FERTILITY OF WOMAN IN OKHALKANDA BLOCK OF NAINITAL DISTRICT IN UTTARAKHAND

BHARAT RATNA Research Scholar, Department of Statistics, D.S.B. Campus, Kumaun University, Nainital, Uttarakhand (India) 263002

DR. MANOJ KUMAR PANDEY Professor & Head, Department of Statistics, D.S.B. Campus, Kumaun University, Nainital, Uttarakhand (India) 263002

DR. SPERSH BHATT Assistant Prof., Department of Statistics, D.S.B. Campus, Kumaun University, Nainital, Uttarakhand (India) 263002

ABSTRACT: *Fertility plays a significant role in Demography. It is the important factor which is responsible for unusual changes in population distributions in the Okhalkanda block of the Nainital district. This study examined the fertility differentials in the rural population of Okhalkanda block (Nainital) in Kumaun region of Uttarakhand by taking into consideration the various demographic variables such as - category, occupation, education, nature of family, present age, age at marriage and age at first & last delivery of the respondents along with the husband's education, occupation and whether the husband has migrated or not. In order to examine the differentials in fertility of women in study area, a regression model approach is used to measure the extent of the interaction of different type of effects of various demographic variables.*

The relationship between the fertility levels and demographic variables shows that female literacy as gone higher were negatively related to fertility and an increase in age at marriage significantly reduced total fertility of women in the study area. It is a well known fact that higher numbers of children leads to hardships and more responsibilities for the respective parents so an ideal situation would be minimum possible number of children. Study concludes that this may be achieved by providing higher educational facilities and better job alternatives to the girls.

KEYWORDS: *Fertility; regression; demographic variables; literacy; age at marriage; Nainital*

1. INTRODUCTION

Fertility plays key role factor to determine the size and structure of the population of any area. Human fertility process which is exceptionally minds boggling is influenced by natural elements as well as by various economic and social factors. The study on fertility is of great importance as it is one of the major positive forces for the balance of vital processes. The Nainital district had shown 7.55% reduced population growth in 2011 census as compared to the 2001 census, which might be due to fertility is expected to decline with

improvements in social conditions and in the presence of better infant survival. Okhalkanda is a block located in Nainital district of Uttarakhand. It is one of the eight blocks of Nainital district. The block has 108 villages and there are total 10566 homes in this block. As per Census 2011, the population of Okhalkanda block is 52043. Out of this, 26966 are males while the 25077 females count here. This block has 6266 children in the age bracket of 0-6 years. Out of this 3238 are boys and 3028 are girls. The creation of the separate state of Uttarakhand caused a large part of the population of the rural Kumaun Region to migrate to different urban parts of the state and India. It is estimated that approximately, one sixth population of Kumaunees is scattered all over the country. By the migration, especially in the developing countries, the socio-economic and cultural environment of the people living has changed in rural areas and ultimately affects the fertility performance. Migrating men have 'left wives behind'. Wives are generally left behind in charge of their families. They have to take care of their children and the elderly people in the family. Most of the rural poor, in particular women, is represented in the low-productivity employment segment of the rural economy both in subsistence farming and agricultural wage labour and in non-farm self-employment. Access to decent work remains limited in both agricultural and non-agricultural work. Work is generally more likely to be either unpaid or low-wage, informal, vulnerable, and to lack social protection. For women, many barriers persist to their equal access to decent work, including the lack of education and training and child-care services, as well as constraints due to unequal care and household responsibilities. Arunachalam, (2005)

This paper is an attempt to analyse the ferility with reference to various demographic indicators like category, occupation, education, nature of family, present age, age at marriage and age at first & last delivery of the respondents along with the husband education, occupation and whether the husband has migrated or not in the Okhalkanda block of Nainital district. The paper will present a descriptive study and test the association between fertiltiy and various demographic indicators in the study area with the help of Chi Square tests and multiple regression model.

2. Methodology

For determining the most responsible factor for declining fertility in rural areas, a random sample of 500 respondents are selected from 6 gram sabha of Okhalkanda block of Nainital

district for investigation by questionnaire and relevant data are collected. The total sample came to 497. Structured questionnaire with all the necessary details was prepared and the details are then assessed on the selected sampling units. The data on complete birth record included questions on birth intervals, age of the female at various parity etc, for each eligible couple. A couple was defined eligible if both the partners were alive and the age of female was below 50 years. Thus, the complete birth record of migrated couples is also available. The details collected are age of women at marriage, type of family, education of women, employment of women and spouse, Income of women and spouse. Statistical package such as SPSS is applied to analyse the collected data and compute the objective functions. Multiple regression model is used for number of children and various fertility affecting variables. Various diagrammatic representations are used to show the fertility levels with reference to different factors.

3. STATISTICAL ANALYSIS

3.1 Children ever born according to their family's nature

Table-1   Distribution of children ever born according to their family's nature

No of CEB	Nature of family				Total	
	Nuclear		Joint			
1	3	2.8%	106	97.2%	109	100.0%
2	19	17.4%	90	82.6%	109	100.0%
3	48	43.6%	62	56.4%	110	100.0%
4	46	56.8%	35	43.2%	81	100.0%
5	41	71.9%	16	28.1%	57	100.0%
6	17	85.0%	3	15.0%	20	100.0%
7	5	55.6%	4	44.4%	9	100.0%
8	0	0.0%	1	100.0%	1	100.0%
9	1	100.0%	0	0.0%	1	100.0%
Total	180	36.2%	317	63.8%	497	100.0%

Source: based on field survey

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	142.817[a]	8	0.000
Likelihood Ratio	163.955	8	0.000
Linear-by-Linear Association	124.752	1	0.000
N of Valid Cases	497		
a. 5 cells (27.8%) have expected count less than 5. The minimum expected count is 0.36.			

The result of Chi-square test shows that there is highly significant association between CEB and their nature of family.

Above table represents that out of total 497 respondents (married women below 50 yrs) there were maximum 109 numbers of respondents has two children form which 83% belongs to joint family and rest 17% was from nuclear family of rural Kumaun. Out of total respondents there were 110 numbers of respondents has three children in which 56% belongs to joint family and rest 44% was from nuclear family. Similarly, there were 109 numbers of respondents has only one child form which 97% belongs to joint family and rest only 3% was from nuclear family. Having with four children, there were 81 numbers of respondents in which 43% and 57% belongs to the joint and nuclear family of rural Kumaun respectively.

3.2 Children ever born according to their respondent's occupation

Table-2   Distribution of children ever born according to respondent's occupation

No. of CEB	Respondent's occupation												Total	
	Farming		Household activity		Wage labor		Agriculture labor		Contract bases		Private job			
1	54	49.5%	52	47.7%	0	0.0%	1	0.9%	0	0.0%	2	1.8%	109	100.0%
2	81	74.3%	26	23.9%	0	0.0%	1	0.9%	1	0.9%	0	0.0%	109	100.0%
3	93	84.5%	15	13.6%	1	0.9%	1	0.9%	0	0.0%	0	0.0%	110	100.0%
4	73	90.1%	6	7.4%	0	0.0%	1	1.2%	1	1.2%	0	0.0%	81	100.0%
5	52	91.2%	4	7.0%	0	0.0%	1	1.8%	0	0.0%	0	0.0%	57	100.0%
6	19	95.0%	0	0.0%	0	0.0%	1	5.0%	0	0.0%	0	0.0%	20	100.0%
7	9	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	9	100.0%
8	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%
9	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%
Total	383	77.1%	103	20.7%	1	0.2%	6	1.2%	2	0.4%	2	0.4%	497	100.0%

Source: based on field survey

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	93.354[a]	40	0.000
Likelihood Ratio	93.128	40	0.000
Linear-by-Linear Association	16.421	1	0.000
N of Valid Cases	497		
a. 42 cells (77.8%) have expected count less than 5. The minimum expected count is 0.00.			

The result of Chi-square test shows that there is highly significant association between CEB and their respondent's occupation.

Above table shows that out of total 497 respondents (married women below 50 yrs) there were maximum 109 numbers of respondents has two children form which 74.3% was farmers and 24% was busy with their household activity. Out of total respondents there were 110 numbers of respondents has three children in which 85% was farmer and 14% was busy with their household activity. Similarly, there were 109 numbers of respondents has only one child form which 50% was farmers and 48% was busy with their household activity. Having with four children, there were 81 numbers of respondents in which 90% was farmers and 7.4% was busy with their household activity. Hence the CEB occurs in the majority of farmers and that population who was busy with household activity in rural Kumaun.

3.3 Children ever born according to their respondent's education

Table-3   Distribution of children ever born according to their respondent's education

No of CEB	Educational status											Total	
	Illiterate		Literate		Literate up to 5std		6-10std		11-12std		Higher Education			
1	6	5.5%	5	4.6%	4	3.7%	20	18.3%	49	45.0%	25	22.9%	109	100.0%
2	9	8.3%	10	9.2%	11	10.1%	27	24.8%	36	33.0%	16	14.7%	109	100.0%
3	15	13.6%	21	19.1%	16	14.5%	33	30.0%	17	15.5%	8	7.3%	110	100.0%
4	23	28.4%	12	14.8%	15	18.5%	19	23.5%	9	11.1%	3	3.7%	81	100.0%
5	27	47.4%	8	14.0%	5	8.8%	9	15.8%	8	14.0%	0	0.0%	57	100.0%
6	11	55.0%	3	15.0%	2	10.0%	2	10.0%	2	10.0%	0	0.0%	20	100.0%
7	7	77.8%	1	11.1%	0	0.0%	0	0.0%	1	11.1%	0	0.0%	9	100.0%
8	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%
9	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%
Total	100	20.1%	60	12.1%	53	10.7%	110	22.1%	122	24.5%	52	10.5%	497	100.0%

Source: based on field survey

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	180.272[a]	40	0.000
Likelihood Ratio	179.533	40	0.000
Linear-by-Linear Association	118.093	1	0.000
N of Valid Cases	497		
a. 24 cells (44.4%) have expected count less than 5. The minimum expected count is 0.10.			

The result of Chi-square test shows that there is highly significant association between CEB and their respondent' education.

Above table shows that out of total 497 respondents (married women below 50 yrs) there were maximum 109 numbers of respondents has two children form which 33% was up to 12th standard passed, 25% was 6th to 10th standard passed and 15% have got higher education. Out of total respondents there were 110 numbers of respondents has three children in which 30% was 6th to 10th standard passed, 19% was only literate, 16% was up to 12th standard passed and 15% was up to 5th standard passed. Similarly, there were 109 numbers of respondents has only one child form which 45% was 12th standard passed, 23% have got higher education and 18% was 6th to 10th standard educated. Having with four children, there were 81 numbers of respondents in which 28% was just literate, 24% was 6th to 10th standard passed and 19% was up to 5th standard passed and 15% was only literate in rural areas of Kumaun. Hence more educated mothers have less number of CEB.

3.4 Children ever born according to the migration status of the husband

Table-4   Distribution of children ever born according to the migration status of the husband

No. of CEB	Husband migrated				Total	
	No		**Yes**			
1	26	23.9%	83	76.1%	109	100.0%
2	55	50.5%	54	49.5%	109	100.0%
3	72	65.5%	38	34.5%	110	100.0%
4	62	76.5%	19	23.5%	81	100.0%
5	47	82.5%	10	17.5%	57	100.0%
6	19	95.0%	1	5.0%	20	100.0%

7	9	100.0%	0	0.0%	9	100.0%
8	1	100.0%	0	0.0%	1	100.0%
9	1	100.0%	0	0.0%	1	100.0%
Total	**292**	**58.8%**	**205**	**41.2%**	**497**	**100.0%**

Source: based on field survey

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	102.275[a]	8	0.000
Likelihood Ratio	111.878	8	0.000
Linear-by-Linear Association	93.557	1	0.000
N of Valid Cases	497		
a. 5 cells (27.8%) have expected count less than 5. The minimum expected count is 0.41.			

The result of Chi-square test shows that there is highly significant association between CEB and their migrated husband of respondent.

Above table represents that out of total 497 respondents (married women below 50 yrs) there were maximum 109 numbers of respondents has two children form which 51% married women lived with her husband and rest 49% respondent was left alone. Out of total respondents there were 110 numbers of respondents has three children in which 66% married women lived with her husband and rest 34% respondent was left at home. Similarly, there were 109 numbers of respondents has only one child form which 24% married women lived with her husband and rest 76% respondent was left alone.. Having with four children, there were 81 numbers of respondents in which 77% married women lived with her husband and rest 23% respondent was left alone in rural Kumaun. Hence greater numbers of migrated husband of respondent have lesser number of CEB.

3.5 Multiple regression model

To show the functional relationship between one dependent and various independent variables, multiple regression model is very useful tool. In this study, the dependent and independent variables are as follows:

Dependent variable: Number of children ever born.

Explanatory variables: category, occupation, education, nature of family, present age, age at marriage and age at first & last delivery of the respondents along with the husband education, occupation and the migration status of the husband.

The multiple regression model is given below

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + b_{11}X_{11}$$

Where Y represents number of children ever born which is dependent variable and X_i's are independent variables.

Model Summary[b]

Table-5

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.879[a]	0.773	0.768	0.761
a. Predictors: (Constant), category, occupation, education, nature of family, present age, age at marriage and age at first & last delivery of the respondents along with the husband education, occupation and the migration status of the husband.				
b. Dependent Variable: number of children ever born				

ANOVA[a]

Table-6

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	956.755	11	86.978	150.128	0.000[b]
	Residual	280.987	485	0.579		
	Total	**1237.742**	**496**			
a. Dependent Variable: Number of children ever born						
b. Predictors: (Constant), category, occupation, education, nature of family, present age, age at marriage and age at first & last delivery of the respondents along with the husband education, occupation and the migration status of the husband.						

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: No_of_Children
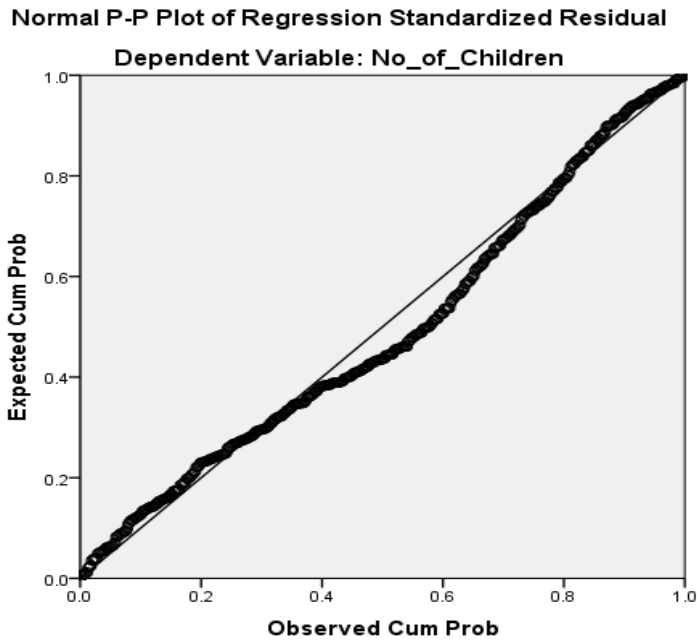
Coefficients[a]

Table-7

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.662	.289		9.216	.000
	Category	.049	.045	.024	1.089	.277
	Occupation of the respondent	-.009	.037	-.005	-.236	.814
	Education of the respondent	-.094	.024	-.129	-3.866	.000
	Nature of family	-.346	.086	-.105	-4.046	.000
	Present age of the respondent	.071	.031	.071	2.325	.020
	Age at marriage	-.510	.091	-.196	-5.621	.000
	Age at first delivery	-.704	.088	-.286	-8.028	.000
	Age at last delivery	1.174	.050	.732	23.258	.000
	Husband education	.050	.024	.068	2.055	.040
	Husband occupation	-.002	.004	-.011	-.477	.633
	Husband migrated	-.216	.088	-.068	-2.474	.014
a. Dependent Variable: Number of children ever born						

The fitted multiple regression model is given below Number of CEB = 2.662 + 0.049 (Category) - 0.009 (Occupation of the respondent) - 0.094 (Education of the respondent) - 0.346 (Nature of Family) + 0.071 (Present age of the respondent) - 0.510 (Age at marriage) - 0.704 (Age at first delivery) + 1.174 (Age at last delivery) + 0.050 (Husband education) - 0.002 (Husband occupation) - 0.216 (Husband migrated).

The above estimated equation is the result of the OLS regression between number of CEB and other determinants of women fertility of the sample data. The value of R square was found to be 0.773 by which 77.3% variations can be explained and the significant F statistic justified the model fit (table-5). The predictors: occupation of the respondent, education of the respondent, Nature of family, age of respondent at the time of marriage, age of the respondent at first delivery, husband occupation and husband migrated were found to have a negative and significant (except occupation of couple) effect on fertility whereas category, present age of the respondent, age at last delivery, husband education were positively associated with fertility (table-7). Thus the results were almost consistent over the model.

4. Conclusion and discussion

The result from the present study support and contribute to the literature relating to socio, demographic variables and fertility. Both age at marriage and age at first delivery have a significant negative impact on fertility. This supports findings by Kamaiah et al. (1999). The relationship between the live births and total years of education is also an indicator that more educated women are going for fewer children. Higher education is also making the women more aware of the economic and social scenario of the country and that may be leading to lesser number of children in the household. The present study was aimed at investigating the fertility behavior of married women with living husbands of Okhalkanda block of Nainital district according to various socio and demographic variables. Various factors are attributed to fertility behavior of women in this region. The main influencing factors included age at marriage, education, occupation, age at first delivery, caste of the respondent, husband education, husband occupation, age at last delivery, nature of family, husband migrated. Among these factors, age at marriage, education, age of first & last delivery, nature of family and husband migrated are important and strong predictors that affect fertility. Despite the legal restrictions against marrying at a young age, early marriage is common in the region. Therefore, programs should focus on creating awareness of the

marriage law and the disadvantages of early marriage and large family size. Similarly, more emphasis needs to be place on messages conveyed via the mass media, addressing the advantages of small family size and family planning. Furthermore, long-running programs focusing on increasing literacy status and wealth status are essential to improve the reproductive health status of women. Similarly, the relation between fertility and child mortality experienced by mothers was found to be very strong and positive in the study. Programs that focus on reduction of infant and child mortality could also be considered, which would also help to reduce fertility. Age at marriage indeed has a significant effect on fertility of women. An increase in age at marriage significantly reduces total fertility of women. So, women's education not only has a direct effect in fertility reduction, but also has an indirect effect through effect on age at marriage. In addition, female educational attainment has a direct effect on fertility as well, although this direct effect is significant only if the woman is highly educated. Further, women's education appeared to have a strong inter-generational effect as well-age at marriage was significantly higher for women with literate parents, and it is important to note that mother's literacy has a stronger effect on age at marriage of her daughters compared to father's literacy. From the policy point of view, all other things being equal, governments should accord a significant priority to female education.

REFERENCES

1. Krishnamurthy, S. (1984): A Note on the Relation of Education, Economic Status and Age at Marriage to Fertility in Community Development Block, South India, Bulletin. Girh and Fwt, IX (1):7.

2. Safilios, R.C. (1985): The Status of Women and Fertility in the Third World in the 1970-80 Decade, The Population Council, Centre For Policy Studies, New York.

3. Rele, J.R. (1987): Fertility Levels and Trends in India, 1951-81, Population and Development Review, 13, No 3, p.p. 513-530.

4. Government of India (2011): Census of India, Uttarakhand Provisional Population Figure, Uttarakhand.

5. Mahadevan, K. (1987): Social Development, Cultural Change and Fertility Decline: A Study of Fertility Change in Kerala; Sage Publications, New Delhi.

6. Mahadevan, K. (1988): Determinants of Religious And Case Differentials In Fertility, A Village Study In Fertility And Mortality Theory, Methodology And Empirical Issues (Ed.) K. Mahadevan, Sage Publication, New Delhi.

7. Kamaiah, B., Begum, H., and Mohsin, M. (1999): Labor Supply, Fertility and Wage Among Married Women: A Case Study of Married Muslim Women of Hyderabad City. Asian Economic Review, 41 (2), pp. 276-293.

8. Amartya, S. (2001): Many Faces of Gender Inequality, India's National Magazine. Volume 18 - Issue 22, Oct. 27 - Nov. 09, 2001.

9. Roy, Ashine (2003): Development of Women: An Assessment, Rajat Publication, New Delhi.

10. Roy, Ashine (2003): Women in Power and Decision Making, Rajat Publication, New Delhi

11. Samantha, R.K. (2005): Empowering Rural Women: Issues, Opportunities and Approaches, The Women Press, Delhi.

12. Arunachalam, Jaya (2005): Women's Equality: A Struggle For Survival, Gyan Publishing

    House, New Delhi.

13. Findley S E (2005): A suggested framework for analysis of Urban-Rural fertility differentials with an illustration of the Tanzanian case. Population Environ., 3(2-4):237-261.

14. SAHAVAGI, (2007): Gender Equality and Women's Empowerment in Nepal. A report submitted to UNFPA. Kathmandu

15. Pankaj Bahuguna,O.K. Belwal (2013): Fertility differential in rural areas of Pauri Garhwal: A regression approach, International Journal of Advanced Research in Management and Social Sciences (IJARMSS)

16. Narendra Bahadur Chand, Prof. M.K. Pande, Dr Spersh Bhatt (2016): Effect of Socio-economic and demographic variables on fertility in far western Nepal (A case study of kanchanpur), International Journal of scientific research and management (IJSRM)