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Patterns and Determinants of Children Ever Born in Bangladesh

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Abstract

Fertility is the key determinants of population growth for any country. The decision of childbearing is mainly influenced by many socio-demographic, economic and psychological factors. The objective of this study is to find the patterns and factors associated with children ever born in Bangladesh. The data was collected from Bangladesh Demographic and Health Survey 2014. A total number of 16,865 ever born children are considered as sample in this study. Descriptive statistics and multiple classification analysis are used to analyse the data. The analytical results show that the average number of children ever born is 2.45 and it declines from3.48 in 1993 to 2.45 in 2014. However, the mean number of children ever born decrease with the increase in age at marriage, education, husband's education and wealth index but the mean number of children ever born increases with the increases in age. It is observed that the average number of children everborn is greater in rural areas than urban areas. The mean number of children everborn is highest in Sylhet division and lowest in Khulna division. It is also observe that contraceptive user had higher mean number of children everborn than non-contraceptive user. Respondent's education, wealth index, region and husband's education have significant impact on children ever born in Bangladesh. Therefore, Government of Bangladesh should take proper initiate to reduce fertility rates by focusing on these identified factors so that fertility as well as infant and maternal mortality and morbidity will be decreased.

Keywords: Multiple Classification Analysis; Model Validation Technique; Children Ever Born; Age at Marriage, Ever Married Women.

AMS Classification: 62J05.

1. Introduction

Number of children ever born (CEB) is a measure of number of children born alive among the married women of age 15 years or more and it includes all the live birth that are living or dead from married women up to the time of collection of data. Children ever born is also called summary of birth histories which quantify all the live births a woman experienced in her lifetime. Not only this, data on children ever born for successive age groups of women provide information about complete trends of childbearing which can be used to predict fertility behavior of that region if census and survey data are inadequate or missing. For instance, data on the number of births by age of mother before 1967 were not available in Japan, it was not possible to compute total fertility by the way of age specific birth rates, so a method was developed by Watanabe to estimate total fertility from children ever born data (Watanabe, 1979) and this means that Children ever born has direct effect on fertility rate which can be estimated from number of it. In past, up to 1965, global fertility rate was more than 5 children per woman. Now-a-days, due to modernization of societies, number of children per woman has decreased substantially throughout the world and reached just below 2.5 children per woman. This rate of transition is very rapid and surprising not only for developed countries but also for the developing country like Bangladesh. According to World Bank report, Bangladesh took 20 years to decline fertility from more than 6 children per woman to less than 3 children per woman. Bangladesh is a densely populated country, so, this is going to be an enormous trouble for the government of Bangladesh to ensure basic needs for these populations in the future. Therefore, government is trying to influence its people to control the live birth by campaigning with the slogan of "Not more than two children, one is better". But due to the increasing speed of population growth as well as pros and cons of overpopulation, the introduction of population slogan is not enough. Moreover, Bangladesh is passing through the demographic dividend from 1980s and will continue until 2040 and if the country fails to take potential economic benefits from it then Bangladesh has to pay huge cost with unemployment, unbearable stain on education, health and old age security (Matin,2012).This research is going to contribute by developing a statistical model to predict the children ever born as well as their influential factors so that government can response significantly by taking necessary steps.

The decision of childbearing is mainly influenced by psychological, economical as well as social and demographic factors. It is examined that relationship among the partner influences first and higher order birth rates (Rijken and Liefbroer, 2009). Similarly, from economic view, demand for children is similar like the demand of goods which was based on a model developed by economist Gary Becker (Becker, 1960) and he found that improving the women education status results less likely to want fewer children due to adjustment of opportunity cost is for higher education by cutting down opportunity of higher number of children. Moreover, when the demand of labor is high and supply is low then fertility rate is relatively higher among the young couples which suggest that timing of fertility is closely linked with economic condition (Kiser et al., 1968).

From the demographic point of view, mostly women were chosen as the respondents in order to study about childbearing, as well as prenatal and postnatal care (Sahle G, 2016). From the prior research, it is found that, in Japan, younger women have lower fertility intensions but it is higher among them who live in rural areas with larger family members (Matsumoto and Yamabe, 2013). Another research found that, there is a negative effect of mother's education on average number of children ever born to the women in Botswana (Dwivedi et al., 2016). Similarly, in accordance with educational level, birth level was also found very significant effects on children ever born among the reproductive women in Semnan, Iran (Saadati, 2015).

In Bangladesh, some studies were conducted on fertility influence and it is found that, high infant mortality as well as economic security at later life has influenced the decision about family size (Sayem et al., 2011) and this is because, though, Bangladesh had achieved the target of reduction of infant mortality from 151 per 1000 live birth in 1991 to 41.01 per 1000 live birth in 2016 but still the infant mortality is high compared to the developed countries. Another study showed that, education, employment as well as food security was key responsible childbearing factors among the women (Haqueet al., 2015). Therefore, the objective of this study is to find the patterns and factors associated with children ever born in Bangladesh.

2. Materials and Methodology

2.1 Data Source

Data for this study was extracted from the Bangladesh Demographic and Health Survey (BDHS) 2014 dataset, which is the seventh national-level demographic and health survey (NIPORT, 2014). The BDHS-2014 is a nationwide cross-sectional survey and it was based on two stage stratified sample with consist of 7 divisions, 64 districts and 545 upazilas/thanas that also divide the whole country into rural and urban areas. The design selected total 18,245 ever married women aged 15–49 and among them finally 17,863 were interviewed. For this research, only socio-demographic characteristics of the ever married women aged 15–49 who had given at least one birth were considered. Children ever born is the key variable in this study which was collected through the questionnaire by asking the ever married women of age 15 to 49 who had ever given birth during their lifetime along with other variables.

2.2 Model Specification

The level of children everborn is found according to socioeconomic characteristics of respondents. The impacts of different variables on children everborn are studied by multiple classification analysis. Except this classification, the analytical results based on percentages and means are provided.

2.2.1 Multiple Classification Analysis (MCA)

Mathematically, MCA can be expressed by the following equation:

$$Y_{ijk} = \bar{Y} + a_i + b_j + c_k + \ldots + e_{ijk},$$

where, Y_{ijk}= value of an individual falls in i^{th} category of factor A, j^{th} category of factor B and k^{th} category of factor C.

$\bar{Y}$ = grand mean of Y.

a_i= effect due to the i^{th} category of factor A which is equal to the difference between $\bar{Y}$ and the mean of its category of factor A.

b_j= effect due to the j^{th} category of factor B which is equal to the difference between $\bar{Y}$ and the mean of its category of factor B.

c_k= effect due to the k^{th} category of factor C which is equal to the difference between $\bar{Y}$ and the mean of its category of factor C.

e_{ijk} = error term related to Y_{ijk}.

The coefficients which are estimated from MCA are unadjusted and adjusted. The unadjusted, coefficient (η^2) is a correlation ratio which explains how well the predictor variable explains the variation in dependent variables. This unadjusted coefficient indicates the proportion of variance explained by a single predictor alone. Similarly, β^2 indicates the proportion of variation explained by a predictor variable taking into account the proportion explained by the other predictor variables. The beta coefficient is compared to the partial correlation coefficient in multiple regression.

2.2.2 Model validation technique

To check how much the model is stable over the population, the Cross Validity Prediction Power (CVPP), ρ^2_{cv}, is applied in this case. The mathematical formula for CVPP is

$\rho^2_{cv} = 1 - \frac{(n-1)(n-2)(n+1)}{n(n-k-1)(n-k-2)}(1-R^2)$; where, n is the number of cases, k is the number of predictors in the model and the cross validated R is the correlation between observed and predicted values of the dependent variable (Stevens, 1996). The shrinkage coefficient of the model is the positive value of (ρ^2_{cv} -R^2); where ρ^2_{cv} is CVPP and R^2 is the coefficient of determination of the model. The information on model fittings and estimated CVPP has been demonstrated at the bottom of the MCA table.

3. Result and Discussions

3.1 CEB by different socio-economic and demographic characteristics:

CEB is affected by a number of socio-psychological and economic variables besides the biological capacity of reproduction. Table1 presents the differentials in

actual family size (i.e. mean number of CEB) by different demographic and socio-economic characteristics. The results indicate that in Bangladesh the overall actual family sizeis 2.45(Table 1). The cause of this may be attributed by unintended pregnancy and/or as a safeguard against expected child mortality. It may also be attributed by imbalance of sex preference of offspring.

The analytical results show that the overall average CEB is 2.45. The CEB level of respondents changes in positive direction with the change in age of respondents. The respondents are at their last stage of child bearing period having maximum number of children ever born. Similar findings are observed in Bangladesh (Mannan, 1988) and in India (Hazra and Datta, 2009). This has happened due to unintended pregnancies and this unintended pregnancy may be due to afraid of child mortality or with the expectation of old age security.

It has been observed that the mean number of CEB is the highest among women aged 40-49 years (Table1). This is usual, but there is no reason for the increase in CEB with the increase in age of respondents unless they have experienced child mortality or they are afraid of old age security irrespective of the level of education.

Table 1: Average number of CEB by background characteristics

Background characteristics	Average number of CEB	Number of currently married women
Overall	**2.45**	16858
Respondent's age		
<20	.60	1984
20-29	1.72	6416
30-39	3.07	5072
40-49	3.96	3386
Age at marriage		
<15	2.96	5981
15-19	2.25	9317
20-24	1.71	1307
25+	1.30	252
Respondent's education		
No education	3.60	3949
Primary	2.68	4916
Secondary	1.84	6503
Higher	1.28	1490
Husband's education		

No education	3.17	4712
Primary	2.53	4680
Secondary	2.00	5085
Higher	1.78	2379
Place of residence		
Urban	2.13	4709
Rural	2.57	12149
Region		
Barisal	2.53	1051
Chittagong	2.65	3121
Dhaka	2.35	5857
Khulna	2.21	1729
Rajshahi	2.29	2007
Rangpur	2.37	1946
Sylhet	3.08	1147
Wealth index		
Lowest index	2.78	6320
Middle index	2.48	3394
Highest index	2.13	7143
Sex of household head		
Male	2.46	15399
Female	2.26	1458
Religion		
Muslim	2.47	15187
Non-muslim	2.26	1657
Contraceptive use		
No	2.26	6330
Yes	2.56	10527

Multiple classification analysis (Table4) also indicates that mean number of children everborn increases with decreases in the level of education. However, this study indicates that children everborn increases with the increase the age of respondents. Similar findings are observed in Bangladesh (Mannan, 1988) and in India (Hazra and Datta, 2009). As expected, the average number of children ever bore decreases with increases the age at marriage. Young mothers are more prone to have more children. This study also indicates that age at marriage plays a vital role in declining fertility level. This has happened due to unintended pregnancies and this unintended pregnancy may be due to afraid of child mortality or with the expectation of old age security.

Education is an important variable influencing the actual family size. Negative

association between the mean number of CEB and educational levels of the respondents and their husbands is observed. The analysis indicates that respondents from rural areas had greater mean number of CEB than those from urban areas. The average number of CEB vary across the region. It was found that the parity level was highest for Sylhet, whereas in Khulna it was the lowest. A negative relation was observed between wealth index and the fertility level; the higher the wealth index, the lower the fertility level. It indicates that education plays a vital role in deciding actual parity level. Fertility level of respondents is also declined with the increase in age at marriage and with the increase in wealth index. Similar findings are also observed by Bhuyan et al, 1996. This phenomenon is true in case of women's age at marriage, and wealth index.

In comparison with female headed families, male headed families had higher mean number of CEB. Muslim respondents had more mean number of CEB than non-Muslims. The analysis shows that fertility is higher among those who used than those who do not use contraceptive methods. This pattern is not quite unexpected because use of contraceptive method does not usually indicate that users have lower fertility, especially, older couples who have not used contraceptives during their early married life. Moreover, some couples may use it to check further births, when they have unexpected number of children. Illiterate couples may use it without care which may create problems and lead them to unintended pregnancy.

3.2 Son preference and desire for additional children

Table2 presents distribution of female respondents desiring more children according to number of living children and living sons. Among the respondents, 10541 (62.5%) do not want additional children. The average number of living children of these groups is 2.88 with standard deviation of 1.33. The corresponding figures for the respondents who want further children are 1.15 and 1.12 respectively.

It is observed that slightly more than one fifth of the respondents who do not want more children have one living child and majority of them having a living son do not want another child. On the other hand higher proportion of respondents who want another child have no living son. Among those who have two living children and do not want another child, the majority of them have one living son and one living daughter. The respondents have been reluctant to have another child if they

have two living sons. Those who want another child, have minimum number of living sons. The analysis indicates that the respondents want another child, in most cases, if they have minimum number of living son.

Table 2: Number of living children and living sons and desire for additional children

Number of living Children	Number of living sons	Want no more		Want next child	
		N	%	N	%
0		49	2.9	1657	97.1
1	0	390	21.7	1408	78.3
	1	494	22.5	1699	77.5
Sub-total		**884**	22.1	**3107**	**77.9**
2	0	554	61.7	344	38.3
	1	2392	87.7	336	12.3
	2	1016	76.4	313	23.6
Sub-total		**3962**	**80.0**	**993**	**20.0**
3+	0	427	80.1	106	19.9
	1	1696	90.6	175	9.4
	2	2132	93.1	159	6.9
	3+	1389	92.1	119	7.9
Sub-total		**5644**	91.0	**559**	9.0
Grand Total		**10541**	**62.5**	**6324**	**37.5**
Average number of living children		**2.88**		**1.15**	
Standard deviation of living children		**1.33**		**1.12**	

3.3 Variations in mean number of living and desired male children

The mean number of desired male children may be determined by personal, social and physiological factors. Overall for one living child, mean number of desired family size (0.71) was greater than the mean number of living male children (0.55). The differences between the mean number of living male children and mean desired male children were minimal for two living children. Overall for two living children, mean number of living male children was 1.09 but that of desired male children was 0.87. Practically, in these two cases a strong son preference was observed in Bangladesh. Overall for three or more, mean desired male children

(1.06) is very much lower than the mean number of living male children (1.77) (Table 3).

For one and three or more living children, mean number of living male children were positively associated with age of the respondents. That is, as age of the respondent increases, the mean number of living male children increases. The highest mean numbers of living male children were observed among women for age group 40-49 for two cases. For one living children, a positive relationship was observed between the respondent's age and the mean number of desired male children. For two and three or more living children, there is a negative association between age of the respondent and mean number of desired male children is observed. That means mean desired family size decreases with the increases in respondent's age.

Table 3: Average number of living and desired male children by background characteristics

Background Characteristics	For one living child		For two living children		For three or more living children	
	Living male children (mean)	Desired male children (mean)	Living male children (mean)	Desired male children (mean)	Living male children (mean)	Desired male children (mean)
Overall	**0.55**	**0.71**	**1.09**	**0.87**	**1.77**	**1.06**
Respondent's age						
<20	0.51	0.69	1.13	0.99	1.41	1.28
20-29	0.54	0.71	1.05	0.87	1.54	1.08
30-39	0.58	0.72	1.11	0.85	1.81	1.05
40-49	0.64	0.78	1.10	0.81	2.05	1.02
Age at marriage						
<15	0.55	0.72	1.09	0.85	1.95	1.07
15-19	0.55	0.71	1.08	0.89	1.78	1.05
20-24	0.52	0.70	1.07	0.79	1.76	1.01
25+	0.52	0.65	1.05	0.80	1.75	0.78
Educational level						
No education	0.57	0.80	1.08	0.89	2.03	1.13
Primary	0.53	0.71	1.09	0.90	1.85	1.04
Secondary	0.55	0.70	1.08	0.86	1.61	0.97
Higher	0.55	0.68	1.08	0.73	1.44	0.86
Place of residence						
Urban	0.53	0.69	1.06	0.80	1.72	0.96
Rural	0.55	0.72	1.09	0.89	1.78	1.09
Region						

Barisal	0.56	0.71	1.12	0.87	1.84	1.06
Chittagong	0.53	0.85	1.09	0.91	1.89	1.18
Dhaka	0.57	0.67	1.09	0.89	1.71	1.06
Khulna	0.52	0.63	1.07	0.82	1.59	0.90
Rajshahi	0.54	0.71	1.07	0.85	1.65	0.97
Rangpur	0.54	0.67	1.07	0.82	1.71	0.95
Sylhet	0.52	0.74	1.10	0.89	1.94	1.15
Wealth index						
Lowest	0.53	0.72	1.10	0.89	1.79	1.11
Middle	0.56	0.74	1.05	0.89	1.77	1.03
Highest	0.55	0.68	1.08	0.84	1.72	1.00
Religion						
Muslim	0.54	0.70	1.07	0.87	1.78	1.06
Non-muslim	0.61	0.79	1.16	0.85	1.58	1.06
Contraceptive use						
No	0.54	0.73	1.01	0.92	1.78	1.10
Yes	0.55	0.69	1.11	0.85	1.76	1.04

The mean number of living male children had a negative relation with the age at marriage for one, two and three or more living children. A negative association remained between age at marriage and the mean number of living male children, since with increased age at marriage, the mean number of living male children fall down for respondents with one, two and three or more living children. The mean number of desired male children was negatively associated with the respondent's age at marriage for one and three or more living children. But at the same time it was also observed that the relation between mean number of desired male children and age at marriage was curvilinear for two living children. Mean number of living male children was negatively associated with educational level for three or more children. It was found that curvilinear relation between respondent's education status and the mean number of living male children for one and two living children.

It has been observed that the mean desired male children decreased with the increase of the education level. That means, there was a negative relationship between education level and mean number of desired male children for one, two and three or more living children. Rural respondents' had more the mean number of living male children than urban respondents for one, two and three or more living children.

In comparison with urban cases, rural respondents' had more the mean number of desired male children for one, two and three or more living children.

On the basis of regional data analysis, it was found that mean number of living male children was the highest in Dhaka (0.57) and lowest in Sylhet (0.52) for one living children, the highest in Barisal (1.13) and the lowest in Khulna (1.07) for two living children and the highest in Sylhet (1.95) and the lowest in Khulna (1.60)for three or more living children. Whereas the mean number of desired male children was highest in Chittagong (0.85) and lowest in Khulna (0.63) for one living children, highest in Chittagong (0.91) and the lowest in Khulna and Rangpur (0.82) for two living children and the highest in Chittagong(1.18) and the lowest in Khulna(0.90) for three or more living children .

According to the data analysis on wealth index, a negative relation was obvious between wealth index and the mean number of living male children for three or more living male children. There was a curvilinear relationship between wealth index status and the mean number of living male children for one and two living male children. Whereas there was a negative relationship with wealth index status and the mean number of desired male children for two and three or more living children. Through analysis of the data on religion it was found that Muslim respondents had more mean number of living male children than Non- Muslims for three or more living children. Whereas the mean number of living male children was vice-versa for one and two living children. Muslim respondent's had relatively less the mean number of desired male children than the non-Muslim respondents for one living children, vice versa for two and no difference for three or more living children. The contraceptive users had greater mean number of living male children than contraceptive non-users for one and two living children. Whereas vice versa for three or more living children. Between the contraceptive users and non-users, the first group had greater mean number of desired male children than the second group for one, two and three or more living children.

3.4 Determinants of Children Ever Born: Multiple Classification Analysis

There are a variety of socio-economic and cultural factors that may influenced the fertility. To examine the differential patterns of mean number of children ever born among women, the well-known Multiple Classification Analysis (MCA) is employed. The result indicates that the proportions of variance explained by MCA is not very high for women (Multiple R^2=0.243). The low value of R^2 may be due to some interrelations among the predictor variables consider here or there may be some other factors, which may affect the mean number of children ever born.

Table 4 shows the mean number of children ever born both unadjusted and adjusted by different socio-economic and demographic characteristics with the values of η^2 and β^2 produced from multiple classification analysis with data of BDHS-2014. Here place of residence, region, respondent's education, religion, respondent currently working, respondent's husband education, wealth index and contraceptive use are considered as the determinants of children ever born.

Among the selected factors respondent's education is the most effective one. It is important to note that highly educated women have been found to have lower fertility. The mean number of children ever born is 3.46 for women who are no education and 1.27 for highly educated women. It may be that educated women marry later and have lower fertility within marriage.

Respondents with an urban residence have lower fertility than their rural counterparts. The mean children ever born (adjusted) in rural and urban areas are 2.51 and 2.32 respectively. This may be due to the fact that women in urban area have late marriage, higher level of real income, better health services, and educational facilities, employment opportunities in the modern sector and other social amenities in the urban areas which have the effect of reducing fertility.

It is observed that Rajshahi division has the lowest children ever born (2.22) and Sylhet division the highest (2.91). Barisal (2.69), Chittagong (2.78), Dhaka (2.33), Khulna (2.29), Rangpur (2.32) are the next to the level of Chittagong.

Table 4: Results of MCA of CEB with selected socio-demographic characteristics

Explanatory variables	Unadjusted	Adjusted	η^2	β^2
Place of residence				
Urban	2.15	2.32	0.11	0.049
Rural	2.58	2.51		
Region				
Barisal	2.54	2.69		
Chittagong	2.67	2.78		
Dhaka	2.35	2.33		
Khulna	2.23	2.29	0.129	0.135
Rajshahi	2.28	2.22		
Rangpur	2.38	2.32		
Sylhet	3.09	2.91		

Respondent's education				
No education	3.52	3.46		
Primary	2.68	2.67	0.43	0.41
Secondary	1.84	1.89		
Higher	1.28	1.27		
Religion				
Muslim	2.48	2.48	0.034	0.038
Non-Muslim	2.28	2.26		
Respondent currently working				
No	2.36	2.41	0.08	0.039
Yes	2.65	2.55		
Respondent's husband education				
No education	3.13	2.56		
Primary	2.54	2.43	0.29	0.073
Secondary	2.02	2.29		
Higher	1.81	2.64		
Wealth Index				
Lowest index	2.78	2.78		
Middle index	2.49	2.49	0.16	0.157
Highest index	2.15	2.15		
Contraceptive use				
No	2.30	2.30	0.073	0.071
Yes	2.56	2.56		
Grand mean= 2.45 R^2=0.243 $\rho^2_{cv} = 0.24$ and Shrinkage coefficient=0.0008. Stability of R^2=1- Shrinkage coefficient=1-0.0008=0.99				

Muslim community has higher fertility than their non-Muslims counterparts. It may be due to the religious value systems, which influence individuals. Mean children ever born are 2.48 and 2.26 respectively for Muslim and non-Muslims community.

Children ever born on the average is higher for working women than non-working women. Though the difference is not remarkable, still working women have produced a greater number of children ever born than the non-working group. It is observed that mean (adjusted) children ever born are 2.41 and 2.55 respectively for did not work and worked categories. The average number of children ever born decreases with the increased level of education of husbands. Though it is not so remarkable that the higher the level of husband's education the lower the

number of children ever born. We observed the negative association between children ever born and wealth index.

3.4.1 Intensity of the Effects of the Variables on Fertility

Socio-economic variables that are considered in the analysis have differential effects on fertility, producing different levels by various socio-economic subgroups. The intensity of the influences of the variables considered is yet to be analyzed. In this section an attempt has been made to observe the extent of influences of the variables on fertility on the basis of the results produced by Multiple Classification Analysis (MCA). Here, the children ever born per ever-married women are taken as the dependent variable. The results of multiple classification analysis are given in the Table 4. It presents children ever born together with the values of η^2 and β^2 produced from multiple classification analysis with data of 2014 Bangladesh Demographic and health Survey(BDHS).The Table 5 produce the results of zero order correlation coefficients of children ever born with various socio-economic variables.

These variables will have to affect fertility through one or more proximate determinants. Therefore, the mechanisms of the relationship are investigated using the technique of Multiple Classification Analysis. Using the value of β^2 in Table 4 with the values of Table 5 the indirect effects of the variables are to be estimated. The causal model for the major sources of the variation in children ever born is presented Figure1.

Table 4 shows that respondent's education has a highest significant contribution on children ever born producing a negative association with children ever born. The correlation coefficient is found to be r = - 0.428. Among the included variables respondent's education has the strongest influence on children ever born. The proportion of variance explained (unadjusted) by respondent education is η^2 =0.43and the proportion of variance explained (adjusted) by this variable is β^2 =0.41. Respondent education has the direct effect on children ever born and also has the indirect effect through work status and contraceptive use. The indirect effect of education through work status on children ever born is .005 and through contraceptive use is 0.004.

Place of residence has an impact on children ever born. Place of residence has a positive association(r =o.11) with children ever born. The proportion of variance explained (unadjusted) by place of residence is η^2 =0.11 and the proportion of variance explained (adjusted) by this variable is β^2 =0.049. The indirect effect of place of residence on children ever born through education is 0.06 and through contraceptive use is 0.002. Again through work status is 0.001.

Table 5: Zero-order correlation coefficient of socio-economic differentials of CEB

Variables	**Total CEB**	**Residence**	**Division**	**Education**	**Religion**	**Working Status**	**Husband's education**	**Wealth index**	**Contraceptive use**
Total CEB	1	0.11**	0.01	-0.42**	-0.03**	0.08**	-0.28**	-0.16**	0.07**
Residence		1	0.13**	-0.15**	-0.04**	0.02**	-0.20**	-0.42**	-0.03**
Division			1	-0.07**	0.01*	0.03**	-0.09**	-0.16**	0.02**
Education				1	0.01	-0.13**	0.61**	0.37**	0.05**
Religion					1	0.03**	0.03**	-0.03**	0.04**
Working Status						1	-0.13**	-0.09**	0.04**
Husband's education							1	0.45**	0.02**
Wealth index								1	0.00
Contraceptive use									1

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

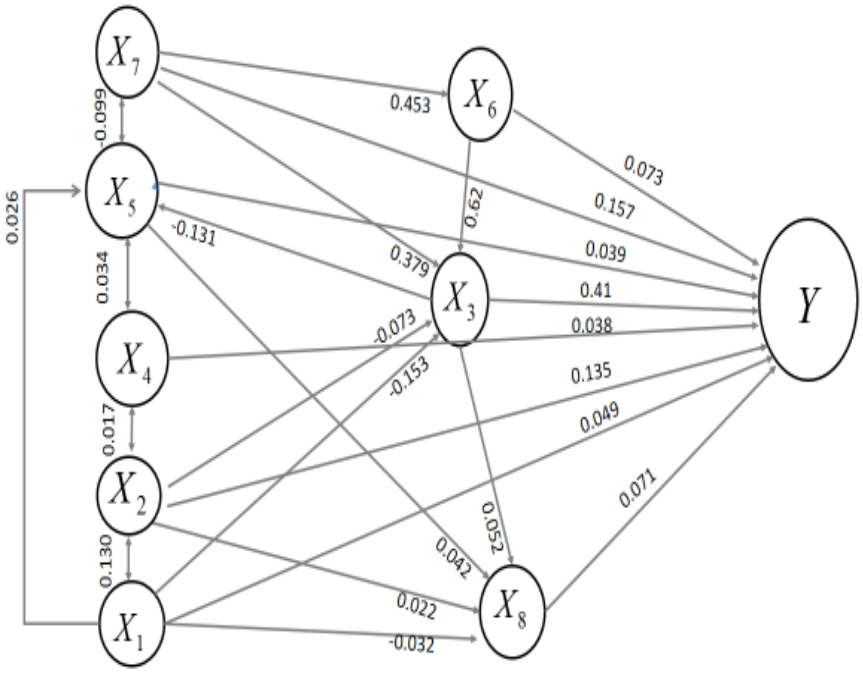
Region of residence of respondent has the third highest contribution on children ever born. The positive association (0.012) between region and children ever born is observed. Among the included variables, region has the third strongest influence on children ever born. The proportion of variance explained (unadjusted) by region is η^2 =0.13 and the proportion of variance explained (adjusted) by this variable is β^2 =0.14. The indirect effect of region on children ever born through education is 0.03 and through contraceptive use is 0.002.

Religion has also a significant contribution on children ever born and found to be negative association (r=-0.034). The strength of the explaining variability (unadjusted) is η^2 =0.034 and the explaining variability (adjusted) β^2 =0.038.

Work status of the respondent has also a significant contribution on children ever born. The work status of the respondent has the positive association (r= 0.08) with children ever born. The proportion of variance explained (unadjusted) by work status of respondent is η^2 =0.08 and the proportion of variance explained (adjusted) is β^2 =0.04. This is the important determinants of children ever born. Work status affects children ever born through contraceptive use is 0.003.

The husband's education has also a significant contribution on children ever born. The husband' education shows a negative association with children ever born. Higher educated men are more likely to marry educated women. Differentials due to this variable might not be as strong as with women's education. The proportion of variance explained (unadjusted) by husband's education is η^2 =0.29 and also the explaining variability (adjusted) is β^2 =0.073. This is the fourth strongest determinants among the variables. The indirect effect of husband education on children ever born through respondent education is 0.25.

Wealth index has also a significant contribution on children ever born and shows a negative association (r=-0.163) with children ever born. Female wealth index has the second strongest influence on children ever born among the variables. The strength of explaining variability (unadjusted) is η^2 = 0.16 and the strength of explaining variability (adjusted) is β^2 = 0.157. The indirect effect of wealth index on children ever born through respondent education is 0.16 and through husband education is 0.03. Contraceptive use has a positive association (r = 0.073) with children ever born. The strength of the explaining variability (unadjusted) is η^2 =0.073 and the explaining variability (adjusted) β^2 =0.071.



Y=Children ever born; X_1=Place of residence; X_2= Region; X_3=Respondent education; X_4=Religion; X_5=Work status; X_6= Husband education; X_7=Wealth index; X_8=Contraceptive use.

Figure 1: Model of Socio-Economic Variables and Children Ever Born

4. Conclusion

This cross-sectional study conducted from BDHS-2014 data set and 16,865 ever born children are considered as sample for this study. The average number of children ever born declines in last two decades. It is found education, wealth index, region and husband's education of respondent's have significant impact on CEB in Bangladesh. Based on the results it may be suggested that attention should be focused on the selected determinants in order to depress the level of fertility in Bangladesh.

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