Social Returns from Fertility Decline: Impact on Child Schooling in India

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1. Association between fertility and child schooling

It has been widely established that child schooling has far reaching influence on shaping a child's subsequent living, in particular and social and economic development of the society, in general. It is a well known fact that there has been a decline in the fertility over the years. Almost half the married couples in developing nations now use some form of modern contraception. Consequently, desired family sizes reported by both women and men in various survey responses are found to be remarkably decreasing in most of the developing countries including India. It is unlikely that these two virtually simultaneous changes in educational opportunities and fertility have no causal links. A growing interest has been noticed in recent years, to investigate the relationship between fertility decline in terms of family size and child schooling (Knodel 1990; Montgomery and Lloyd 1999), which is mainly associated with the child's quantity-quality trade off.

In India, considerable increase in educational level can be noticed during the last few decades. The literacy rate has increased almost 30 percent during the period of 1971 to 2001. It is a documented fact that there has also been a substantial decline in fertility during the same period. According to SRS data, TFR has declined from 5.2 in 1971 to 3.1 in 2001. It is unlikely that these two virtually simultaneous changes in educational opportunities and fertility have no causal links. At macro level, a reduction in the total number of children at any point of time may be reflected after 5-6 years on the number of children of school entrance age (Jones 1975). This also implies that there will be an increase in the quality of education as teacher-pupil ratio will increase and this in turn helps individuals to obtain a better job in future and thereby replace the unskilled workforce of the nation with skilled manpower in future. Addressing the issue of long term implications of low fertility in Kerala, Rajan and Zachariah (1998) stated that the pressure on schools and colleges is now is not a matter of concern and presently there are ample opportunities for the educational system to concentrate on the quality of education rather than on quantity. When the volume of total consumers or in other words, number of children becomes less in number, there may be an increase in the savings level at the national as well as household level (Coale and Hoover 1958). Providing education to the children involve an increase in consumption by creating new expenses relating to schooling and this decreases the benefit derived from children by removing them from family productive system or earning system at household level (Axinn 1993, Caldwell 1980). Accordingly, the parents take the decisions regarding child schooling which explains the relationship between family size and child schooling at family level.

This paper has been organized into several sections. The first section of this paper enlightens a theoretical framework for how family size is associated with child schooling and also some empirical evidences to show the family size- child schooling relationship and

gender and birth order effect on child schooling. The next section discusses the methods and data used in this study and its next part presents the results and discussion of the analysis, with some concluding remarks.

2a. Theoretical reasons for relating family size and child schooling

The relationship between family size and child schooling is generally explained through the quantity-quality tradeoff theory. A key element of the quantity-quality model is an interaction between quantity and quality in the budget constraint that leads to rising marginal costs of quality with respect to family size; this generates a tradeoff between quality and quantity (Becker and Lewis 1973, Rosenzweig and Evenson 1977, Becker 1981, Hanushek 1992, Kaplan 1994). Economic theories of fertility are generally built on the premise that fertility and children's schooling are jointly determined outcomes of a common set of exogenous determinants.

When considering that the choices of quality and quantity of children, in a household, are thus determined simultaneously by the parents, that is, it is assumed that the total investment in human capital for each child as well as the level of fertility of the parents, are endogenous variables. In this case, one can observe the presence of a bias due to the occurrence of endogenous decisions, that are made conjointly and that are influenced by common determinants. This statistical bias is called simultaneity bias. The estimates of the impact of family size on human capital investment in children can be compromised given the existence of this bias. In models where fertility and education are determined in the same time, the direction of the simultaneity bias depends on how the size of the family relates to the costs of education, and of schooling in relation to family size. In general, the bias will be less in low-income countries, in rural areas, where levels of education are low. In a developing country like India, parents may not have full control on their fertility behaviour, especially in the presence of elder members in the family. In addition, there is uncertainty about the survival of the children (Bhat 2002). Couples generally cannot plan their family size well in advance with a calculation of net lifetime return of schooling especially if the parents are illiterate. Probably, in these situations, the decision about family size is not substantially affected by decisions regarding educational investment in children, which makes the simultaneity bias weak or even non-existent. In other words, in this case, the fertility can be considered a "less" endogenous variable. On the other hand, the simultaneity bias should be stronger among more educated women, in urban regions and, of course, in times of low fertility (Verona 2006). Thus, it can be said that in Indian rural setup and among the illiterate parents the effect of fertility on child schooling is causal and unidirectional in nature and free from the simultaneous bias.

2b. Empirical evidences relating family size with child schooling, gender effect and birth order effect

Literatures addressing the issues of children's schooling decisions at household levels mostly combined child labour with child schooling and more emphasis were laid on child labour. Child schooling was identified as the opportunity costs of child labour (Deb and Rosati 2004, Jeong 2005, Ray 2000, Kulkarni et al. 2004, Emerson and Souza 2002). Studies based on primary surveys in Thailand and Vietnam exhibit that, even after adjustment for the many other powerful correlates of educational attainment, a strong inverse association operates between family size and the percentage of children who enter lower and upper secondary (Knodel and Wongsith 1991, Knodel 1992, Sudha 1997, Anh *et al.* 1998).

In order to identify the effect of fertility transition on child's education in Brazil a study by Marteleto (2005) considered the cohorts of children born in pre and post transitional period. The findings based on a nationally representative data show that the fertility decline advantaged the younger cohort by increasing the proportion of smaller families, although the negative effect of family size on children's education did not decline. In India, Bhat (2002) using NCAER data has shown that there exist a tradeoff among illiterate parents, and he argued that first-born daughters have the most to gain from this development as in smaller families they are less likely to forgo schooling to take care of younger siblings. Children with many or closely spaced siblings are often thought to be disadvantaged with respect to their schooling in comparison with other children (Eloundou-Enyegue 1999, DeGraff *et al.* 1992).

Family size is an important determinant of children's education. Even after adjustment for the many other powerful correlates of educational attainment, a strong inverse association remains between family size and child's education (Knodel 1992; Knodel and Wongsith 1991). The relationship of fertility in terms of family size with child schooling, is seen to vary over time and among countries according to several factors; the stage of economic development, role played by the state, the phase of demographic transition and the nature of the family system. The relationship between child's schooling and family size may also vary within different subgroups of the population (Diamond *et al.* 1999). This decision varies according to various social -economic and demographic characteristics of the parents (Ilahi 2001). Some of the main factors that have an influence on child schooling are wealth of the family, educational level of the parents, rural-urban residence, sex of the child and their birth order.

There are significant gender differences in child schooling in the Indian states (Pal 2003). Birth order is also said to affect educational attainment especially for girl child (Sudha 1997). The first born daughters appear to be the greatest beneficiary of the changing emphasis on quality over quantity from the decline in the family size and changing reproductive outcomes as she is released from the burden of attending to younger siblings (Bhat 2002). The economic implications of findings from some psychology and sociology literatures suggest in the presence of capital constraints, families may not be able to afford to

send their earlier born children to school, but may be able to send their later-born children due to the income earned by their older siblings. In fact, male first-born children are less likely to attend school than their later born siblings and more likely to work as child laborers. Household income is expected to have a negative effect on children's market work and home production and a positive effect on children's schooling. (Kessler 1991; Horton 1988; Emerson and Souza 2002; DeGraff *et al*.1992).

In this light of the above discussion, the present paper first, attempts to examine the impact of family size on child schooling in India in the context of fertility decline. Analyzing all three rounds of NFHS datasets an effort has also been made to observe how the relationship changes over time. Additionally, to find out whether there exist any family level discrimination, this paper made an effort to observe how family size influences child schooling with respect to child's sex and birth order composition.

3. Data and Methods of analysis

The study used the secondary dataset from the three rounds of National Family and Health Survey-I (1992-93), National Family and Health Survey-II (1998-99) and National Family and Health Survey-III (2005-06). In the household schedule of NFHS dataset, for each member of the household aged 6 and above questions were asked about years of schooling, whether the member is still going to school or not and reasons for continuing/discontinuing schooling. Information is also available for women's educational aspirations for both boys and girls. In the study, fertility will be expressed through the component family size and to express child schooling two variables will be used - whether enrolled in school that is ever been to school or not and school attendance that is whether the member is still in school or not.

In NFHS datasets, the schooling information is given in the household file for all the members of the household, whereas detailed information about women's fertility behaviour and contraceptive behaviour, and birth history of each child is provided in the individual file. After matching the mother from the women's individual file of the member of household aged 6-14 years the required dataset has been created, where along with children aged 6-14 years all the information of their mother's fertility behaviour can be found. The final working data files consists of total 25804, 50465 and 16571 children of age 6-14 years of illiterate parents in the rural areas of India in NFHS-I, NFHS-II and NFHS-III respectively. Literate parents even if any one of the parents is literate are excluded from the analysis because of the explicit fact that, when parents are literate they obviously want educated children as well. It is mentioned earlier, that in rural areas and among illiterates the simultaneity bias will be almost negligible. Thus, the results will be free from the biasedness and moreover, it is also important from the policy point of view.

4. Results and discussion

The profile of the children (6-14 years) of illiterate parents in rural India according to socio-economic and demographic characteristics is described through Table 1. The percentage of children in the age 6-14 varied between 8 to 14 percent in various ages in all three rounds of NFHS. The sex ratio (F/M) of the child population in the above mentioned age group was around 919, 904 and 926 for NFHS-I, NFHS-II and NFHS-III respectively. In both NFHS-I and NFHS-II around 19 to 22 percent of those children were of the first order birth, while in NFHS-III around 27 percent of them belong to first birth order. Birth order of four or more in NFHS-I and NFHS-II were 40/41 percent, while the percentage belonging to the same group in NFHS-III is almost 29 percent.

More than three fourth of children are from those illiterate rural mothers who are using any contraceptives in NFHS-III, while the share of children aged 6-14 years were almost half or less of those mothers who used any contraception in previous two NFHS survey datasets. This result indicates that though literate women from urban areas were the first to start contraceptive use, but with the fertility transition through the diffusion process the rural illiterate women became aware of the benefits of contraception and thus the use of contraception increases among them and the proportion of higher order births became less. In NFHS-I and NFHS-II more than 67 percent children belonged to the parents having four or more surviving children. On the other hand according to NFHS-III, around 57 percent of children aged 6-14 belongs to the parents with four or more living children which was less compare to NFHS-I and NFHS-II. This may occur as the demand for desired family size is decreasing and people are having smaller family compared to earlier preferences. These children are mostly from the general caste Hindu families belongs to medium or low standard of living families, where both the parents are illiterate and from rural areas.

From bi-variate analysis (in Table 2) it was evident that proportion of children ever enrolled in school has increased from 44 percent in NFHS-I to 70 percent in NFHS-III, but among those enrolled children the proportion of continue schooling or school attending increased from 45 percent in NFHS –I to 78 percent in NFHS-III. As the main focus of this paper is on how family size and contraceptive use are related with child schooling, so the emphasis is given on the discussion of these two variables. The children enrolled in school are more among the users of any contraceptives compare to non-user of any contraceptives in all the three datasets of NFHS. It can be noticed that as number of surviving children increases the percentage of school enrollment as well as school attendance both decreases, though the percentages for enrolment as well as school attendance is increasing continuously from NFHS-I to NFHS-III. This can be clearly observed from Figure 1a and 1b.

Figure 1a: Proportion of 6-14 years old children enrolled in school by family size in India

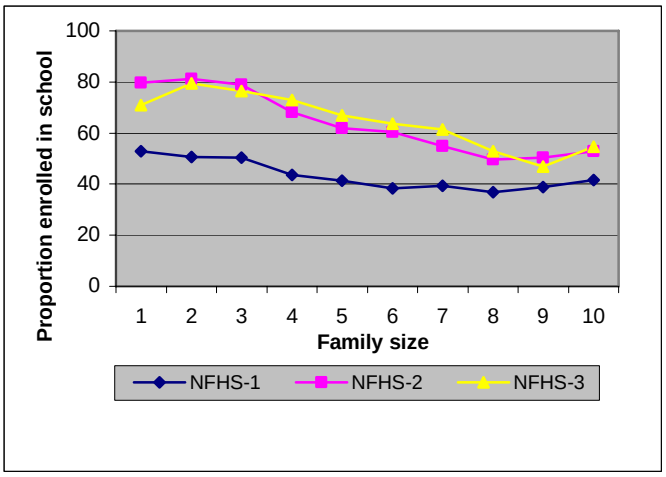
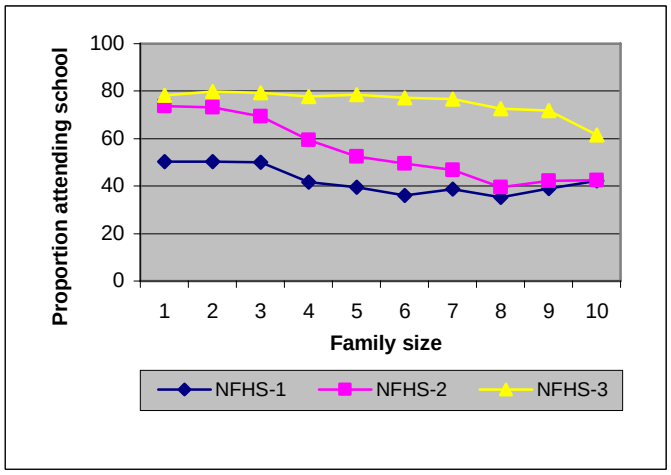


Figure 1b: Proportion of 6-14 years old children attending school by family size in India



Though it came out that the parents using any contraceptives are more inclined to send their children to school, the parents those who are deliberately trying to control their family size by using contraception have a higher tendency to send their children to school, which is clear from the difference of the percentages in Table 3 of children enrolled and attending school in all the three NFHS datasets. Though percentage of children enrolled or attending school declines with the increase in the number of surviving children, there is a considerable difference in percentage of children attending school among never user and ever user of contraception. The differences between the percentages of children attending or enrolled in school among the never users and ever users of contraceptive decreased from NFHS-I to NFHS-III.

Though previously the influences of different socio-economic and demographic factors were analyzed, it is necessary to control the effect of other factors through multivariate analysis to know the significance of each factor. Binary multivariate logistic analyses have been carried out for this purpose, considering school enrolment and attendance as the dependent variable. Controlling for other socio-economic factors family size has a significant negative impact on child's school enrollment as well as on school attendance. Irrespective of its effect of school attendance through family size, contraceptive use is also found to be significant factor controlling for all other independent variables. This result is same for all the three rounds of NFHS (Table 4 and Table 5). For school enrollment and school attendance girl children are less likely to be benefited compared to their counterpart. The gender biasness in schooling seems to reduce from NFHS-I to NFHS-III. On the other hand the higher order children are less likely to be in school compared to the first born children in NFHS-I and NFHS-II and the effect is statistically significant, but NFHS-III shows the opposite picture though it is not found as significant. Before going to the in-depth explanation of the child schooling with respect to birth order and sex of the children, it is

worthy to look into the changes in relationship the overall fertility level (TFR) with school attendance in rural India from NFHS-I (1992-93) to NFHS-III (2005-06). Figure 2a, 2b and 2c show the relationship of child school attendance with TFR in rural India, without controlling for other socio-economic and demographic variables. The figures show that the

Figure 2a: Fertility and school attendance relationship in rural India, NFHS-I

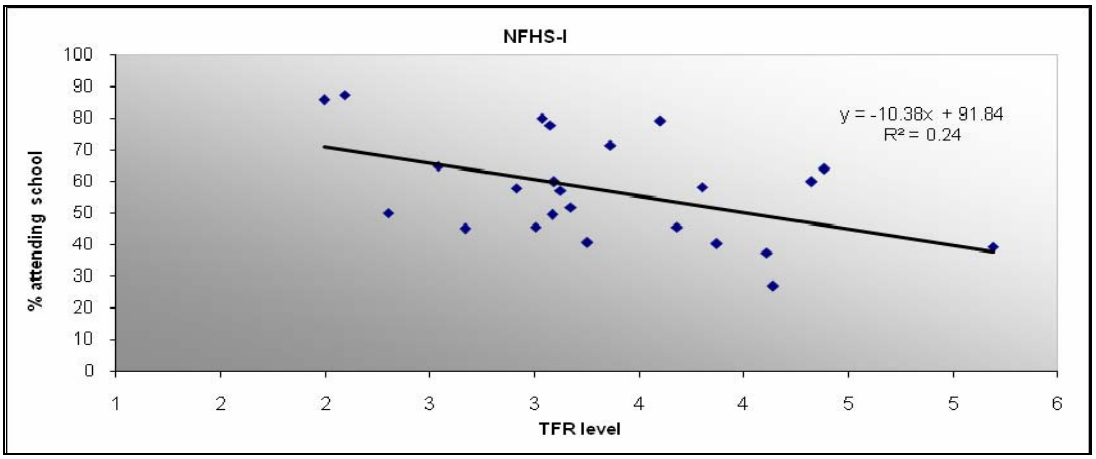


Figure 2b: Fertility and school attendance relationship in rural India, NFHS-II

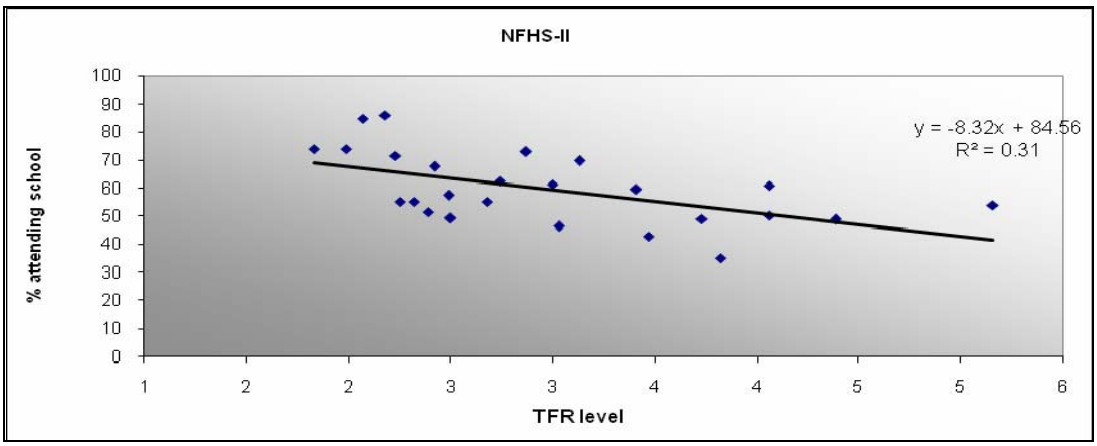
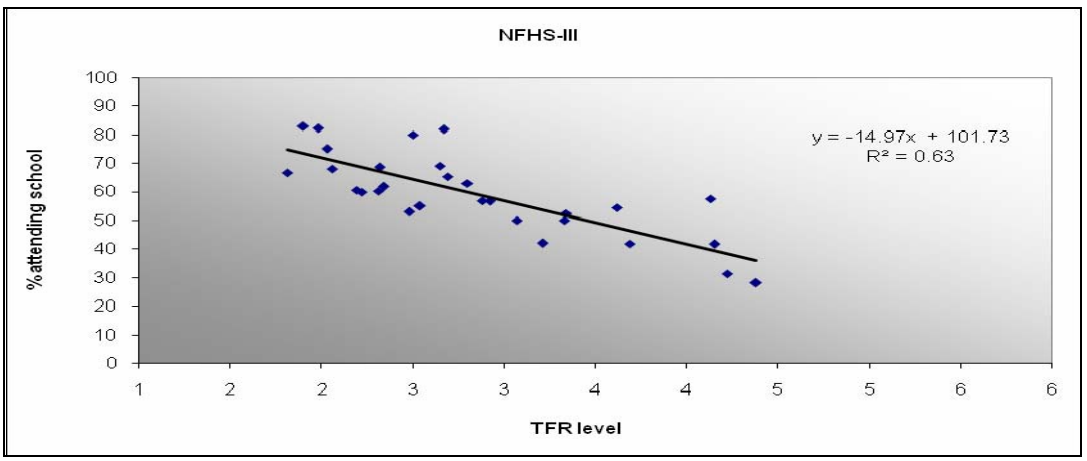


Figure 2c: Fertility and school attendance relationship in rural India, NFHS-III



relationship of fertility and school attendance is negative in all the three periods of NFHS survey. The percentage of variation in child schooling explained by TFR increases from 24 percent in NFHS-I to 63 percent in NFHS-III, which indicates the strengthening of the relationship of the fertility and child schooling among the rural illiterates.

There exists male female difference in school enrollment and attendance. The illiterate parents intend to send their sons to school more compared to their daughters. The results of z-test in Table 6 revealed that the difference is significant at one percent level of significance. To observe whether there are any sex specific birth order effect of schooling among the children the sample is divided into two categories i.e. first order birth and higher order birth, for each sex. Higher birth order children are less enrolled in school and they are attending school less compared to the first order born children irrespective of their sex. It may happen due to the fact that the higher order son or daughters are privileged as when they are getting admission to school the number of children born to their parents is less and as they are not supposed to share their part of resources they got from their parents. But after that, whether the child will continue schooling or dropout from school that becomes dependent on the number of siblings, so that the difference of school attendance between first order boy or girl to their higher order boy or girls is small, though it is statistically significant.

Table 7 and Table 8 shows the impact of family size and contraceptive use for specific sex of the children for all three rounds of NFHS. It is clearly seen that as number of surviving children increases the likelihood of getting enrolled in school also increases. The odds ratio shows that the impact is stronger over the years for both the sex. But for female children the negative impact of surviving children is stronger in NFHS-III. This result tells us that with the decline in fertility or with the process of fertility transition the family size and child schooling relationship became stronger, thus girl children are more benefited from earlier due to the reduced family size compared to boys.

From Table 2, it is also clear that all the children of aged 6-14 years of illiterate parents in rural India are not enrolled in school. Only around 70 percent of them are enrolled in school, though, among them 78 percent continue schooling in 2005-06 (NFHS-III), there are thousands of children who are not enrolled and even if they are getting enrolled they are withheld from school. Thus the result depicts that still there exist school dropout though it declined in 2005-06 (NFHS-III) from 1992-93 (NFHS-I). Therefore, this results calls for a further explanation of the reasons for not enrolled in school and discontinuing school. To observe the reasons for discontinuance in schooling according to sex, Table 9 have been given. It can be observed that apart from ‘not interested in studies’ and ‘cost of schooling’ is the main reason for the children irrespective of their sex in NFHS-III. Around 17 percent female children between ages 6-14 in NFHS-III are not continuing schooling school as they are required for household work and sibling care. Looking at the reasons for discontinue schooling according to children’s sex, it is found that while the daughters of illiterate parents aged 6-14 years are withheld from school as they have to be engaged in household work and

sibling care, for the sons that motive is economic, i.e., sons are withheld from school as they are required for work in the family business or required to work outside home and earning.

It is already established from table 4 and 5 that there is a significant effect of birth order on child enrolment as well as school attendance. There higher order children are found to be less likely to be at school, compared to the first order children, though the relationship is not significant in NFHS-III. Separate analysis (Table 10) for sex specific birth order reveals the same as before with the female children having a lesser odd than the male child. It is also note worthy that where the first order male children are 14 percent less likely to attend the school the same is 27 percent for the female children, for the higher order births this likelihood becomes similar for both the sex. It can be easily interpreted from the above revelations that the earlier born girl children being at a more unprivileged condition will benefit more from the reduction in the family size.

5. Conclusion and policy implication

The above discussions of results specify that family size plays an important role in child schooling. It is a well established fact that parent's education has a significant impact on child school attendance (Pal 2003). To control the effect of parental education and other diffusion effect of education, the present study considers only the rural illiterate parents and the results show that smaller the family size more is the child school attendance. Significant sex and birth order differentials are also found to exist. This calls for a better gender discrimination free society, so that all the girl children receive education along with the boys.

With the fertility transition, as people are using contraceptives, and desire smaller family, the next consequences of the fertility decline can be seen in forms of more schooling among children. In other way, the returns of fertility decline in terms of smaller family size will result in providing more schooling and therefore, increase the overall educational level of a society. So far in the fertility research the fact is established that education has a strong negative effect on fertility, i.e., as educational level increases the people desires smaller family. Thus, it can be said that not only schooling can influence the people to achieve their desired smaller family in the context of fertility decline, on the other hand the smaller family during fertility transition can be helpful for fulfilling the target of achieving 'education for all'. While schooling influences to have smaller family size, small family provides more education to children. It is a unavoidable fact that for better socio-economic prospect and for the overall development of a country it is necessary to have universal education for all. Therefore, it can be concluded from the policy and programme point of view that the fertility control programme or population statbilization programme need to be integrated with the overall education program. These two programs are not to treated side by side but they should be discussed on the same platform.

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Table 1: Percentage distribution of children aged 6-14 years of illiterate parents by selected background characteristics in rural India

Background Characteristics	*Percentage of children*		
Characteristics of the Child	**NFHS-I (1992-93)**	**NFHS-II (1998-99)**	**NFHS-III (2005-06)**
Age of the child			
6	13.0	13.3	12.1
7	12.4	11.5	11.6
8	13.6	14.1	12.5
9	10.0	10.0	10.1
10	13.8	13.7	12.6
11	8.2	8.6	9.6
12	12.3	12.0	11.8
13	8.4	8.1	10.7
14	8.4	8.8	8.9
Sex of the child			
Male	52.1	52.5	51.9
Female	47.9	47.5	48.1
Order of birth			
1	21.5	19.3	27.1
2	19.7	21.2	25.4
3	17.4	19.7	18.6
4+	41.3	39.8	28.9
Characteristics of the parents			
Age of the mother			
<25 Years	5.1	4.6	3.2
25-34	50.0	55.8	54.3
35 and above	45.0	39.5	42.5
Mother's working status			
Not Working	49.5	42.1	55.9
Working	50.5	57.9	44.1
Contraceptive use			
No	53.9	48.2	23.3
Yes	46.1	51.8	76.7
Number of surviving children			
1	1.9	1.2	2.3
2	8.9	7.9	17.4
3	22.2	19.2	22.8
4+	67.0	71.7	57.4
Socio-economic Characteristics			
Religion			
Hindu	81.2	79.3	78.5
Muslim	14.4	17.3	16.5
Other religions	4.4	3.4	5.1
Caste			
Scheduled caste	17.1	25.6	28.2
Scheduled Tribe	15.5	15.6	20.4
Other Backward Castes and general	67.4	58.9	51.4
Standard of living			
Low	47.5	61.9	31
Medium	47.8	36.0	35.2
High	4.7	2.1	32.2
Total number of children	**25804**	**50465**	**16571**

Table 2: Proportion of children (6-14 years) of illiterate parents enrolled in school and attending school in rural India

Background Characteristics		*% Enrolled in school*			*% Attending school*		
Characteristics of the Child		**NFHS-I**	**NFHS-II**	**NFHS-III**	**NFHS-I**	**NFHS-II**	**NFHS-III**
Age of the child	6	19.5	63.1	39.8	32.3	61.1	42.1
	7	34.4	68.0	61.3	43.9	65.0	63.1
	8	43.3	68.1	66.7	47.3	63.8	78.0
	9	48.0	70.7	76.3	49.4	65.5	86.6
	10	48.8	66.9	77.9	47.4	59.6	89.3
	11	54.0	67.8	82.1	48.6	58.0	89.5
	12	51.8	64.5	78.8	44.0	51.7	84.2
	13	51.4	67.9	76.7	39.0	48.9	78.4
	14	49.3	63.9	76.8	32.1	41.5	69.8
Sex of the child	Male	57.4	74.4	74.8	55.5	64.7	79.8
	Female	30.1	58.1	64.9	29.2	49.4	75.9
Order of birth	1	45.1	70.8	72.5	44.2	64.3	78.4
	2	44.7	69.9	73.5	43.5	61.2	78.9
	3	43.5	67.1	71.8	42.3	56.6	78.8
	4+	43.7	63.0	66.2	42.1	52.8	77.0
Characteristics of the parents							
Age of the mother	<25 Years	31.9	68.5	51.7	41.0	66.9	50.9
	25-34	41.7	68.8	70.1	42.5	60.9	78.2
	35 and above	48.0	63.9	71.1	43.6	52.1	79.3
Mother's working status	Not Working	42.9	67.8	67.9	43.2	60.5	77.6
	Working	45.4	65.9	71.8	42.7	55.3	78.4
Contraceptive use	No	34.5	56.8	59.5	35.0	49.5	74.1
	Yes	55.6	75.4	76.1	52.1	64.4	79.8
Number of surviving children	1	52.9	79.8	70.9	50.4	73.7	78.3
	2	50.7	81.3	79.5	50.2	73.1	79.9
	3	50.3	79.0	76.5	50.0	69.3	79.2
	4+	41.1	61.7	66.5	39.4	52.4	77.3
Ideal family size	1	64.1	83.3	90.3	59.2	73.9	79.1
	2	61.3	80.1	79.1	56.9	69.7	79.7
	3	50.1	73.0	68.7	48.9	63.3	77.8
	4+	36.6	57.1	62.6	36.1	48.6	76.4
Socio-economic Characteristics							
Religion	Hindu	45.0	68.0	72.4	43.4	58.5	78.9
	Muslim	34.3	58.4	59.3	35.7	50.7	73.7
	Other religions	60.5	76.9	74.7	55.9	66.1	78.2
Caste	Scheduled caste	48.2	67.1	72.9	46.5	57.8	78.9
	Scheduled Tribe	36.2	59.0	64.2	35.9	49.6	75.9
	Other Backward Castes and general	45.0	68.4	69.9	43.6	59.1	78.2
Mass media exposure	No exposure	39.5	62.0	65.8	39.1	53.8	76.4
	Any exposure	60.2	80.2	76.6	55.9	68.1	80.3
Standard of living	Low	39.4	61.0	63.1	39.7	52.2	74.8
	Medium	50.0	75.5	78.7	48.4	65.6	81.0
	High	73.4	85.8	88.2	68.9	76.1	87.1
	Total	**44.1**	**66.8**	**70.0**	**45.3**	**57.5**	**78.1**

Table 3: Percentage of children aged 6-14 years of illiterate parents attending school by mother's contraceptive use and family size in Rural India

Use of contraceptives	Number of surviving children	% of children enrolled in school		
		NFHS-I	NFHS-II	NFHS-III
Never used	1	47.2	77.5	68.3
	2	40.1	70.4	65.7
	3	35.4	66.6	60.5
	4+	33.1	53.5	58.2
Ever used	1	76.6	86.2	77.9
	2	63.9	88.0	85.5
	3	63.2	85.2	82.1
	4+	51.3	70.2	72.1
		% of children attending school		
Never used	1	46.0	70.7	76.2
	2	41.2	63.4	70.8
	3	37.9	60.2	70.6
	4+	33.0	46.0	75.1
Ever used	1	67.9	82.1	83.0
	2	61.1	79.1	82.9
	3	60.4	73.8	81.4
	4+	47.4	59.0	78.5

Table 4: Results of logistic regressions for school enrollment of children (6-14) years of illiterate parents in rural India, for NFHS-I, II & III

Background Characteristics	Exp(B)		
	NFHS-I	NFHS-II	NFHS-III
Characteristics of the Child			
Age of the child	3.051**	0.943	4.366**
Age of child square	0.951**	1.000	0.937**
Birth order of child (reference=first order)			
Higher birth order	0.854*	0.893**	1.025
Sex of the child (reference=male)			
Female	0.285**	0.563**	0.55**
Characteristics of the parents			
Age of the mother	1.039**	1.013**	1.023**
Mother's working status(Reference=not working)			
Working	0.817**	0.702**	0.894
Contraceptive use (Reference=not using/never used)			
Ever used	1.855**	1.463**	1.673**
Number of surviving children	0.878**	0.880**	0.812**
Mass media (Reference=no exposure)			
Exposure	1.794**	1.616**	1.415**
Socio-economic Characteristics of the household & community			
Landholding (Reference=own no land)			
Has agricultural land	1.502**	1.314**	1.468**
Religion (Reference=Hindu)			
Muslim	0.838*	0.763**	0.529**
Others	1.727*	1.231**	1.094
Caste (Reference=General & OBC)			
Scheduled Caste	1.162*	0.909**	0.837*
Scheduled Tribe	0.700*	0.718**	0.636**
States (reference=high fertility states)			
Moderate fertility states	1.671**	1.052	1.439
Low fertility states	2.253**	1.401**	0.776*
Constant	0.004**	3.599**	0.001**
-2 Log likelihood	15184.731	129942.975	10088.935
Cox & Snell R Square	0.200	0.083	0.162
Nagelkerke R Square	0.268	0.112	0.222
Total number of cases	**25726**	**49258**	**16571**

*p<0.01, **p<0.001

Table 5: Results of logistic regressions for school attendance of children (6-14) years of illiterate parents in rural India, for NFHS-I, II & III

Background Characteristics	Exp(B)		
	NFHS-I	NFHS-II	NFHS-III
Characteristics of the Child			
Age of the child	2.558**	0.791**	10.158**
Age of child square	0.952**	0.994	0.898**
Birth order of child (reference=first order)			
Higher birth order	0.839**	0.512**	0.951
Sex of the child (reference=male)			
Female	0.311*	0.792**	0.786**
Characteristics of the parents			
Age of the mother	1.028**	0.991*	1.016
Mother's working status(Reference=not working)			
Working	0.775**	0.633**	0.937
Contraceptive use (Reference=not using/never used)			
Ever used	1.733**	1.068**	1.310**
Number of surviving children	0.904**	0.963**	0.924**
Mass media (Reference=no exposure)			
Exposure	1.675**	0.954	1.205
Socio-economic Characteristics of the household & community			
Landholding (Reference=own no land)			
Has agricultural land	1.576**	1.127**	1.287**
Religion (Reference=Hindu)			
Muslim	0.863*	1.067	0.637**
Others	1.589	1.183	0.991
Caste (Reference=General & OBC)			
Scheduled Caste	1.181*	1.009	0.84
Scheduled Tribe	0.713*	0.825**	0.888
States (reference=high fertility states)			
Moderate fertility states	1.553**	0.756**	1.292
Low fertility states	1.513**	0.804**	1.227
Constant	0.023**	724.623**	0.000**
-2 Log likelihood	17202.630	42808.285	5631.925
Cox & Snell R Square	0.148	0.095	0.104
Nagelkerke R Square	0.198	0.171	0.157
Total number of cases	**25726**	**29891**	**11774**

*p<0.01, **p<0.001

Table 6: Results of Z test for significance differences in school enrollment and school attendance of children according to sex and birth order, NFHS-III (2005-06)

	Percentage of children ever been to school	Significance	Percentage of children attending school	Significance
Sex of the child				
Male	**86.0**	ψ	**94.7**	ψ
Female	**82.1**		**93.9**	
Birth order composition of child (Male)				
First order male	**89.2**	ψ	**95.9**	ψ
Higher order male	**84.8**		**94.2**	
Birth order composition of child (Female)				
First order female	**86.2**	ψ	**95.1**	ψ
Higher order female	**80.6**		**93.4**	

ψ = Difference is significant at 1% level of significance

Table 7: Results of logistic regressions for school enrollment of children (6-14) years of illiterate parents in rural India

	All Sons			*All Daughters*		
Background Characteristics	**NFHS-I**	**NFHS-II**	**NFHS-III**	**NFHS-I**	**NFHS-II**	**NFHS-III**
Characteristics of the Child						
Age of the child	3.638**	1.314**	4.77**	2.31**	1.395**	3.859**
Age of child square	0.945**	0.986**	0.936**	0.961**	0.981**	0.941**
Birth order of child (reference=first order)						
Higher birth order	0.846	0.844*	0.926	0.851	0.948	1.114
Characteristics of the parents						
Age of the mother	1.031**	1.030*	1.021*	1.049**	1.003	1.022*
Mother's working status(Reference=not working)						
Working	0.916**	0.717**	1.073	0.717**	0.646**	0.772**
Contraceptive use (Reference=not using/never used)						
Ever used	1.904**	1.822**	1.567**	1.854**	1.613**	1.772**
Number of surviving children	0.890**	0.865**	0.834**	0.861**	0.862**	0.798**
Mass media (Reference=no exposure)						
Exposure	1.712**	1.724**	1.262*	1.888**	1.993**	1.555**
Socio-economic Characteristics of the household & community						
Landholding (Reference=own no land)						
Has agricultural land	1.82**	1.801*	1.679**	1.198*	1.328**	1.335**
Religion (Reference=Hindu)						
Muslim	0.703**	0.553**	0.445**	1.061*	0.658**	0.611**
Others	1.29	1.222*	0.876	2.257	2.027**	1.369
Caste (Reference=General & OBC)						
Scheduled Caste	1.315*	0.969	0.818	0.997	0.765**	0.837
Scheduled Tribe	0.611*	0.636*	0.561**	0.840	0.633**	0.693
States (reference=high fertility states)						
Moderate fertility states	1.304**	1.784**	1.61	2.245**	1.94**	1.285
Low fertility states	1.813**	1.215**	0.837	2.953**	1.989**	0.735*
Constant	0.000**	0.431*	0.001**	0.001**	0.458*	0.002**
-2 Log likelihood	8093.304	22459.800	4715.9732	6924.718	23501.388	5291.079
Cox & Snell R Square	0.158	0.091	0.175293	0.135	0.131	0.131488
Nagelkerke R Square	0.212	0.134	0.2494585	0.191	0.175	0.176744
Total number of cases	**13524**	**21998**	**6370**	**12202**	**19459**	**5404**

*p<0.01, **p<0.001

Table 8: Results of logistic regressions for school attendance of children (6-14) years of illiterate parents in rural India

Background Characteristics	All Sons			All Daughters		
	NFHS-I	NFHS-II	NFHS-III	NFHS-I	NFHS-II	NFHS-III
Characteristics of the Child						
Age of the child	3.028**	0.782*	9.981**	2.082**	0.806*	10.794**
Age of child square	0.946**	0.994	0.90**	0.958**	0.994	0.894**
Birth order of child (reference=first order)						
Higher birth order	0.807*	0.445**	0.923	0.87	0.601**	0.996
Characteristics of the parents						
Age of the mother	1.022**	0.991	1.025	1.036**	0.989*	1.006
Mother's working status(Reference=not working)						
Working	0.881	0.687**	1.062	0.659**	0.566**	0.813
Contraceptive use (Reference=not using/never used)						
Ever used	1.738**	1.064	1.47**	1.774**	1.086	1.171
Number of surviving children	0.921**	0.99	0.894**	0.881**	0.934**	0.966
Mass media (Reference=no exposure)						
Exposure	1.594**	1.029	1.152	1.786**	0.888*	1.274
Socio-economic Characteristics of the household & community						
Landholding (Reference=own no land)						
Has agricultural land	1.798**	1.391**	1.38*	1.335**	0.873*	1.199
Religion (Reference=Hindu)						
Muslim	0.732**	0.925	0.701*	1.086	1.216*	0.594**
Others	1.427*	1.447**	1.135	1.803	0.938	0.896
Caste (Reference=General & OBC)						
Scheduled Caste	1.288**	0.937	0.734*	1.053	1.082	0.985
Scheduled Tribe	0.633**	0.563**	0.866	0.848	1.398	0.897
States (reference=high fertility states)						
Moderate fertility states	1.207*	0.754**	1.459	2.141**	0.783*	1.143
Low fertility states	1.232	0.776**	1.461*	2.002**	0.881*	1.029
Constant	0.003**	737.607**	0.000**	0.007**	561.655**	0.000**
-2 Log likelihood	9486.179	24201.377	3007.645	7541.413	18809.408	2598.607
Cox & Snell R Square	0.091	0.097	0.114	0.101	0.098	0.096
Nagelkerke R Square	0.122	0.181	0.176	0.144	0.173	0.141
Total number of cases	**13524**	**17751**	**6370**	**12202**	**12517**	**5404**

*p<0.01, **p<0.001

Table 9: Reasons for discontinue schooling by sex of the children aged 6-14 years of illiterate parents in Rural India, NFHS-III (2005-06)

Reasons	Sex of child	
	Male	Female
No proper school facility/ No transport/ School far away	2.2	7.1
Education not considered necessary	2.8	3.8
Required for household work and sibling care	7.7	17.1
Required for family business /earning outside	13.0	6.9
Cost too much	16.2	19.7
Not interested in studies	39.2	23.2
Repeated failure	3.5	4.1
Got married	0.0	0.5
No facility for girls/Not safe for girls/No female teacher	0.5	4.6
Other reasons	14.9	12.9
Total	**1344**	**1385**

Table 10: Logistic regressions of school attendance of children aged 6-14 years of illiterate parents in Rural India, NFHS-II (1998-99)

Background Characteristics	Exp(B)			
	First order son	Higher order son	First order daughter	Higher order daughter
Characteristics of the Child				
Age of the child	2.931**	2.983**	3.330**	2.363**
Age of child square	0.947**	0.944**	0.937**	0.950**
Characteristics of the parents				
Age of the mother	1.032	1.030**	1.020	1.018**
Mother's working status(Reference=not working)				
Working, but not for wage	0.786	0.807**	0.637**	0.702**
Working for wage	0.570**	0.629**	0.589**	0.603**
Contraceptive use (Reference=not using/never used)	1.689**	1.650**	1.554**	1.670**
Number of surviving children	0.858**	0.873**	0.727**	0.859**
Mass media (Reference=no exposure)	1.481*	1.565**	1.489**	1.821**
Socio-economic Characteristics of the household & community				
Landholding (Reference=own no land)	1.393*	1.666**	1.328*	1.210**
Religion (Reference=Hindu)				
Muslim and others	0.832	0.756**	0.924	1.016
Caste (Reference=General)				
Scheduled Caste	0.968	0.992	0.943	0.862
Scheduled Tribe	0.554**	0.669**	0.812	0.804*
OBC	0.950	0.912	1.019	0.930
Distance to available Transport	0.998	0.999	1.000	0.999
Distance to Middle school	1.003**	1.002**	1.002*	1.002**
Village size	0.857*	0.911**	0.855*	0.935*
States (reference=low fertility states)				
Moderate fertility states	1.103	1.212	0.920	1.038
High fertility states	0.884	0.839*	0.536**	0.536**
Constant	0.031**	0.017**	0.041**	0.076**
-2 Log likelihood	2729.767	10566.439	2970.903	10349.165
Cox & Snell R Square	0.081	0.095	0.138	0.137
Total number of cases	**2691**	**9807**	**2563**	**8856**

*p<0.01, **p<0.001