

# Determinants Of Fertility: A Study Of A Minority Community In Nagaon District Of Assam

Siddika banu

**Abstract:** The study of human population has always remained an area of interest among social scientists. The global concern on declining fertility levels and its impact on the economy needs to be reviewed in the context of the Indian scenario particularly with reference to states that are experiencing lower fertility levels. Assam with its highest growth rate among the major states in India inhabited by heterogeneous religious, linguistic and socio-economic groups of people provides a unique place for any demographic study. The study area for the present research work is the Nagaon district of Assam, having highest percentage of Muslim population in Assam. In the sample villages, data related to fertility have been collected for 3 years i.e., from January 2014 to December 2016 and data were collected during the month of November, 2017. Several demographic measures have been applied to work out the fertility determinants and pattern of Muslim women and statistical tools like multiple regression technique, mean, etc. have been used in the study. It is found that the variables i.e., effective married life lived, infant and child mortality experiences, education of mothers, desired family size and age at marriage of the female respondents are significant determinants of fertility of the Muslim community.

**Keywords:** Determinants, Fertility, Muslims, Live birth, Assam, Nagaon.

## 1. INTRODUCTION:

Continuous and rapid growth of population in Assam has been obstacle to its socio-economic development over the years. In addition to migration and falling mortality, the higher level of fertility is reason for rapid growth of population in Assam. Studies have shown that the Muslims in India exhibit higher level of fertility than any other community. Similar pattern is exhibited in Assam too. The growth rate of Muslim population in 2001 was 30.9 percent and it has increased to 34.26 percent in 2011. The growth rate of population of some of the minority dominated districts of Assam like Dhubri, Goalpara, Barpeta, Nagaon, Morigaon, Hailakandi etc. are comparatively much higher than the average growth rate of population in the state. According to SRS (Sample Registration System) data 2013, Total Fertility Rate (children per female) of Assam is 2.42, among Muslim community it is 2.9 exhibits highest among all religious groups in the state. Figures on Literacy rate and other socio-economic indicators are also very poor among this particular community. Estimation of the fertility level through application of demographic techniques is required to understand the fertility preferences. Moreover, the factors governing fertility should also be identified in which regard the present study is undertaken. It has been seen that the fertility levels have been declining in varying degrees among different religious minority groups in India and Assam. The decline in fertility levels and preferences are largely affected by contraceptive use, increasing age at marriage and various family planning and maternal health programs initiated by both the central and state governments. It is evident that Muslims have more children than other religious communities and thus exhibits higher fertility (NFHS I, II, III). In Assam, Muslims are a minority group and are lagging behind in terms of education, income and health care. The present study is an attempt to analyse the fertility behaviour of Muslim community and to find out the factors affecting their fertility level.

## 2. REVIEW OF LITERATURE:

To study the proximate determinants of fertility Bongaarts (1978) analyzed the relationship between intermediate fertility variables and fertility levels. He identified four intermediate fertility variables which were found to have significant impact on fertility. Those were- the proportion married the degree of non contraception, abortion, and lactational infecundability. In the study he used a quantitative framework to analyse intermediate fertility variables responsible for fertility differences among populations or among subgroups within a population. Cleland et.al (1984), discusses about the effects of nuptiality, contraception and breastfeeding on fertility in developing countries. The researcher found that the use of contraception has led to fertility restraining effect in several Asian countries. The study also found that breastfeeding also has considerable impact on fertility which varies from country to country. Das and Pandey (1985) studied the relationship between religion and marital fertility behaviour by using age specific marital fertility rates and total fertility marital fertility rate for the different religious groups of India. The study revealed that Buddhist had highest fertility followed by Christians and Muslims and Jains had the lowest fertility. The total marital fertility rate among Hindus was lower than that of Christians and Buddhists for all the age groups. The fertility of Hindus was slightly higher than that of Jains and Sikhs in case of women aged 33 years and above. The study employed Chi-square test to examine the relationship between fertility and religion and found that religion had significant impact on fertility in India. Mohanty & Ram (2011) in their study of poverty reduction and fertility transition in India examines the linkages of poverty reduction and fertility transition in Indian states. According to the study the decline in fertility level and preferences are largely reflected in contraceptive practice and increasing age at marriage. The difference between poor and non-poor in using contraceptives has narrowed down in many of the states. The study reveals that the association of declining poverty and fertility is not strong and the effect of region is large in relation to the change in contraceptive use. By studying the determinants of rural fertility, Mahanta & Mubarak (2014) found that socio-economic factors determine the fertility level in the rural area significantly. In

• Siddika Banu  
• M.A., M.Phil., Deptt. of Economics, Dibrugarh University, Assam, India (siddibanu43@gmail.com)

the multivariate regression analysis employed in the study using age at marriage, education of both the parents and institutional efforts for population awareness generation have been found to have significant effect on fertility. On the other hand, infant and child mortality experience of the couples and household size were found to have significant positive impact on fertility. The study concludes that fertility decline will be possible if and only if the socio-economic changes are taken place in the rural areas. Haque & Patel (2016) in their study found that Religion, class-caste factors, and socio-cultural norms influence fertility rates, largely determining reproductive behavior. The study examined Hindu-Muslim fertility differentials in West Bengal and India by using National Family Health Survey-3 data. The study reveals that most Hindu women have at least two births while Muslim women are likely to have at least four births, before they are motivated to avoid subsequent births. In this study multiple classification analysis shows that the prevalent socio-economic characteristics are the factors causing this fertility differential. Fertility differences are also noticed between educated and uneducated women. The study found the same result for the religion and son preference interaction effect also.

### 3. Database and Methodology:

The study is based on primary data collected through sample survey. The samples for the study have been drawn by following a multi-stage sampling technique, both random and purposive. Apart from primary data information from several secondary sources like population census reports, official records, journals, books etc. are also used. The required data for the study have been collected through direct interview with the help of structured questionnaire. The information on fertility is collected from one currently married women of the reproductive age group 15-49. The study area for the present research work is the Nagaon district of Assam, having highest percentage of Muslim population in Assam. In the sample villages, data related to fertility have been collected for 3 years i.e., from January 2014 to December 2016 and data were collected during the month of November, 2017. Multiple regression analysis has been applied to find out the effects of proximate (age at marriage, use of contraceptives and breastfeeding) and distant determinants (education, level of income, occupation etc.) on the fertility behaviour of the sample Muslim women of the reproductive age group.

### 4. Results and Discussions:

#### 4.1.: Proximate and Distant Determinants of Fertility:

Determinants of fertility imply those variables which directly or indirectly affect the level and pattern of fertility of the females exposed to it. These determinants are categorized as proximate or distant. Proximate determinants are those which have direct impact on fertility. On the other hand, distant determinants are those which have their direct impact on the proximate determinants and then they indirectly affect fertility. According to John Bongaarts and Robert Potter, "The proximate determinants of fertility are the biological and behavioural factors through which social, economic and environmental variables affect fertility". They are called proximate as they are nearest to the event to fertility (Bhinde & Kanitkar, 2010). Bongaarts in his study

mentioned that it is possible to study fertility differentials among various populations and trends in fertility levels of any country over a period of time by studying the variations in one or more of the proximate variables. These are age at marriage, use of contraception and duration of breastfeeding. On the other hand Distant determinants are those which have indirect effects on fertility. These are Educational attainment (Sinha & Zacharia, 1986), Working status of Mothers (Siegel, 2012; Martin, 2013; Hua Ye et.al, 2014; Salami & Oladosu, 2016), Husband's Education (Chutia, 2016), Nature of occupation of the husband (Wong, 1986; Acharya, 1998), Income of the Family (Schultz, 2005; Fox, 2015), Infant and Child Mortality (Palloni & Rafalimanana, 1997; Doepke, 2005; Hondroyannis, 2009), Effective married life lived (Borah, 2008; Khan and Khan, 2010), Desired Family Size (Murthi, 1999; Khatun, 2011). Specification of the Regression Model: To analyze the effects of proximate and distant determinants on the fertility level of the sample population, multiple regression technique has been used in this study. For the regression analysis, dependent and independent variables are taken as under:

#### Dependent Variables:

1. Number of live births: The number of live birth ever born has been taken as the dependent variable which depends on the following variables.

#### Independent Variables:

1. Contraceptive use: In the model, the use of contraception is taken as a dummy variable with 1 = ever used contraceptive and 0 = never used any contraceptive methods.
2. Age at marriage: In the model, age is a continuous variable with a minimum of 14 years and a maximum of 45 years.
3. Breastfeeding: Breastfeeding is taken as a continuous variable in the model.
4. Working status of mothers: In the model, work status is defined as a dummy variable, 1 = respondent working, 0 = respondent not working.
5. Nature of occupation of the husband: It is used in the model as a dummy variable, 1 for husbands who are engaged in agriculture and allied activities and 0 for husbands who are engaged in non-agricultural activities.
6. Effective married life lived: It is taken as a continuous variable in the model.
7. Mother's Education: This variable is used as a categorical coded 1 for mothers having education level High School and above and 0 if otherwise.
8. Education of the husband: It is also taken as a dummy variable, scored 1 if the husband is having education of High School and above and 0 if otherwise.
9. Infant and child mortality: It is taken as a dummy variable, 1 if infant and child mortality experienced and 0 if not experienced.
10. Family income: It is taken as a continuous variable in the model.
11. Desired Family size: Family size is taken as a quantitative variable in the model.

Considering the above factors, the following regression equation is fitted-

$Y_t = \alpha + \beta_1 X_{1t} + \dots + \beta_n X_{nt} + U_t$   
 Where 'n' goes from 1 to 11  
 $Y_t$  is the dependent variable depicting number of live births.  
 $\beta_1, \beta_2, \dots, \beta_n$  stand for coefficients of the predictor variables  
 $X_{1t}, X_{2t}, \dots, X_{nt}$  respectively  
 $\alpha$  represents the constant term used in the model, it gives the average effect of live births when all the independent variables are set equal to zero.

**Table 1**  
 Description of the explanatory variables

Variables	Type	Definition	Value
Age at marriage	Quantitative	Age at marriage of the female respondent	
Use of contraceptives	Categorical	Use of contraceptives by the respondent	1 if yes, 0 otherwise
Duration of breastfeeding	Quantitative	Duration of breast feeding to the last child	
Husband's occupation	Categorical	Occupation of the husband	1 if engaged in agriculture and allied, 0 otherwise
Husband's education	Categorical	Level of Education of the husband	1 if High School and above, 0 otherwise
Education of mother	Categorical	Education level of the female respondent	1 if High School and above, 0 otherwise
Working status of mother	Categorical	Working status of the female respondent	1 if working, 0 not working
Effective married life	Quantitative	Effective married life lived (in years)	
Infant and child mortality	Categorical	Death of infants and children experienced	1 if experienced, 0 if not
Income of family	Quantitative	Household monthly income	
Desired Family Size	Quantitative	Desired Family size as reported by the mother	

The table 2 displays the results of the multivariate linear regression model expressing the relationship between fertility levels and its determinants.

**Table 2**  
 Multivariate Linear Regression Model  
 Description of Fertility Level

DEPENDENT VARIABLE: Fertility Level ( No. of Live Births)			
Variables	Unstandardized coefficients $\beta$	t ratio	VIF
Age at marriage	-0.061**	-3.123	1.259
Use of contraceptives	0.274	1.011	1.104
Duration of breastfeeding	-0.002	-0.420	1.070
Nature of Husband's occupation	0.110	0.503	1.531
Husband's education	-0.061	-0.391	1.837
Education of mother	-0.329**	-2.268	1.532

Working status of mother	0.344	1.046	1.052
Effective married life	0.069*	8.450	1.288
Infant and child mortality	0.835*	3.864	1.056
Income of family	-0.011	-1.173	1.711
Desired Family Size	0.653*	7.485	1.309
Constant	1.225		

R = 0.776, R square = 0.602

\* F = 31.352

\*significant at 1 percent level

\*\*significant at 5 percent level

The multiple regression model clearly shows that, these eleven independent variables largely determine fertility level of the sample population. The intercept value of 1.22 indicates that if the values of all the eleven independent variables are fixed at zero, the number of live births will be quite low, i.e., 1.22. These eleven variables explain more than 60 percent variables in the live birth. The assumption of no multicollinearity among the regressors included in the regression model has been satisfied by the collinearity statistics. The Variance Inflation Factor (VIF) in respect of all the eleven independent variables is much below 10 (it is within 1 to 1.8 in case of all the independent variables).

Analysis of the Estimated Regression Coefficients:

1. Live Birth and Effective Married Life: In the regression analysis, effective years of married life lived is found to be significant at 1 percent level of significance. The estimated regression coefficient of effective married life (0.069) indicates that one year increase in effective married life causes an increase in live birth by 0.07 units. So it is concluded that effective married life lived is a highly significant determinant of Muslim community. The average effective married life lived of the sample population has been found to be 12 years. Prevalence of early marriage may be the reason of longer effective married life which in turn causes higher fertility.
2. Live Birth and Age at Marriage: In the multiple regression analysis, female age at marriage is found to be significant at 5% level of significance. The regression coefficient of the female age at marriage (-0.061) indicates that one year increase in age at marriage decreases live birth by 0.06 units. So it can be concluded that female's age at marriage is a significant determinant of fertility of the Muslim community. The mean years of age at marriage of the Muslim females has found to be 17.5 years. The lower the age at marriage the higher will be the effective reproductive span for couples and it, therefore, is likely to cause high birth. The table 3.7 shows the age at marriage of the sample female population. It is found that early marriage is quite common among the females of the Muslim community, as 53.6 percent of the sample women get married below the minimum legal age of marriage for the females, i.e., 18 years. Only around 46.4 percent females get married at the age of 18 years and above. According to NFHS 3<sup>rd</sup> round report 33.9 percent females get married before the age of 18 years. The mean age at effective marriage of the sample females is 17.5 years. This figure is 21.1 for

- Assam and 20.7 for India (Family Welfare Statistics in India, 2011).
3. Live Birth and Infant and Child Mortality: The  $\beta$  coefficient for infant and child mortality experiences reveals that there is a highly significant positive relationship between the live birth and infant and child mortality experiences by the couples. The regression coefficient of infant and child mortality is 0.835, which indicates that the couples who have experienced infant and child mortality affect fertility positively (i.e., by 0.835 units) compared to the couples who have not experienced the same. This may be due to the high tendency to replace the children they have lost with additional child bearing. It is concluded that this variable is highly significant determinant of fertility of Muslim community as it is found to be significant at 1% level of significance. It may be due to their high tendency to replace the child they have lost with additional one. Also they may need more number of children because of their poor economic conditions.
  4. Live Birth and Desired Family Size: The ideal family size as reported by the female respondent is found to be significant at 1% level of significance. The partial regression coefficient of ideal family size is 0.653, which indicates that, holding all other variables constant, an increase in ideal family size increases live birth by 0.653 units. It is concluded that this variable is highly significant determinant of fertility of Muslim community. This may be due to the preference of large number of children of the couples. The table 3.8 shows desired family size expressed by the respondents.
  5. Live Birth and Education of Mother: In the regression analysis, education of mothers is found to be significant at 5% level of significance. The estimated regression coefficient of education of mother is -0.329, which indicates that compared to the females with no education or below high school level of education, the females with high school and above level of education can decrease the number of live birth by 0.33 units. Females with atleast high school level of education have experienced less number of children. The table 3.9 shows the male female educational attainment and fertility level of the sample population. It can be seen that participation of females in higher education is more than the males. Also the percentage of live birth is inversely related to the level of education of the females. Higher the level of education the lower is the number of live births.
  6. Live Birth and Use of Contraceptives: Use of contraceptives is found to be insignificant determinant of fertility and the results show that contraceptive has its positive impact on the live births as the regression coefficient is found to be 0.274. It indicates that use of contraceptives leads to increase in live births. This may be due to the use of contraception by couples is exercised only after having a large number of births. The table 3.10 shows the percentage of women regarding the knowledge of contraceptives and birth control.
  7. Live Birth and Working Status of Mothers: Working status of mothers is found to be statistically insignificant determinant of fertility. The estimated regression coefficient is 0.344, which indicates that compared to the non-working mother, working mothers have higher fertility. Here it might be concluded that working status of mother has not its significantly impact on the fertility performances of the Muslim community. In the sample population, 95.55 percent of the respondents are housewives, 2.43 percent of the respondents are in service. 0.81 percent of the respondents are wage earner.
  8. Live Birth and Income of the Family: The estimated regression coefficient of income of the family is -0.011, which indicates that as income increases, live birth falls by 0.011 units. As the income of the family is found to be statistically insignificant. Therefore, it can be concluded that income has not its significant impact on the fertility of the Muslim community. The reason may be due to their failure to access better health care and modern contraceptives methods due to very low level of income. Information related to family income reveal that the average monthly income of the sample household is about Rs. 9449 with a standard deviation of Rs. 6752. Monthly per capita income is found to be Rs. 2063.
  9. Live Birth and Nature of Husband's Occupation: The estimated regression coefficient of husband's occupation is 0.110, which indicates that compared to the husbands engaged in non agricultural occupation, husbands engaged in agriculture and allied activities have higher fertility. The nature of husband's occupation has not its significant impact on the live births as it is found to be statistically insignificant. In the sample households, agriculture and wage earning are found to be main occupations. Therefore, the need for large number of children is there in the families.
  10. Live Birth and Breastfeeding: The estimated regression coefficient of duration breastfeeding is -0.002, which indicates that, controlling all other variables, longer duration of breastfeeding practice reduces live birth by 0.002 units. The duration of breastfeeding is found to be statistically insignificant, so it can be concluded that breastfeeding has not its significant influence on the fertility performances of the Muslim Community. The average months of breastfeeding has been found to be 22 months.
  11. Live Birth and Husband's Education: The estimated regression coefficient of the husband's education is -0.061, which indicates that having educational attainment of high school and above reduces live birth by 0.061 units. Husband education is found to be statistically insignificant and so it can be concluded that husband's education has not its significant influence on the fertility behaviour of the Muslims. This may be due to the low standard of educational attainment of the husbands. It is estimated that only 10 percent husbands have higher secondary level of education, 6 percent husbands are graduate and 1 percent husbands have post graduation level of education.
- It is found that the independent variables i.e., effective married life lived, infant and child mortality experiences, education of mothers, desired family size and age at marriage of the female respondents are significant determinants of fertility of the Muslim community. It gives the answer to the first research question of the study i.e., the socio-economic and demographic factors affecting

fertility of the sample Muslim women are- effective married life lived, infant and child mortality experiences, education of mothers, desired family size and age at marriage of the female respondents. The other independent variables i.e., duration of breastfeeding, husband's education, working status of mother, use of contraceptives, nature of occupation of the husband and income of the family are found to be statistically insignificant. They do not have significant impact on the fertility of the Muslim women.

#### 5. Conclusion:

The change in human attitude for acceptance of fertility control programs cannot be achieved safely through target oriented approach. It should be brought about by persisted and indigenous Information, education and communication activities and provision of basic health and family welfare activities. From the above discussion it can be seen that the Muslims exhibits lower socio-economic status and higher fertility compare to the state average. The educational status of the sample Muslims population is not satisfactory and it calls for special attention. Sex education should be included in the schools atleast in the middle primary level. It will go in a long way to create awareness in the society. It also helps to create sense of responsibility among the males and females about their lives. In order to influence the fertility behaviour of Muslims, attention should be focused on raising the educational attainment of both males and females as education is found to be one of the key determinants of fertility of this particular community. So, government should make serious efforts to improve the socio-economic status by giving more emphasis on increasing educational levels of Muslims and execute the family planning programs in a proper way which ensure greater participation of women.

#### REFERENCES:

- [1] Acharya, (1998): "Determinants of Fertility in the 1970s and 1990s in Nepal", Contributions to Nepalese Studies 25, (Special Issue), pp. 95-108.
- [2] Annual Health Survey of Assam, 2011-12.
- [3] Banu, S. (2017): Level and Determinants of Fertility: A study of a Minority community of Nagaon district of Assam", Unpublished M.Phil Dissertation (Economics), Dibrugarh University, Assam, India.
- [4] Bhende, A. & Kanitkar, T. (1992): "Principles of Population", Himalaya Publishing Company.
- [5] Bongaarts, J. (1978): "A framework for Analysing the Proximate Determinants of Fertility", Population and Development Review, Vol. 4 No. 1, pp. 105-132.
- [6] Cochrane et.al, (1990): "Education, In- come, and Desired Fertility in Egypt: A Revised Perspective", Economic Development and Cultural Change, Vol. 38, pp. 313-339.
- [7] Chutia, (2016): "Tribal Demography in Assam: A Case Study of the Deoris" A Ph.D Thesis submitted to Dibrugarh University, Department of Economics.
- [8] Das & Dey, (1998): "Female age at Marriage in India: Trends and Determinants", Demography India, Vol. 27, No. 1, pp. 91-115.
- [9] Dreze, J and M Murthi (2001): "Fertility, Education and Development: Evidence from India", Population and Development Review, Vol. 27, No. 1, pp. 33-63.
- [10] Doepke, (2005): "Child Mortality and Fertility Decline: Does the Barro-Becker Model Fit the Facts", Journal of Population Economics, Vol. 18, pp. 337-366.
- [11] Family Welfare Statistics in India, 2011.
- [12] Fox et.al, (2015): "Is a Positive Relationship between Fertility and Economic Development Emerging at the Sub-National Regional Level? Theoretical Considerations and Evidence from Europe", MPIDR Working Paper WP 2015-006
- [13] Hondroyiannis, (2009): "Fertility Determinants and Economic Uncertainty: An Assessment using European Panel Data", Working Paper, Bank of Greece, Economic Research Department, Special Studies Division.
- [14] Khan & Khan, (2010): "Fertility Behaviour of Women and Their Household Characteristics: A Case Study of Punjab, Pakistan", Journal of Humanity and Ecology, Vol. 30, No. 1, pp. 11-17.
- [15] Khatun, (2011): "Desired and Actual Fertility in Bangladesh: The Role of Mass Media and Social interactions", A Thesis submitted to Graduate School of Development Studies, Bangladesh.
- [16] Martin (1995): "Women's Education and Fertility: Results from 26 Demographic and Health Surveys", Studies in Family Planning, Vol. 26, No. 4, pp. 187-202.
- [17] Molyneaux & Gertler, (2000): "The impact of Targeted Family Planning Programs in Indonesia", Population and Development Review, Vol. 26, pp. 61-85.
- [18] NFHS I, II, III, IV.
- [19] Palloni & Rafalimanana, (1997): "The Effects of Infant Mortality on Fertility Revisited: Some New Evidence", Center for Demography and Ecology, University of Wisconsin-Madison Working Paper No. 96-27.
- [20] Saadeh & Benbouzid, (1990): "Breastfeeding and Child Spacing: Importance of information collection for Public Health Policy", Bulletin of the World Health Organisation, Vol. 68, No. 5, pp. 525-631.
- [21] Salami & Oladosu, (2016): "Factors Influencing Women's Employment Status and Fertility Preferences among Married Women in South-South Region of Nigeria", 3rd International Conference on African Development Issues (CU-ICADI).
- [22] Schultz, (2005): "Fertility and Income", Center Discussion Paper No-925, Yale University.
- [23] Siegel, (2012): "Female Employment and Fertility- The Effects of Rising Female Wages", CEP Discussion Paper No. 1156.
- [24] Sinha, V.C. & Zacharia, E. (1986): "Elements of Demography", Allied Publishers Private Limited.
- [25] Westoff & Bankole (2001): "The Contraception – Fertility Link in Sub-Saharan Africa and in Other Developing Countries", DHS Analytical Studies No. 4. Calverton, Maryland: ORC Macro.
- [26] Wong, (1986): "The Role of Husband's and Wife's Economic Activity Status in the Demand for Children", Published by Department of Economics, Chinese University of Hong Kong.