should be exposed more to IEC activities aimed at disseminating information about the beneficial impacts of family planning so that the "population explosion" in the slums of major cities can be suppressed in the immediate future. Further, the increasing population of teenagers may be expected to act as intermediaries in current efforts to accelerate the process of achieving replacement level fertility by the year 2005. The analyses presented in this article also prompt us to conclude that, in view of the increasing importance of the urban slum segment of the population, as well as owing to the lack of reliable information about the various dimensions of reproductive health behaviour of the slum population, the conduct of nationally representative studies on these matters should be given top priority.

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