Is Recent Fertility Decline in India Poverty Induced?

Introduction

Reducing fertility and meeting the need for family planning can make achieving the Millennium Development Goals more affordable and directly contribute to the goals of reducing child and maternal mortality. Therefore, understanding the emerging pattern in fertility and its proximate determinants is necessary to make policy provisions for vulnerable section of society.

Reciprocity of education and fertility has already been well documented in the Indian context. It is established that diffusion mechanism is helping to reduce fertility among non-literate women. Various analyses in the past have shown that the fertility decisions of educated women influence fertility behaviour of uneducated women (Bhat, 2002; Arokiasamy *et.al.* 2004). Such hypothesis testing are no longer limited to fertility behaviour, but extended later to reduction in child mortality (Arokiasamy, 2009). It is needless to say that poverty and fertility are negatively associated in all the societies (Krishnaji, 1983). However, these analyses did not bring out whether poor women get influenced equally from non-poor women. Therefore, this paper aims to understand changes in overall fertility among poor and non-poor women by their educational attainments. It also aims to find which of the proximate determinants of fertility contributed most in the respective category of women's education and poverty.

Reviews of literature:

Since long a number of articles have been discussing and making interpretations that poor tend to have higher level of fertility (Cain, 1981). In his work, it was mentioned that only after some small improvements in the economic status of the poorer working classes take place that a reduction in family size appears. However, Robinson (1986) cited the work by Schnaiberg and Reed (1974) who contended by mentioning that many of these policies serve to reduce risks and uncertainties of adopting smaller family strategies as well as by even minor improvements in the risk reduction aspects of social welfare institutions, substituting to some extent for the earlier dependence solely upon children. Diffusion is defined as the process by which an innovation, e.g. deliberate parity-dependent birth control, spreads from one locale,

social group, or individual to another and it is divided particularly in two kinds; spontaneous and purposive. And the term social integration or interactions, which facilitates the diffusion and therefore exerts an important influence on the time and pace of fertility decline (Retherford, 1985; Bongaarts and Watkins, 1996). Sometimes the best channels of diffusion have been segmented into different groups like homogenous (language) and heterogeneous (elites) to facilitate the transmission of new modes of thought and behaviour (Basu and Amin, 2000). Sometimes channels operate at local, national or global levels work well to capture the anomalies in the relationship between onset of fertility decline and the figures for Human Development Index (Bongaarts and Watkins, 1996).

The strenuous efforts towards the study of reproductive changes have been made to generalize the mechanism of fertility regulation driven purely by either economic or social status or in combination at large in any society (Becker, 1960; Caldwell, 1987). The most common example to investigate such changes worked out by Davis and Blake (1956) with the both biological and behavioural approaches in a single framework through a number of intermediate variables which and only which such reproductive changes occurred. Since then more and more thoughts have arrived to deal with the situation like why reduction of fertility in some regions or parts of this world onsets so early where in others too late. Anew, the pace of its decline was found to be completely alike to each other. What factors have contributed to such phenomena and what kind of spectrum of development is required to these onsets have been discussed at large lengths (Mason, 1992).

In many applications, in India or outside, Bongaarts' proximate determinants model has been use to understand the contribution of each principal proximate determinants in fertility decline. In Latin American countries (plus Jordan) have been showing very large differential in marital fertility by place of residence and education. Although it has been observed that breastfeeding and contraceptive use explained marital fertility differentials to a considerable degree, but at the same time it should have been seen that contraceptive differences outweigh the lactation differences here. About Asian-African, marital fertility differentials are found to be generally smaller. The differentials have not seen as causes of smaller differentials in lactation, particularly in contraceptive but also by the fact that these two factors largely compensate each other. The

direction of the differentials in Asian –African marital fertility remains a difficult task. To solve these kinds of problems it has been suggested that one would have to incorporate the effect of other intermediate fertility variables and correct observed marital fertility rate in order to find true picture (Lestheghe *et.al.*, 1981, pp 210).

Another application of the Bongaarts' mathematical modul was also applied out in Vietnam to study the unexpected rapid fertility decline (Haughton, 1997). During 1989 to 1993 total fertility rate in Vietnam appears to have fallen from 3.8 to 3.2, which was very surprising at the time, when Vietnam itself was moving towards market driven economy. In presence of remarkably high rates of contraceptive use and pregnancy termination, Vietnam total fertility rates appears to be apparently high. The fertility rate around four children per women in late 1980's does not seem to be resonating with the contraceptive prevalence rate of over 50 percent. Considering the cross-national study of the fertility-inhibiting effect of intermediate variables, the TFR should have been much lower in Vietnam (Bongaarts, 1982).

Data and Methodology:

In India, three rounds of DHS, popularly known as the National Family Health Survey, have been conducted so far. The first (1992-93) and third (2005-06) of the National Family Health Survey have been used in this study. First of all, levels of education and poverty have been derived for both the surveys. Level of education is divided into four categories; non-literate, literate up to primary schooling completed, middle complete, and high school and above. Level of poverty has been decided on the basis of wealth quintiles from the scores generated from household's status on possession of selected household items using the principal component analysis (PCA). Women belonging to the first or the second quintiles of households are referred as poor and rest of them as non-poor. Thereafter, total fertility rate and three major proximate determinants of fertility (index of marriage, index of contraception and index of postpartum infecundability) have been calculated for each group of women from both the survey. To estimate the total fertility rate, age-specific fertility rate is estimated from the births to three years prior to survey and women-months were calculated for both the surveys. Thus, births during 1989-93 and 2002-06 are considered to estimate fertility rates for NFHS (1992-93) and NFHS

(2005-06) respectively. To understand the contribution of these indicators, proximate determinant framework operationalized by Bongaarts and Potter (1983; 1987) has been used. These three indicators have been calculated in the following manners. With the four principal determinants, Bongaarts proposed his multiplicative model as

$$TFR = C_m * C_c * C_i * TF \ldots\ldots\ldots\ldots(1.0)$$

The value of each index can be estimated as given below;

$$C_M = \frac{\sum m(a)g(a)}{\sum g(a)} \ldots\ldots\ldots\ldots\ldots(1.1)$$

m(a) is the age-specific proportion currently married (or in consensual union) among female and *g(a)* is the age specific marital fertility rates.

$$C_C = 1 - 1.08 * u * e \ldots\ldots\ldots\ldots\ldots(1.2)$$

u can be defined as proportion of married women age 15-49 currently using contraception, and *e* is the average use effectiveness of contraception.

The index of postpartum infecundability is measured as;

$$C_i = \frac{20}{18.5 + i} \ldots\ldots\ldots\ldots\ldots(1.4)$$

i, is the average duration of postpartum infecundability caused by breastfeeding or postpartum abstinence. The estimates on *i* are not readily available as like other proximate determinants, therefore, in that situation duration of postpartum amenorrhoea is obtained from the following relation developed using data from 41 WFS countries;

$$i = 1.753\, e^{(0.1396 * B - 0.001872 * B^2)} \ldots\ldots\ldots(1.5)$$

B is the mean or median duration of breastfeeding, which is generally collected in demographic surveys.

In the above model, TF: Total Fecundity Rate, is the average number of live births expected among women who, during their entire reproductive period, remain married, don't use contraception, don't have any induced abortion, and don't breastfeed their children (Bongaarts,1978). This is generally expected to vary between 13 and 17 with an average of about 15.3 children per woman. This is of course an unobservable magnitude almost and abstract idea, because no society has ever achieved completed fecundity; Hutterite women achieved total fertility of 10.9, which is the highest, recorded (Reinis; 1992).

Results and Discussions:

Table 1: Estimated Total Fertility Rate by Level of Poverty and Education, India, 1992-93 and 2005-06.

	Educational Attainments	**1992-93**	**2005-06**
Poor	Non-literate	4.2	3.9
	Primary Completed	3.2	3.1
	Middle Completed	2.9	2.8
	High School and Above	3.0	2.8
	Total	**4.0**	**3.6**
Non-poor	Non-literate	3.8	2.9
	Primary Completed	2.9	2.5
	Middle Completed	2.4	2.2
	High School and Above	2.0	1.9
	Total	**2.8**	**2.2**
Total		**3.4**	**2.7**

Estimated total fertility rates clearly indicate that the rate remains stable in almost all the educational groups (except 0.3 point decline in non-literate) for poor women. Among non-poor women, it is contrary that non-literate and women with primary education completed show the decline of 0.9 child and 0.4 child per woman. The overall average decline stands at 0.7 child per woman between the two surveys.

Table 2: Age-specific fertility rates among poor and non-poor, India, 1992-93 and 2005-06.

	Poor		**Non-poor**	
Age Groups	**1992-93**	**2005-06**	**1992-93**	**2005-06**
15-19	208	200	171	159
20-24	260	264	260	230
25-29	189	171	166	130
30-34	124	95	77	48

35-39	63	48	29	15
40-44	25	18	8	3
45-49	9	8	4	1

It is evident from the Table 2 that all the age groups have contributed in decline in fertility among non-poor whereas fertility decline among poor women is visible only at age 25 years and above. Among poor women, the trend follows the normal pattern as first fertility starts declining at higher age groups. However, if there was a strong learning or diffusion effects, first of all younger women must have shown a sharp decline in their fertility instead of older women (Shekhar *et al.,* 2010).

Table 3: Poor/Non-poor Ratio for three principal proximate determinants, 1992-93 and 2005-06.

	Ratio (Poor/Non-Poor)				
Index	Non-literate	Primary Completed	Middle Completed	High School and Above	Total
Cm (1992-93)	1.02	1.01	1.06	1.15	1.23
Cm (2005-06)	1.07	1.08	1.12	1.07	1.26
Cc (1992-93)	1.23	1.21	1.26	1.36	1.33
Cc (2005-06)	1.47	1.49	1.41	1.38	1.39
Ci (1992-93)	0.90	0.90	0.89	0.88	0.85
Ci (2005-06)	0.90	0.90	0.86	0.86	0.84
TFR (1992-93)	1.11	1.09	1.17	1.48	1.42
TFR (2005-06)	1.31	1.25	1.26	1.47	1.49

In Table 3, Poor to Non-Poor Ratios for index of marriage (Cm) and index of non-contraception (Cc) have shown an increase between 1992-93 and 2005-05. The increase was more evident among non-literate and primary complete educated women. The similar trends have been observed in case of total fertility rate. If poor were to follow non-poor in marriage and contraceptive behaviour, these ratio tends to reduce instead of the enlarging. On the contrary, the increase is found to be small and negligible for middle complete and high school educated women. From these results, it become clear that emancipation of women in terms of getting a threshold level education have played stronger role in bringing poor at par with non-poor than imitating contraceptive and marriage behaviour of richer by poor women. In absolute term, proportion married has decrease slightly among non-literate poor aged 15-19 years, but this has been compensated by an increased among primary completed women in the same age group. So

a low level of education would not be effective as far as on fertility decline rather it may work in opposite direction as poor uneducated women less probability getting married as compared to little educated women. However, index of infecundability (Ci) does not change over the period, and it is expected as suckling and resumption of sexual relationship may not differ by merely level of poverty, it is depending largely on the cultural context. The pattern in the duration for postpartum insusceptibility show that Poor and non-poor have maintained almost the same gap in 2005-06 as it was in 1992-93, almost four months. During the same period, decline in duration of postpartum insusceptibility was much more among non-poor than poor in middle completed and above educated categories.

Table 4: Percentage change in total fertility rate due to change in a given proximate determinant by level of education among poor and non-poor women, India, 1992-93 and 2005-06.

	Educational Attainments	% Change in TFR due to change in marriage	% Change in TFR due to change in Contraception	% Change in TFR due to change in Postpartum infecundability	% Change in TFR
Poor	Non-literate	-2.2	-23.6	4.1	-8.3
	Primary Completed	4.6	-6.2	4.9	-4.0
	Middle Completed	6.1	-8.2	1.5	-3.5
	High School and Above	-2.8	-9.7	-2.3	-5.4
	Total	**-3.2**	**-21.6**	**4.9**	**-10.0**
Non-poor	Non-literate	-6.9	-35.9	4.5	-22.0
	Primary Completed	-2.1	-23.8	4.1	-16.0
	Middle Completed	1.0	-18.1	5.4	-10.3
	High School and Above	5.0	-11.0	-0.3	-4.5
	Total	**-5.5**	**-24.8**	**6.4**	**-20.0**

Table 4 shows that decline in total fertility rate (TFR), even at lower level of fertility, among non-poor women (20 percent) was double than the decline in total fertility rate (10 percent) among poor women. Comparing non-literate women from both the groups, it is found that TFR has changed only by 8 percent in poor women as compared to non-poor women. Contribution of change in TFR due to change in proportion married among non-poor was slightly higher than the poor. It is well evident that contribution of contraceptive in changing TFR remains critical in declining fertility for both the groups. However, once again non-poor women were in advantage in reducing fertility through contraception as compared to poor women, especially in non-literate class.

It is clear from the analysis that poverty is still main hindrance in fertility decline especially among non-literate poor women. They might have strong desire to reduce family size by learning the advantage of small family size from those who already had it in their surroundings. But the barriers like availability and affordability of contraceptive methods in need force these women to have additional children. On the other hand, lack of confidence about child survival, especially areas with higher child mortality among poor non-literate women, ebb them to take decisions for ceasing reproduction through modern limiting method, which is readily available with local level health institutions. Poverty not only has direct impact on fertility decline, but also has greater indirect impact when the implementation of family planning programme is less efficient. For example, highly educated poor and non-poor women have several occasions to meet, know and interact on family planning and reproductive issues (either in schools or have greater exposure to mass media). However, poor non-literate women are deprived from such advantages. Many a time they are cut off from poor literate women as well as non-literate rich women. Also the End Level Service Provider is often non-responsive to their contraceptive needs as their approach and influence is limited in the prevailing health system.

For policy point of view, the state level analysis would have been better. However, it is difficult to carry out individual state level analysis due to limited sample size. The final paper will also discussed about desired for additional children, wantedness about last child/pregnancy, unmet need by types of contraceptives, intention to use and reasons for not using family planning methods among poor and noon-poor women will be critically analyzed. Evidences will also be borrowed from other research works done on the issue. Further discussions will be made in the light of existing motivational programmes influencing fertility (direct and indirect) such as educational incentives for girl child and raising at marriage and first birth especially among rural and poor women. Because decline in fertility was almost absent in the age group 15-19 years and 20-24 years among poor women during the observed period.

A genuine effort that has been recognized widely from Coale's (1973) three axioms in the study of decline of fertility in Europe; (i) fertility must be within the calculus of conscious choice, (ii) effective techniques of fertility reduction must be known and available and (iii) reduced fertility

must perceived to advantageous. If that so, imitation in fertility behaviour of non-poor by poor does not seems to be an appropriate choice unless poor themselves perceive that it fits into their calculus. Moreover, historical segregation of poor (labourers) and non-poor (owners) suggests that poor non-literate should learn and have first encounter with their own educated people rather than non-poor non-literate. Therefore, it has to be further debated that a poor woman has aspiration to become like non-literate in her fertility behaviour or has aspiration to learn from educated women around her. If the poverty is only reason to decline the fertility then non-poor women should not show such decline as it is shown between 1992 and 2005 in all the educational categories.

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