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Modelling the First Two Delays of the "Three-Delays Model" for Emergency Obstetric Care in Bangladesh : A Choice Model Approach

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The paper analyzes the factors responsible for the delay in the women's decision to seek emergency obstetric care by urban and rural women in Bangladesh.

Key words : Bangladesh, Emergency Obstetric Care, maternal mortality.

Maternal mortality is a serious health concern in Bangladesh. Estimates show that with the current maternal mortality rate of 6 per 1000 live births, about 37,000 mothers die each year due to causes related to pregnancy and child birth (UNICEF 1995). The estimated life-time risk of dying from pregnancy and child-birth related causes in Bangladesh is about 500 times higher than in the developed countries (Barkat A 1995). More than 100 mothers die each day in the very process that brings forth new life.

Studies show that only 5 percent of about 600,000 obstetric complication patients attend medical facilities, 27.5 percent of pregnant women receive some prenatal care, only 3.5 percent of women go for institutional delivery, and visits for postnatal care are virtually absent (Barkat 1995; Mitra SN et al. 1994). Another study on the maternal morbidity situation in rural Bangladesh shows that 96 percent of deliveries take place at home and women are aware of health problems associated with child birth, but their use of formal health services remains extremely low (Rahman A 1994). Again, a midterm evaluation report on traditional Birth Attendants (TBA). Training indicates only 26 percent utilization of the trained TBAs in a community (National Institute of Population Research and Training 1992). According to a study of MCH-FP Extension Project of the International Center for Diarrhoeal Disease and Research, Bangladesh, only 6 percent of the recent births were attended by trained TBAs (Mirza T et al.). The most recent Bangladesh Demographic and Health Survey shows that 35.7 percent of urban women and only 6.7 percent of rural women take assistance at delivery from medically competent persons: doctors, trained nurses or midwives (Mitra SN et al. 1994).

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In order to reduce the relatively high rate of maternal mortality in Bangladesh, programs like family planning, prenatal and postnatal care, TT immunization, identification of high risk pregnancies, TBA training and promotion of safe birth practices have been undertaken. While these interventions can influence maternal mortality and neonatal mortality, it has been realized that without proper facilities for case management of major obstetric complications, the lives of mothers cannot be saved (Obstetrical and Gynaecological Society of Bangladesh/UNICEF 1993; Haque and Mostafa 1993; Barkat A et al. 1995; Maine D 1993). It is obvious that in order to be able to maximize saving lives and minimize morbidity, emergency obstetric care services should be available at the most peripheral levels of health care. However, considering the large population size (118 million and 820 persons per Km^2) and resource constraints (US$ 220 per capita GNP) in Bangladesh, this is an almost impossible target to achieve in the short-run. Therefore, to make an emergency obstetrical program implementable, the government has divided the emergency obstetric care service delivery into three categories for the various administrative/geographic units, as shown in Table 1: (a) *obstetric first aid at the most peripheral level (Union)* administers parenteral oxytocic dr (ergometrine), parenteral antibiotics, parente sedatives/anticonvulsants; (b) *basic EOC service the mid-level (Thana)* performs all functions obstetric first aid, plus manual removal of place and assisted vaginal delivery (vacuum extracti forceps); and (c) *comprehensive EOC services at higher-level (District and above)* performs all those functions included in Basic EOC plus surg (e.g., caesarean section, curettage) and blo transfusion (Obstetrical and gynaecological Soci Bangladesh 1993; Barkat A et al. 1995). It is evide from the estimates presented in Table 1 th according to the government policy at least o facility providing emergency obstetric care first a services should be available for 20,000 populatic at least one facility for basic services should l available for 200,000 population, and at lea one facility for comprehensive emergency obstet care service delivery should be available for abo 2 million population. Information presented Table 1 also indicate that there are still 761 unio (4451 minus 3200 minus 490 unions at the Thar HQs) without any Family Welfare Centers, and Thanas (490 minus 358 minus 64 thanas the District HQs) without any Thana Healt Complexes.

Table 1 *Government facilities for EOC services - Bangladesh*

Administrative-geographic location/unit (from the lowest to the highest)	Name of the EOC service facility	Total number of facilities	Population per facility	Type of EOC services available according to the government policy
Union (4451)	HFWC (Health and Family Welfare Center)	3200	20,000	First aid
Thana (490)	THC(Thana Health Complex)	358	200,000	Basic services
District (64)	DH(District Hospital)	64	1,875,000	Comprehensive services
	MCWC (Maternity and Child Welfare Center)	93 a/	1,100,538	Basic services
Division (6)	MC & H(Medical College and Hospital)	13	9,230,769	Comprehensive services

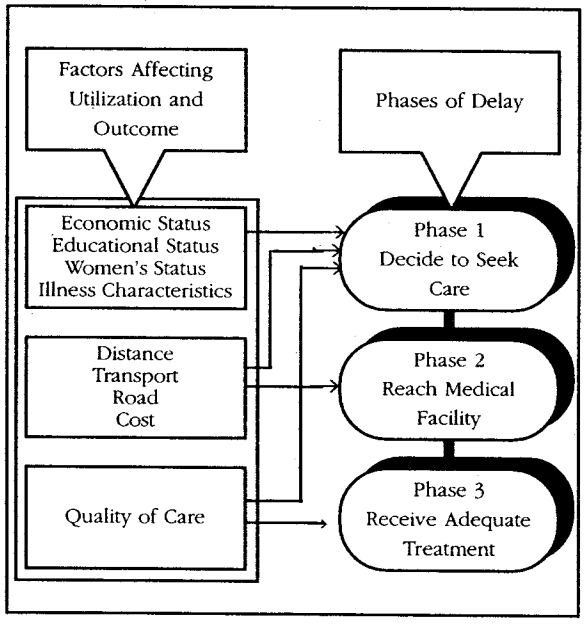
Figures in the parentheses show the number of the administrative - geographic units.
a/ 50 MCWC at the district level and 43 MCWC at the thana level.

Currently the utilization of institutional child delivery and emergency obstetric care (EOC) facilities in Bangladesh is far below the recommended "minimum acceptable level" and the relevant emergency obstetric care service facilities are not equally available across the administrative-geographic locations (Obstetrical and Gynaecological Society of Bangladesh/UNICEF 1993; Ahmed YN et al. 1995). A recently conducted study reports that only 39 percent of the district hospitals function as comprehensive emergency obstetric care facilities, 69 percent of the Maternal and Child Welfare Centers (MCWCs) and 56 percent of the Thana Health Complexes (THCs) render basic emergency obstetric care services, and none of the Family Welfare Centers (FWCs) at the union level (lowest administrative unit) could be classified as providers of obstetric first aid emergency obstetric care facilities (Ahmed YN et al. 1995). Thus, there exists a large gap between the government policy regarding the availability of emergency obstetric care services (first aid at Health and Family Welfare Center, basic at Thana level and Maternal and Child Welfare Centers, and comprehensive at District Hospital and Medical College and Hospital) and the actual availability of recommended services at the relevant facilities.

Three Delays Model: Delays between a woman and emergency obstetric care

Although emergency obstetric care services are of paramount importance, they are not sufficiently available in Bangladesh, and the services which are available are not fully utilized, for several reasons. Women with obstetric complications face various barriers to obtaining necessary care. Among these barriers are medical, social, cultural, economic, geographic and community factors. The "three-delays" model proposed by Maine (1993) depicts the roles of community and health system in the use status of emergency obstetric care. This model postulates that the outcome of an obstetric emergency is influenced by factors that govern the decision to seek care, reaching the medical facility and receiving adequate treatment (Barkat A et.al 1995). These three delays create hindrances in the process of utilization of emergency obstetric care facilities. Such delays in turn are impacted by a set of factors which should be known to the policy-makers in designing appropriate policy interventions. A graphic idea of the three-delays model is provided in Figure 1.

Figure-1 *Three Delays Model: Delays Between a Woman and EOC*



The purpose of this paper is to identify the relative importance of the factors affecting the first two delays, using an appropriate econometric choice model. It is to be noted that the factors affecting the third delay, namely the quality of care and services at health facilities, is an important determinant influencing peoples' decision to seek emergency obstetric care. Since we are interested in the first two delays, this variable per se is beyond the scope of our investigation in this paper.

It is very important to confirm the appropriateness of the methodologies adopted for analyzing a given data set. In the current situation, analysis on the basis of econometric modelling framework is considered to be the best approach. This approach has a sound logical basis and appropriately depicts the relative importance of different factors.

Methods

Based on the existing infrastructure and resources of various public sector health care facilities of Bangladesh, emergency obstetric care services are to be upgraded and decentralized up to the lowest administrative level (Union) where all unions will provide obstetric first aid through the Family Welfare Centers, all thanas will provide Basic emergency obstetric care through Thana Health Complexes and Maternal and Child Welfare Centers, and all districts will provide comprehensive emergency obstetric care services through district hospitals. The first phase of this program is already under implementation in the eleven out of sixty-four districts which are considered to be representative for the entire country as they cover all administrative divisions of the country. Information was collected on the basis of representative samples of respondents from these selected districts so that valid inferences could be drawn for the entire country with respect to different determinants of the first two delays.

It was considered rational to identify the pregnant women, women who delivered at home, and women who delivered at institutions by us Family Welfare Assistant (FWA) registers. In or to reach the respondents, a stratified multist random sampling procedure was followed. He the municipal area of every district has been trea as urban stratum and the remaining area as r stratum.

The total sample sites comprise 33 Family Welf Assistants in the rural areas and 11 wards in urban areas. It has been observed that altogeth 542 sample women with emergency obstet complications exhibited dichotomous decisio they can be grouped as either "women who visi health facilities with own emergency obstet problems," or "women having emergency obste problems who did not visit any health facili (Table 2). These samples were taken from a big project on emergency obstetric care conducted University Research Corporation (Bangladesh) 1994 for the UNICEF supported emergency obste care project in Bangladesh (Barkat A et al. 199

Construction of the econometric model a choice of variables

The econometric model was constructed to refl the fact that a particular agent has an inher attitude and intensity of desire that motivates h or her to choose a particular course of action. Su a desire may be denoted by a latent variable, which is influenced by a set of factors characteriz by economic, socio-cultural and communi conditions. Such factors may be denoted by

Table 2 *Distribution of women with emergency obstetric problems by visit status*

Visit status to healthcare facilities	Rural	Urban	Total
Visited with EO problems	89 (20%)	24 (24%)	113 (21%)
Not visited with EO problems	353 (80%)	76 (76%)	429 (79%)
Total	442 (100%)	100 (100%)	542 (100%)

Figures in parentheses indicate percentages.

vector, **x**. Beyond the assignable factors included in **x**, there are some random factors which we suppose to have some impact on **y***. All those random factors are included in a term called "random error" denoted by **î**. Thus, the desired model in the latent variable framework, as has been formulated, is as follows:

$$\mathbf{y}^*_n = \mathbf{X}'_n \mathbf{ß} + \hat{\mathbf{I}}_n$$

where y* is the latent variable indicating the desire of an agent to seek treatment and ability to reach the facility, **ß** is the *kx1* vector of parameters to be estimated, and such parameters provide the marginal contributions of the corresponding factors to **y***.

This model resembles a dichotomous choice model. Since the outcome variable, use or non-use of emergency obstetric services, is dichotomous, binary probit model is estimated. A brief discussion about the regressors included in the paper is presented in Table 3, and discussion about the regressors along with the rationale for choosing them appears below.

Economic variable: In this category we include land ownership and husband's occupation denoted by dummy variables, designated by *l* and *o* respectively. Landholding status of a family is the main deciding factor of the household economic status, particularly in rural Bangladesh. Thus, landownership status of responding women has been considered as an explanatory variable. Income, although a strong proxy for the measurement of economic status, was not collected due to the complexity involved in obtaining accurate information. Husband's occupation is one of the key factors that determines the social status of people in the country and influences the decision making process of whether to seek service outside the home.

Socio-cultural variable: This three-part variable includes education of both women and their husbands, religious status of the respondent, and decision-making power regarding treatment of EO problems. Sub-groups of this variable are indicated by *we, he, r* and *d* respectively. Education of both husband and wife is an important decision making variable. Another important social factor which supposedly influences people's decision to visit EOC service centers is religion. Muslim-non-muslim differentials in reproductive behavior are frequently recognized in surveys of Bangladesh (Barkat A et al. 1995; Huq N and Cleland 1990). Another important decision variable included in this analysis traces who (woman, husband, or mother-in-law) makes decisions in the family regarding emergency obstetric problems. Additional important variables encountered for the analysis are distance of nearest health facilities from respondent's home, access to electronic media, knowledge status about emergency obstetric problems and knowledge about the consequences of emergency obstetric complications.

Community variable: This variable has two elements: distance of nearest health facilities from respondent's home and access to electronic media. For the *distance variable* the distance to the nearest health facilities offering emergency obstetric care services (at least basic) from the home of the respondent has been calculated and denoted by variable **D**. The average distance of Thana Health Complex (THC) and District Hospital (DH) has been taken for the whole sample. However, in disaggregate form, distance of Thana Health Complex is considered for rural respondents and district hospital for urban respondents. The access to electronic media has been measured using availability of radio and/or television in the household and denoted by **M**.

Table 3 *Symbol and characterization of variables*

Name of variables	Symbol	Characterization of the symbol
		Economic variable
Land ownership	l_1	1 medium and above, having ³ 250 decimals of land, 0 otherwise
	l_2	1 small, having 50-249 decimals of land, 0 otherwise
	l_3	1 landless, having £49 decimals of land (absolute+functional), 0 otherwise
Occupation of the husband	o_1	1 agriculture, 0 otherwise
	o_2	1 business, 0 otherwise
	o_3	1 service/teaching, 0 otherwise
	o_4	1 labor/rickshaw-van puller, 0 otherwise
	o_5	1 other occupation, 0 otherwise
		Socio-cultural variable
Women's education	we_1	1 no education, 0 otherwise
	we_2	1 primary education, 0 otherwise
	we_3	1 secondary education and above, 0 otherwise
Husband's education	he_1	1 no education, 0 otherwise
	he_2	1 primary education, 0 otherwise
	he_3	1 secondary education and above, 0 otherwise
Religion	r	1 if an agent is a Muslim, 0 otherwise
Decision making	d_1	1 respondent herself takes decision, 0 otherwise
	d_2	1 husband only takes decision, 0 otherwise
	d_3	1 others (mothers/fathers-in-law, etc.), 0 otherwise
		Community variable
Distance	D	Distance of Thana Health Complex and District Hospital
Access to mass media	M	Respondent possessing radio and/or television
		Knowledge variable
About EO problems	k_1	Knowledge about emergency obstetric problems
About consequences	k_2	Knowledge about life threatening consequences

'nowledge variable: We have formed a composite ıdicator called "knowledge coefficient" separately ɔr knowledge about emergency obstetric problems nd knowledge about life threatening onsequences of emergency obstetric problems, lenoted by $\mathbf{k}_1$ and $\mathbf{k}_2$ respectively. Each respondent vas asked about ten emergency obstetric problems: ɔre-eclampsia, eclampsia, retained placenta, ɔrolonged labor, hand-cord-foot prolapse, PV ɔleeding, post-partum haemorrhage, perineal tear, ɔuerperal sepsis, and induced abortion. Jnprompted knowledge about each of these 10 ɔroblems has been considered to estimate $\mathbf{k}_1$, vhere $\mathbf{k}_1$ is defined as the ratio of unprompted cnowledge about emergency obstetric problems :o total 10 problems. Similarly, $\mathbf{k}_2$ has been estimated for knowledge about life threatening consequences of emergency obstetric problems.

Results

The estimation results of the choice model presented in Table 4 show that the landholder category of "medium and above" has a much more positive attitude towards health facility use for emergency obstetric problems than the "landless and poor" group. This implies that economic status has a serious influence on people's decision to go to emergency obstetric care facilities. This is relatively more true for rural women compared to urban. A similar interpretation is also true for educational attainment. It is evident from estimation results that educational status in women correlates with health facility use for treating emergency obstetric problems. Comparison of "no education" with "primary and above" groups also correlates with utilization of emergency obstetric care facilities. The above results appear to be statistically significant and explain the reality in choice behavior. The impact of women's education on utilization of emergency obstetric care facilities is similar for both urban and rural women. Husband's education status positively impacts upon the choice behavior although such impacts do not appear to be statistically significant.

One interesting feature of the choice behavior is related to the role of religious affiliation of the respondents in predicting use of emergency obstetric care services. The current study shows that the muslim religious category has significant adverse impact on the use of emergency obstetric care facilities. In Bangladesh, muslim women are conservative regarding outside movement and the attitude formed due to this seclusion acts as an obstacle to visiting health facilities with any emergency obstetric problems. Possibly due to a relatively high degree of seclusion, rural women show a more pronounced effect compared to urban ones. It is important to note that these serious harmful practices are steeped in cultural or religious beliefs that are more pronounced among Muslims than among non-muslims (Blanchet T 1991; Pelon-Piet NJ 1996).

Women who undergo home delivery by untrained attendants are exposed to such harmful practices as Cyntocin injection to induce stronger contractions during a prolonged labor; hard massage during prolonged labor; binding the abdomen; unhygienic delivery on the floor; and failure of attendants to clean their hands or properly clean the area. After delivery, there is great anxiety among these attendants to expel the placenta. If this does not happen quickly, many methods are used to encourage it: manual manipulation (usually with unwashed hands and no gloves); forcing women to vomit to expel the placenta by pushing her hair into her mouth until she gags; and drinking kerosene or other substances. Following delivery, the harmful practices vary in terms of how long a woman is kept away from the family. Usual belief among the muslims is that it requires six to seven

Table 4 *Results of model estimation*

Regressors	Parameter Estimates			Standard Error			t-value		
	Rural	Urban	All	Rural	Urban	All	Rural	Urban	All
Land ownership (decimals):									
l_1 : Medium and above, having ³ 250	.390	.221	.208	.197	.113	.106	1.970	1.950	1.960
l_2 : Small, having 50-249	-.033	-.188	-.201	.017	.101	.103	-1.860	-1.920	-1.941
l_3 : Absolute/functional landless, having £49	-.084	-.545	-.343	.043	.282	.175	-1.920	-1.930	-1.960
Education:									
we_1 : No education	-.339	-.304	-.368	.175	.157	.188	-1.927	-1.930	-1.990
we_2 : Primary education	.275	.295	.383	.139	.149	.193	1.965	1.970	1.981
we_3 : Secondary education & above	.309	.320	.397	.159	.164	.202	1.940	1.940	1.962
he_1 : No education	-.146	-.770	-.167	.239	.445	.204	-.611	-1.743	-.820
he_2 : Primary education	.149	.024	.037	.199	.497	.172	.745	.049	.213
he_3 : Secondary education & above	.146	.024	.166	.239	.497	.204	.611	.049	.815
Occupation:									
o_1 : Agriculture	.468	-	-	.396	-	.366	1.180	-	-
o_2 : Business	.424	.398	.337	.217	.202	.169	1.950	1.970	1.985
o_3 : Service/teaching	.414	.399	.268	.211	.203	.135	1.960	1.960	1.978
o_4 : Labor/rickshaw-van puller	-.304	-.198	-.206	.389	.286	.367	.781	.690	.579
o_5 : Other occupation	-.215	-.118	-.207	.397	.208	.358	-.541	-.565	-.578
Religion:									
r : Muslim	-.144	-.134	-.149	.073	.068	.074	-1.946	-1.960	-1.988
Decision maker:									
d_1 : Respondent herself	.114	.315	.444	.064	.178	.242	1.760	1.760	1.837
d_2 : Husband	-.106	-.137	-.168	.187	.141	.149	-.566	-.970	-1.121
d_3 : Others (mother-in-law, etc.)	-.114	-.309	-.444	.059	.160	.253	-1.880	-1.910	-1.837
Distance (km):									
D : Average distance of THC and DH	-.028	.024	-.012	.060	.013	.011	-1.827	-1.750	-1.797
M : Access to mass media: possession of radio and/or television	.357	.171	.271	.183	.402	.160	1.950	.426	1.690
Knowledge:									
k_1 : Knowledge on EO problems	.754	.755	.766	.378	.385	.384	1.980	1.960	1.990
k_2 : Knowledge on life threatening consequence of EO problems	1.250	1.280	1.298	.449	.475	.497	2.780	2.690	2.610

Level of significance considered is 5 percent.

days before the "pollution" of child birth is gone. During this time a woman is usually not bathed and is given only limited food. Bleeding is not taken as a cause for concern because it is believed that "polluted blood must be expelled".

Respondents by their husband's occupation, except "labor-rickshaw/van puller" and "other occupation," respond positively towards the use of health facility for emergency obstetric problems; this holds true for both urban and rural samples. Whenever a woman feels empowered to make a decision herself, she shows a positive attitude towards use of emergency obstetric care facility. Contrary to this, when husbands or in-laws make the decision about whether to seek emergency obstetric service from a health facility, the negative attitude appears to be prominent. Responding women who are the direct victims of emergency obstetric complications feel more about visiting health facility than do others of the family. Urban women compared to rural are more responsive towards using health facilities for treating emergency obstetric problems. It is also clear that husbands and mothers-in-law are more conservative than the women themselves. A highly significant impact on using health facilities for emergency obstetric care is measured on possession of knowledge about life threatening consequences of emergency obstetric problems. Possession of general knowledge about emergency obstetric problems also has a significant impact on the utilization of emergency obstetric care facilities. The distance variable plays the expected negative role in predicting health facility use for emergency obstetric problems. This is true for both the whole sample and disaggregated samples, rural and urban. Women's exposure and access to electronic media plays an important role in emergency obstetric care service facility use as well. Current study shows that possession of radio or television has a positive impact on the choice behavior, although the results are not statistically significant; this might be because the information-education-communication activities on emergency obstetric care in Bangladesh are not very pronounced.

Discussion

Several important policy implications emerge from the analysis presented in this paper. Some of the policy implications are short-run (immediate) and some are long-run. For example, the choice model analysis shows that better economic status of respondents bears a strong positive relationship to people's decision to utilize emergency obstetric care facilities. However, it is most unlikely that in the context of Bangladesh, people's economic emancipation and women's economic empowerment will be attained in the short-run. From the health policy viewpoint, the demand creation for emergency obstetric services through changes in economic policies is a matter of exogenous shocks. The case of educational status is also a matter of medium-run national policy goals.

The factors which will accelerate the process of "ideational changes" through the reduction of widespread religious prejudices, prevention of harmful practices, perceptional changes to expedite decision making process for treating emergency obstetric problems, enhancement of knowledge about emergency obstetric problems and their serious consequences, increased knowledge about availability of various emergency obstetric care services at the various types of health facilities, as well as widening the spatial coverage of emergency obstetric care services can be addressed under a well designed short-run health and social policy framework. In the short-run, the factors noted above can be effectively tackled with the purposeful utilization of existing resources, such as the following efforts:

1. Concerted information-education-communication (IEC) efforts by the inter-sectoral agencies, using 70,000 grass-roots-level health and family planning field workers of the government system and the non-government organizations, more than 300,000 school teachers, more than 17,000 grass-roots-level workers under the Ministry of Agriculture, and more than 13,000 grass-roots-level workers of the Ministry of Local Government and Rural Development (Khuda BE et al. 1994; Bangladesh Bureau of Statistics 1995). Also, in order to ensure emergency obstetric care information is transmitted more effectively, the innovative use of mass media—namely radio, TV, and newspapers—should be considered actively by the policy planners.

2. Establishment of more EOC service facilities, distributed in a fashion that reduces the distance between the target people's homes and the facilities.

3. The most important segment of agents to be brought under the emergency obstetric care information-education-communication effort are husbands and mothers-in-law, who according to the current study findings are the major decision makers in families facing emergency obstetric problems, but appear to be the most conservative, least aware of emergency obstetric problems and their consequences, and therefore the most negative in attitude towards using emergency obstetric care facilities when needed. It is to be noted that a confounding variable in getting a high-risk woman to the right place for delivery is that she often goes to her maternal home for delivery, especially for the first birth. Thus, it is often not enough to educate the husband and the mother-in-l about her risks; her own parents must educated as well. This means that t practices which surround delivery basica require the education of the entire natior

Long-run policy interventions should be pursu along with short-run ones for attaining a sustain EOC program, and thereby reducing mater mortality and morbidity to the extent possib Substantial reduction in the maternal mortality a morbidity is not only a function of hea intervention but also a function of "beyond heal measures.

The findings of the current study also lead us conclude that policy options in their dimensio urgency, and intensity should differ between ru and urban areas. For example, distance is a mc significant determinant of using EOC facilities rural women than for their urban counterpar Similarly, although both rural and urban wom possess positive attitude towards use of EC facilities, rural women lag behind the urbans actual use. Rural women currently need mc outside motivation than their urban counterpar

In this research paper an attempt has been made possibly for the first time in Bangladesh a elsewhere in the developing countries—to foc on the choice behavior of pregnant and lactati women in Bangladesh regarding utilization health facilities for treating EO complicatior Research methodology in the framework of econometric model (choice model) has be adopted on the ground that such an approa enables one to identify the relative importance factors affecting a phenomenon in an elegant wa The parameter estimates of the constructed mod exhibit consistency with expectation although son of the estimates appear to be statistical

insignificant. Among all policy implications that emerged from the analysis of the study results, the most crucial is that the programmatic factors dealing with short-run policy measures should be viewed as torchbearers for paving the way to wider use of emergency obstetric care facilities, thereby reducing maternal mortality and morbidity in Bangladesh.

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References:

Ahmed YH, Rahman MH, Chowdhury FK, Khan YA, Akhter HH. 1995. A Report on: Baseline Survey for Assessment of Emergency Obstetric Care Services in Bangladesh. Dhaka, Bangladesh Institute of Research for Promotion of Essential and Reproductive Health Technologies. p. 24.

Barkat A. 1995. Utilization of Emergency Obstetric Care Services in Bangladesh. Keynote paper presented at the Dissemination Seminar organized by Obstetrical and Gynaecological Society of Bangladesh under the sponsorship of Ministry of Health and Family Welfare, Government of Bangladesh and UNICEF. Dhaka: November 08.

Barkat A, Helali J, Rahman M, Majid M, Bose ML. 1995. Knowledge, Attitude, Perception and Practices Relevant to the Utilization of Emergency Obstetric Care Services in Bangladesh: A Formative Study. Dhaka, University Research Corporation (Bangladesh). pp. 8-10, 13-15, 23.

Blanchet T. 1991. Maternal Health in Rural Bangladesh: An Anthropological Study of Maternal Nutrition and Birth Practices in Nasirnagar, Bangladesh. Dhaka, Save the Children (USA).

Bangladesh Bureau of Statistics.1995. 1994 Statistical Yearbook of Bangladesh. Dhaka, Statistics Division, Ministry of Planning, Government of Bangladesh. pp. 66, 71.

Bangladesh Bureau of Educational Information and Statistics. 1992. Bangladesh Educational Statistics, 1991. Dhaka, Ministry of Education, Government of Bangladesh. pp. 1, 22.

Haque YA, Mostafa G. 1993. A Review of the Emergency Obstetric Care Functions of Selected Facilities in Bangladesh. Dhaka, UNICEF. pp. 2, 4-13.

Huq N, Cleland J. 1990. The 1989 Bangladesh Fertility Survey Report. Dhaka, National Institute of Population Research and Training p. 38.

Khuda BE, Barkat A, Helali J, Miller P, Haaga J. 1994. Population Policy in Bangladesh: A Review of Ten Priority Areas. Dhaka, University Research Corporation (Bangladesh) and The Population Council. pp. 4-5.

Mitra SN, Ali MN, Islam S, Cross AR, Saha T. 1994. Bangladesh Demographic and Health Survey, 1993-94. Claverton, Maryland, National Institute of Population Research and Training, Mitra and Associates, Macro International Inc. pp. 100, 104-105.

Mirza T, Akhter P, Juncker T. Utilization of Trained Traditional Birth Attendant. Dhaka; ICDDR,B MCH-FP Extension Project Working Paper No. 84.

Maine D. 1993. Reduction of Maternal Mortality in Bangladesh during 1995-2000: A Concept Paper. Dhaka, UNICEF. pp. 2-10.

National Institute of Population Research and Training. 1992. Midterm Evaluation Report on TBA Training. Dhaka 83.

Obstetrical and Gynaecological Society of Bangladesh/ UNICEF. 1993. Emergency Obstetric Care: Interventions for the Reduction of Maternal Mortality. Dhaka pp. 5-9.

Pelon-Piet NJ. 1996. Reproductive Health in Bangladesh: A Sectoral Review. Dhaka, UNFPA.

Rahman A (Ed). 1994. Maternal Morbidity Situation in Rural Bangladesh: Findings from a joint BRAC-LSHTM Study. Dhaka, Access. pp. 11: 10.

UNICEF. 1995. The state of the World's Children 1996. 50th Anniversary Issue. New York, NY: Oxford University Press. pp. 88,92.