

Research Article

The Level and Determinants of Excess Fertility in Uttar Pradesh

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Abstract

The paper focuses on the level and determinants of excess fertility by taking the difference in their actual and desired fertility for the women of Uttar Pradesh. The study analyzes the effects of some potential socio-demographic factors such as place of residence, religion, years of schooling, wealth index, age at marriage and current age of the women etc. on the gap between the actual and desired fertility levels. The data used for this study are obtained from 6 cities in Uttar Pradesh in 2010. Logistic regression is used as a statistical tool to examine the effect of various socio-demographic variables on the level of excess fertility. The findings of the study support that women who have higher education, dwelling in non-slum areas, and have higher age at marriage generally have desire for less number of children and lower level of actual fertility as compared to the women living in slum areas, having low level of education and are married at an early age. The inverse relationship between the years of schooling and desired fertility as well as actual fertility may play the vital role in framing social policies to reduce fertility level. A similar relationship is found between age at marriage and actual fertility level.

Introduction

Fertility is responsible for growth in the population, since much of the population growth seen in the last hundred years is the result of decrease in infant mortality as well as increase in life expectancy and thus to control population growth, birth rate must be reduced. Fertility is shaped by many socio-economic as well as biological factors. It can be of two types: desired and actual. The desired and actual. The desired fertility which is also coined as demand for children which measures the number of children a woman wants to have in her lifetime, whereas, the actual fertility measures the number of children she actually has during her complete reproductive span. Desired fertility has many forms of explanations, it can be defined as the number of children wanted in one's life (Thomson, 2001), whereas, McClelland (1983) defines it as the number of children parents would have if there were no subjective or economic problems involved in regulating fertility. There is extensive literature on desired family size (Leibenstein, 1957; Becker, 1960; Lewis, 1973; Becker, 1981).

The fertility trends are shown to have declined for most of the countries around the world and the TFR level reached below the replacement level, in past half century in developed world (Mturi, 2000; Bongaarts, 2005). However, still in many parts, the persisting fertility is at a high level. In spite of a low number of children desired by the couples they ultimately have more children than initially desired. Among the plausible reasons behind the prevailing high fertility, one is unintended births. Women want to have lesser number of children but due to insufficient knowledge of birth control methods or due to their lesser autonomy in family size decision they end up having more children than desired. The concern regarding unintended births in developing countries has been raised by several authors in their study (Bongaarts, 1997; Rashid, 2004).

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Parents try to limit the number of children and they plan the family size. Some factors which are responsible for excess fertility are the level of schooling of women, income level of the household, religion/caste, etc. The levels of desire, as well as actual fertility, is not same in all parts of society, it varies in different sections of society (Dieudonné et al., 2014).

According to the well accepted economic theory of fertility, the changes in socio-economic structure in societies bring down the desired fertility. The cost of raising a child in terms of food, clothes, health and education increases as the society adopts modernization and the expected benefits by the extra child is overrun by the cost involved in his upbringing. The value of a child is determined by the social surroundings of the couple. The social and cultural variables, especially which of the mother, are often found to be the driving forces of high or low prevailing fertility. India, being home to many cultures and religions, possesses a very diverse picture of fertility behavior. In some states, the fertility level has already been reduced below fertility level while in some parts of the country it is still very high. Uttar Pradesh is the most populous state in India with high fertility rate and the demographic profile of the state shapes the demographic profile of the country to a great extent. In this study, we have tried to explore the socio-economic factors which are responsible for excess fertility among the women of Uttar Pradesh.

In many societies, women's status is linked with how many children she gives birth to and sometimes also with the sex of children. At the same time, women's status can also be enhanced with her higher educational attainments and participation in the labour force but this leads to the reduction in her desired fertility preference and her actual fertility (Hindin, 2000). Women's autonomy is found to have a negative impact on fertility (Abadian, 1996). The excess fertility can also be attributed to the socio-economic status of women. The women of low socioeconomic status are in a state of excess fertility as they have lesser knowledge of birth control methods. Besides, if they have access to contraceptive methods, they consider extra children as helping hands for earnings. In developing countries, the extra child as the helping hand and the extra earning due to that child is considered higher than the cost of raising that child and this leads to favorable condition to have more children. The negative relation between education and unintended births is explored by various authors (Cochrane, 1979; Martin & Juarez, 1995; Nohora & Gamboa, 2009). Therefore, it is expected to have a negative relation between education and excess fertility. The educated women generally have right to make decisions regarding family size and contraceptive uses (Tambashe & Shapiro, 1994). Also, the women who are married at an early age are expected to be in a state of excess fertility attributed to their early entry into sexual activity and lesser knowledge about contraceptive methods.

In the societies having son preference, the fertility level is generally high (Robert, 1972) and couples may produce children until they have at least one male birth (Rai et al., 2014). Sometimes a couple wants to have at least one child of either sex and in this case, they may cross their desired fertility to achieve the favorable sex structure of children. It is evident from many studies that couples who have children of both sexes may not want more children but the couples, who have either sons or daughters, may go on producing children to have children of both sexes (Arnold, 1992; Nag, 1991). Sheps (1963) showed in his study that if the desire is constant, and the couple is fertile, the expected number increases with increasing preference for one sex over the other. Couples having more daughters than sons are the ones having higher actual fertility than the desired one (Park, 1983; Coombs, 1979).

It can be seen from the above described papers that the gap between the desired and actual levels of fertility can be contributed to many factors related to the women. The purpose of this study is to analyze the level and determinants of excess fertility among women of Uttar Pradesh who have completed their family size. It is worthwhile to mention that there is almost common universal trend in the world that the actual fertility is higher than the desired fertility. The factors which explain this

gap are explored in this study for the women of Uttar Pradesh, India. We have assumed in this paper that if the desired fertility is less than the actual fertility, the woman is in the state of excess fertility.

Data and Methodology

The data for this study have been taken from the baseline surveys conducted in Uttar Pradesh, India in 2010 by the Measurement, Learning & Evaluation (MLE) Project led by the Carolina Population Center in partnership with the International Center for Research on Women. These data were collected as part of the evaluation of the Urban Health Initiative (UHI), the India arm of the Bill & Melinda Gates Foundation Urban Reproductive Health Initiative. Women aged 15–49 were interviewed in six cities of Uttar Pradesh which are Agra, Aligarh, Allahabad, Varanasi, Moradabad and Gorakhpur in baseline survey 2010 and followed-up till the end line survey conducted in 2014. A total of 17,643 women were interviewed at baseline survey. The subset of questions required for this study was extracted, which included questions regarding women's desire for another child, her desired number of children, number of children she actually have, her years of schooling, her age at marriage etc., which eventually reduce sample size for the analysis to 7713.

The main focus of this study is the desired number of children stated by respondent and a total number of living children. The study is restricted to those females only who have completed their family and stated no further desire for children. Further, women who have no living children and also stated no desire for another child were excluded from the study because it is believed that in the life course, there may be a change in their status from zero parity to at least one. All the missing observations were removed corresponding to any variable taken in the study. Women who have given a non-numeric response such as 'don't know', 'up to God' etc. to the question 'desire for children' were also excluded from the study to avoid ambiguity. As stated earlier the study focuses on excess fertility, which can be defined as the situation where the actual fertility by the couple exceeds the desired fertility. The excess fertility can be considered as unwanted fertility. The gap between the actual fertility and desired fertility is grouped into two categories, one is 'actual fertility is less than or equal to desired' which is coded as 0 and the other is 'actual fertility is more than desired' which is coded as 1. This dichotomous coding is taken as dependent variable. Having binary outcome variable, logistic regression method is used as the statistical tool to get the odds of being in excess fertility. The logistic regression is well suited for describing the relationship between a categorical outcome variable and various categorical and continuous variables. The model is written as follows

$$\text{logit}(\pi) = \log\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_p X_p + \varepsilon$$

Where π is the probability of being in the status of excess fertility, X_i 's are independent variables, β_i 's are the coefficients of regression and ε is the error term.

Excess fertility, in this study, is modeled as the outcome of various socio-demographic factors. The study is confined to only socio-economic variables. Factors such as mortality (infant or child) have been excluded from the study. Variables like 'the place of residence', 'religion', 'wealth index', 'educational attainment', 'age at marriage' etc. are taken as the independent variable, more details on the independent variable can be obtained from Table No. 3. The 'knowledge and use of contraception' variable is not used in the study. Many women use contraceptive once they have crossed their desired fertility hence 'ever use of contraception' may mislead the outcome. Only the living number of children not 'children ever born' is considered for the study. As women may cross their desired level of fertility to have the desired number of living children if they had any child born alive but later died or born dead.

Result and Discussion

Table 1 shows the demographic profile of the respondents considered in the present study. The women in this study are residing in the urban slum and non-slum areas. Having a glance at the profile of women, it is seen that maximum percentage is obtained for the Hindu religion (69%) and the remaining 31% have non-Hindu belief. The minimum number of women belongs to the category current age is less than 24 years which is one-tenth of the total sample considered (10%). More than one-third of the total women are in the category no education and an equal percentage of women (22%) have education up to 8 years and 9 to 12 years respectively. Fifty percent of the women were married at the age 17-20 years, whereas, forty percent women married at an age after 20 years. It is worth to mention that the women who are living in urban areas still ten percent women were married before age 16 years.

Table 2 describes the difference in the mean levels of actual fertility and desired fertility of the women. Some interesting findings of the study are observed by Table 2, the maximum difference in desired and actual fertility is observed for women who are of age more than 40 years. Similarly, it can be seen from the table that the gap between desired and actual fertility is wider for women who have no education, have age at marriage less than 16 years and are in the household having poor wealth index. Women, who are married at an early age, may not have much knowledge of contraceptives or birth control methods and due to that are not able to control their fertility even if they desire for a lesser number of children to have in their lifetime. Similar reasons can be given for the women with no education. From Table, one more thing can be noticed that for the women who have no education, their desire for children is higher than that of other women having some education. Similarly, women who belong to a household with poor household index or have age at marriage less than 16 years generally want more children in their lifetime as compared to other women.

Logistic Regression Analysis

In order to check that the difference in study variable is due to the different levels of explanatory variables or is it due to chance, logistic regression is applied to the dichotomous study variable. Logistic regression analysis also tells that how the different independent variables affect the dependent variable under study. The crude, as well as adjusted odds ratio is obtained for different explanatory variables. Table 3 shows the result of binary as well as multivariable logistic regression analysis. The crude as well as adjusted odds ratio corresponding to study variable along with their 95% confidence intervals are given in the Table. Almost all predictor variables are found to be statistically significant to influence the study variable i.e. difference in desired fertility in both univariate as well as multivariate logistic regression analysis. The prediction accuracy of the model used is approximately 80 percent and the p-value for Hosmer-Lemeshow statistic is 0.364 (>0.05) indicating that the model fits the data quite well.

Having a glance on the Table 3, it is observed that for the classification of women as slum and non-slum areas of residence, crude odds of being in excess fertility for women belonging to slum areas is 1.5 times higher than that of women belonging to non-slum areas, but if we consider adjusted odds ratio, the same becomes 1.1 times higher for the women belonging to slum areas and both the results are statistically significant. Considering the religion of women, the adjusted odds ratio corresponding for the non-Hindu women having is 1.605, this shows that the non-Hindu women have 1.6 times higher odds of being in the state of excess fertility as compared to women of Hindu religion. The religion of the women affects the variable under study significantly. Similar findings can be obtained if women are categorized into different caste groups. The adjusted odds ratio is 1.07 and 1.392 respectively for OBC and SC/ST Caste with respect to General caste, which shows the higher chance of having desired fertility greater than actual fertility for the women of SC/ST Caste group as

compared to women of General caste group. The crude odds ratio for OBC caste is 1.75 and is highly significant but when the regression analysis is done controlling the other variables, the difference between OBC and General caste becomes insignificant for the characteristic under study.

Women belonging to 'Poor' and 'Middle' wealth categories have odds ratios 1.83 and 1.36 respectively, this also indicates that these women have a higher chance of being in a state of excess fertility than that of women who belong to the family with 'Rich' wealth index. Women's education reduces the chance of being in the state of excess fertility. Women having 'No education', '1-8 years of schooling' and '9-12 years of schooling', have odds ratios 2.93, 2.35 and 1.84 respectively with respect to women having 'More than 12 years of schooling' which is considered as the reference category. This clearly indicates that as the schooling years of women increases, the difference between her desired and actual fertility decreases significantly. This may be due to the fact that educated women are considered to have better knowledge of birth spacing and family planning methods.

From this result, we may also conclude that educated women are aware of the unplanned family size and they try to limit their family size to their desired level. Looking at the odds ratio for current age categories, it is seen that younger women have a lesser chance of being in the state of excess fertility than older women when women of age more than 40 years are taken as the reference category. The reason behind this trend might be attributed to the better knowledge and access to the family planning methods in childbearing phase for younger women. Younger women are more likely to plan their family size. The adjusted odds ratio corresponding to women married at the age of less than equal to 16 years, 17-20 years have odd ratio 3.345 and 2.281 respectively with respect to women whose age at marriage is more than 20 years. This indicates that the women whose age at marriage is less than equal to 16 years and age at marriage 17-20 years have a higher chance of being in a state of excess fertility than that of women who were married after age 20 years. It may be due to the fact that women who are married at higher age have more maturity and are able to talk to their spouse about family planning. Low age at marriage may stop schooling of women at earlier than those who are married later, so ultimately the low level of education also plays its role in shaping family size for women who are married early.

Conclusion

The objective of this study was to see the level and determinants of the excess fertility which in turn is a function of desired and actual fertility. It is worthwhile to mention that the desired and actual fertility is also a function of various socio-demographic factors. To understand the distribution of excess fertility descriptive statistics is provided. Women who are at the last phase of their childbearing span i.e. more than 40 years have a maximum number of children ever born as well as it is observed that their desired number of children is also high. Women having no education, are poor, married at an early age generally, have a higher level of actual fertility and desired fertility. Births to women at a younger age and a higher number of births reduce their health and quality of life. Women though want to limit their family size go on reproducing children due to many factors is a matter of concern. In this study, many factors are shown to have a significant impact on excess fertility.

As the educational level of women increases, the decrement in their desire for children as well as their actual fertility is seen. It is believed that women having higher educational attainment are more prone to use contraceptive methods, have better reproductive knowledge thus they can better control their fertility. They fear lesser of side effects of contraceptive methods hence use may use modern contraceptive methods. These women have generally less number of desired children, and by means of contraceptive methods, they generally stop childbearing as their desired fertility is achieved. It may be due to the fact that educated women have more job opportunities and have less opposition from the spouse in making contraceptive or other decisions. If a woman is highly educated, she will

be getting married at higher ages thus reducing the early exposure of becoming a mother. Thus, educating female plays a vital role in curbing excess levels of undesired births. Actual as well as desired fertility level shows a decline as the age at marriage increases. The young mother may lose chances of studying and consequently job opportunities due to motherhood and may fail to provide a better quality of life to her children.

Women should be married at a later age, this leads to better educational opportunity, better job opportunity. Women married at an older age, are mature enough to decide about their family structure. Women who are poor and those who live in slum areas have higher actual and desired fertility level. These women might fear of child mortality and assume more children as extra helping hands in earning bread. For these women may be extra children are considered as extra helping hands by the poor, the cost of raising extra children is less than the benefits obtained by that extra child as the investment in the education and other facilities is generally absent in poor community. From this study, it can be concluded that to lessen the burden of excess fertility, women's education should be the central concern for policy planners. If women get a chance to pursue higher education, they could avoid early marriage and exposure to childbirth. The late entry into marriage union also reduces the childbearing period for married women. The awareness regarding health hazard and lost job opportunities due to early childbearing should be spread among women. Younger women should be encouraged to use family planning methods.

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Table 1: Distribution of Different Variables

Variable	Frequency	Percentage
Residence		
Non- Slum	3878	50.3
Slum	3835	49.7
Religion		
Non-Hindu	2387	30.9
Hindu	5326	69.1
Caste		
SC/ST	1428	18.5
OBC	3548	46.0
General	2737	35.5
Wealth		
Poor	3279	42.5
Middle	1496	19.4
Rich	2938	38.1
Education (years)		
No Education	2894	37.5
1 – 8 years	1665	21.6
9-12 years	1661	21.5
> 12 years	1493	19.4
Current Age (in Years)		
Below 24	777	10.0
25-29	1822	23.6
30-34	2003	26.0
35-39	1712	22.2
Above 40	1399	18.2
Age at Marriage (in years)		
Less than 16	777	10.1
17-20	3825	49.6
More than 20	3111	40.3
Total	7713	100

Table 2: Socio-demographic Characteristic and Mean of Actual Fertility Level and Desired Fertility

Variable	Mean Actual Fertility	Mean Desired Fertility	Difference
Residence			
Non- Slum	3.15	2.37	0.78
Slum	3.70	2.51	1.19
Religion			
Non-Hindu	4.23	2.81	1.42
Hindu	3.06	2.28	0.78
Caste			
SC/ST	3.73	2.53	1.20
OBC	3.72	2.58	1.14
General	2.88	2.22	0.66
Wealth			
Poor	4.13	2.68	1.45
Middle	3.39	2.46	0.93
Rich	2.65	2.17	0.48
Education			
No Education	4.52	2.85	1.67
1-8 Years	3.38	2.47	0.91
9-12 Years	2.72	2.19	0.53
More than 13	2.11	1.91	0.20
Current Age			
Below 25	2.06	2.05	0.01
25-29	2.82	2.3	0.52
30-34	3.34	2.44	0.90
35-39	3.97	2.58	1.39
Above 40	4.42	2.67	1.75
Age at Marriage			
Less than 16	4.35	2.67	1.68
17-20	3.46	2.50	0.96
More than 20	2.35	2.06	0.29
Total	3.42	2.44	0.98

Table 3: Results of Logistic Regression Analysis

Variables	Crude Odds Ratio			Adjusted Odds Ratio		
	Exp(B)	95% C.I. for Exp(B)		Exp(B)	95% C.I. for EXP(B)	
		Lower	Upper		Lower	Upper
Residence						
Non- Slum	Ref.	--	--	--	--	--
Slum	1.582*	1.446	1.731	1.181*	1.061	1.314
Religion						
Hindu	Ref.	--	--	--	--	--
Non-Hindu	1.855*	1.682	2.045	1.605*	1.422	1.812
Caste						
General	Ref.	---	--	--	--	
SC/ST	2.012*	1.767	2.290	1.392*	1.180	1.642
OBC	1.753*	1.584	1.940	1.074	0.950	1.215
Wealth						
Poor	3.136*	2.826	3.480	1.831*	1.580	2.121
Middle	1.950*	1.717	2.215	1.361*	1.170	1.583
Rich	Ref.	--	--	--	--	--
Education (years)						
No Education	7.315*	6.312	8.477	2.913*	2.364	3.590
1 – 8 years	4.037*	3.445	4.731	2.346*	1.919	2.867
9-12 years	2.456*	2.092	2.882	1.844*	1.536	2.213
> 12 years	Ref.	--	--	--	--	--
Current Age (in Years)						
Below 25	0.123*	0.099	0.152	0.058*	0.046	0.074
25-29	0.353*	0.305	0.407	0.228*	0.193	0.270
30-34	0.551*	0.479	0.633	0.460*	0.392	0.540
35-39	0.830*	0.718	0.959	0.708*	0.600	0.834
40 and above	Ref.	--	--	--	--	--
Age at Marriage						
Less than 16	5.845*	5.054	6.760	3.345*	2.801	3.994
17-20	3.085*	2.720	3.499	2.281*	1.964	2.649
More than 20	Ref.	--	--	--	--	--

* p< 0.05