IMPACT OF SCHOOLING OF GIRLS ON DEMOGRAPHIC TRANSITION: AN ILLUSTRATION FROM INDIA

R.S.GOYAL

Indian Institute of Health Management Research

A growing body of demographic and development literature indicates that in a wide variety of settings, schooling of women is related to lower fertility and childhood mortality. The statistical relationship between female schooling and fertility or childhood mortality remains strong even after controlling for the factors which are likely to confound it (Jeffery and Basu, 1996). Against this backdrop, an apparent programme intervention in a country with an anti-natalist population policy would be to invest in enlarging the range and quality of female schooling. In fact, most developing countries, particularly those in South Asia, have already accepted women's education as a source of fertility decline. Developing an understanding of the mechanisms involved in the schooling-fertility relationship would be useful in designing effective intervention strategies.

Many researchers have attempted to explore the pathway of linkage between education of women and fertility. Firstly, improvement in female education is associated with a rise in her status, which is believed to lead to lower fertility (Mason, 1984, Cochrane, 1979). But, Jeffery and Basu (1996) have raised doubts about the constituents of the term "status", as the two researchers have used it differently. Woman's status has been described as her position in the society and expectations from her according to her position. It has also been linked to the prestige of women vis-à-vis men. Therefore, newer concepts such as women's control over resources or women's autonomy are more acceptable now.

Easterlin (1975) provides a convenient framework to synthesize the relationship between empowerment of women and fertility. He has classified all the intervening factors influencing fertility into three categories: supply, demand, and cost of fertility regulation. The supply of children relates to the number of surviving children a couple will have in the absence of family planning. The demand for children is linked to the desire for a specific number of children, and the cost factor includes economic as well as social and psychological costs.

To examine the mechanism of the impact of education on fertility, the model proposed by Easterlin (1975) is the most appropriate and widely used. By enlarging the domain of the three groups of intermediate variables proposed by him (it included child mortality also), the analysis could be expanded to provide an understanding of the relationship between schooling, fertility and child mortality.

Objectives

This research has two objectives. Firstly, to examine the levels and trends in the schooling of adolescent girls in India. Secondly, taking India as a case study, to understand the pathways and the extent to which the schooling of women, particularly of adolescent age, has effected a decline in fertility and childhood mortality. The focus is on the findings of the census and large surveys.

Analysis

In India, historically, schooling of girls has been given a low priority. The roots of this low priority lie in the social, cultural, religious, economic and political ethos and milieu of contemporary Indian societies. Girls have been deprived of education for reasons (perceived) such as: limited functional utility of education for women (the domain of a woman's work is considered to be within the four walls of her home), family prestige (it was considered uncultural for girls to expose themselves to the outer world or to go out of the home unescorted by a male companion), functional role of girls in the household, and, above all, adherence to norms of a patriarchal society where men are valued more highly than women. This situation remained more or less unchanged until the middle of the 20th century. It is only after the independence of the country that serious efforts were made to promote the education of women. These efforts began with the introduction of provisions in the Indian constitution for equal status of men and women, and directive principles for state policy to provide basic education to all. Social development and welfare programmes, social reform movements for empowerment of women, and the creation of a supportive environment as well as opportunities for education of women have contributed to a large increase in the schooling of girls in India.

These observations are amply supported by data.

However, before looking at these statistics, it must be borne in mind that India is a large country (with a total population of 1000 million as of May 2000). The estimated child population in the 6-14 age group is 181.4 million (Table 1).

Table 1: Estimated Child Population (`000) in Age Groups 6-11 and 11-14 as of 30th September, 1993

Area / Gender	Age Group	
	6-11 Years	**11-14 Years**
Rural		
Boys	45,346	24,417
Girls	42,345	21,843
Total	87,691	46,260
Urban		
Boys	15,903	8,710
Girls	14,948	7,876
Total	30,851	16,586
Total		
Boys	61,249	33,127
Girls	57,293	29,719
Total	118,542	62,846

Source: NCERT (1996): Sixth All India Educational Survey, NCERT, New Delhi.

The number of children in rural areas is larger than in urban areas (nearly 74 per cent of India's population resides in rural areas). Table 1 also shows that the sex ratio of children (female per 1000 males) is more evenly balanced in the 6-11 age group than in the 11-14 age group. This could be associated with higher childhood mortality among girls than boys.

Table 2 presents statistics on educational facilities in rural areas. In urban areas, the availability of educational facilities is almost universal, i.e., schooling facilities up to the graduate level are available in every town.

Table 2: Availability of Educational Facilities in Rural Areas, 1993.

Type of School	Nearest Educational Facility			
	Within Village	Up to 2kms	Up to 5kms	Up to 8 kms
Primary School (up to V Standard)	77.8	98.0	-	-
Middle School (up to VIII Standard)	37.0	73.3	94.7	-
High School (up to X standard)	18.3	27.2	77.9	90.1
Intermediate School (up to XII Standard)	5.4	15.2	23.2	63.6

Source: NCERT (1996): Sixth All India Education Survey, NCERT, New Delhi.
(Data are presented in the form of percentages of villages having educational facilities as of September 1993). There are nearly 575,000 villages in India.

Table 2 indicates that there is a primary school located within a distance of 2 kms. of almost every village, which, in normal circumstances, is an accessible distance. Moreover, until a girl crosses the primary school level (generally by 10-11 years of age or by the age of puberty), it is socially permissible for her to move around on her own. However, as children go to higher classes, a larger proportion of them need to travel longer distances to reach a school. In other words, at the age at which social sanctions on freedom of movement of girls become operational, girls are expected to travel even longer distances to reach a school. The extent to which girls and their parents are able to negotiate this distance will be examined later.

Besides creating infrastructure facilities (school buildings, teachers, etc.), the state has also provided incentives to encourage parents to send their children to school. Most prominent of these are free education for all up to middle school and for girls up to high school. Girls from weaker sections of society are provided scholarships for attending school. Importantly, these benefits are aggressively publicised through mass media, school teachers, revenue officers, development workers etc. Village headmen are particularly encouraged to promote basic education for all children.

These promotional efforts have apparently had a profound effect on parents. The data shows that girls' enrolment in schools at the primary level has grown from 5.4 million in 1950-51 to 41.88 million in 1993 and at the middle school level, from 0.5 million to 15.50 million. The number of girls going to high schools or intermediate schools (in 1993) was 5.5 million and 1.96 million respectively.

It must be noted here that there are large interregional variations in the schooling of girls in India. For example, southern Indian states like Kerala, Tamil Nadu, Karanataka, etc. have fared well in this regard as compared to northern states of Rajasthan, Bihar, Madhya Pardesh, Uttar Pardesh, etc. Data presented in Table 3 corroborate these observations.

Table 3 : Percent of Children Aged 6-14 Attending School, 1992-93.

State	Age (years)	Rural			Urban			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
India	6-10	71.4	55	63.5	86.2	81.8	84.1	75	61.3	68.1
	11-14	73.4	47.9	61.2	84.2	75.7	80.1	76.3	55.3	66.2
	6-14	72.2	52.2	62.6	85.3	79.2	82.4	75.5	58.9	67.5
AP	6-10	68.9	51.9	60.4	86	82	84	73.4	59.9	66.6
	11-14	63.5	37.1	50.7	83.4	67.7	75.6	69.2	46.2	58
	7-14	66.8	46.5	56.8	85	76.3	80.6	71.8	54.8	63.3
BH	6-10	57	34	45.7	83	69.3	76.5	60.6	38.5	49.5
	11-14	64.9	33	49.1	86.2	65.6	77.1	68.8	37.9	53.8
	6-14	59.8	33.6	46.9	84.3	67.8	76.7	63.6	38.3	51.3
GU	6-10	78.9	64	71.5	89.8	84.4	87.3	82.6	70.5	76.7
	11-14	78.7	57.9	68.9	88.4	78.4	83.7	82.2	65.3	74.3
	6-14	78.8	61.7	70.5	89.2	81.8	85.7	82.4	68.4	75.7
HY	6-10	85.9	71.9	79.3	91.9	89.9	90.9	87.5	76.7	82.4
	11-14	85.8	65.8	76.7	89.3	87.3	88.3	86.7	71.7	79.8
	6-14	85.9	69.5	78.2	90.8	88.8	89.8	87.2	74.6	81.3
KA	6-10	76.4	64.8	70.8	87.6	85.4	86.5	79.7	71.1	75.6
	11-14	67.2	46.4	56.9	80.1	72.5	76.3	71.2	54.5	62.9
	6-14	72.8	57.4	65.3	84.6	80.1	82.4	76.4	64.4	70.5
KE	6-10	94.9	95	95	95.8	97.1	96.4	95.2	95.5	95.3
	11-14	94.8	93.6	94.1	93	95.4	94.3	94.3	94.1	94.2
	6-14	94.9	94.3	94.6	94	96.3	95.4	94.8	94.8	94.8
MP	6-10	61	47.3	54.6	83.9	81.7	82.8	66	55.2	60.9
	11-14	69.7	44.5	58	85.9	81.4	83.7	73.6	54.1	64.4
	6-14	64.3	46.2	55.9	84.7	81.6	83.2	69	54.8	62.3
MA	6-10	84.9	77.5	81.2	91.9	89.8	90.9	87.5	82.2	84.9
	11-14	80.8	56.2	68.9	89.2	85.1	87.3	84.4	68.3	76.7
	6-14	83.3	69.2	76.4	90.7	87.8	89.3	86.2	76.6	81.5
OR	6-10	75.8	63	69.6	89.7	78.8	84.3	77.9	65.5	71.8
	11-14	72.9	52.5	62.9	88.2	78.2	82.4	75.2	56.7	66.2
	6-14	74.7	58.9	67	88.2	78.6	83.5	76.8	62	69.6
PB	6-10	83.8	77.5	80.9	90.2	91.4	90.8	85.5	81.6	83.8
	11-14	77.4	67.5	72.7	87.1	85.9	86.5	80.3	72.9	76.8
	6-14	81.1	73.1	77.4	88.9	89	88.9	83.4	77.8	80.8
RA	6-10	69.9	36.4	54.2	82.5	72.4	78.3	72.4	42.4	58.5
	11-14	75.2	28.6	84.7	87	71.2	79.1	77.2	37.7	59.3
	6-14	72	33.5	54.4	84.2	71.9	78.6	74.3	40.6	58.8
TN	6-10	90.8	83.6	87.3	94.4	94.7	94.3	92	87.4	89.7
	11-14	77.7	62.5	70.2	78.5	75.7	77.1	78	67.3	72.7
	6-14	85.3	69.2	76.4	90.7	87.8	89.3	86.2	76.6	81.5
UP	6-10	69.5	45.4	58	77.3	70.3	74.1	71.1	50.2	61.2
	11-14	75.1	38.2	58.2	76.8	68.4	72.7	75.4	45.2	61.4
	6-14	71.7	42.6	58.1	77.1	69.5	73.5	72.8	48.2	61.3
WB	6-10	68.9	63.5	66.1	83.3	77.5	80.5	72.5	66.6	69.5
	11-14	68.1	55	61.5	83.4	65	74.7	72.5	57.6	65.1
	6-14	68.6	60.1	64.2	83.3	71.8	77.9	72.5	62.9	67.7

Source: IIPS (1995) National Family Health Survey - 1992-93, India, IIPS, Mumbai.
AP=Andhra Pradesh, BH=Bihar, GU=Gujarat, HY=Haryana, KA=Karnataka, KE=Kerala, MP=Madhya Pradesh,
MH=Maharashtra, OR=Orissa, PB=Punjab, RA=Rajasthan, TN=Tamil Nadu, UP=Uttar Pradesh, WB=West Bengal.

Table 3 also shows that except for a few states, such as Kerala and Punjab, rural-urban differences in the schooling of girls are large. Further, in most states, the gender differences in schooling were relatively smaller in urban than in rural areas. Among others, this means that easy accessibility to education facilities is an important facilitating factor in promoting the schooling of girls. Goyal and Singh (1998) have examined the macro correlates of improvement in the schooling of children (1979-93) and noted that the literacy status of parents is an important determinant in this regard. They have also observed that the economic status of parents had a poor correlation with the schooling of children or the rate of increase therein. (It must be noted here that these correlations were for schooling up to the high school level.) This suggests that attitude (as reflected by the literacy level of parents) rather than economic status plays a determining role in promoting the education of children, particularly of girls.

There are several ways through which the schooling of women affects fertility or childhood mortality. These can be direct or indirect. If a woman marries late in order to complete her education, she is exposed to child bearing for fewer years, which may reduce her fertility. Using the Easterlin (1975) framework, Jain (1999) and Jeffery and Basu (1996) have postulated that the indirect effects of schooling on fertility are manifested through:

- a decrease in the duration of breast-feeding and post-partum abstinence, foetal and child mortality (natural fertility),

- a decrease in the demand (ideal or desired) for children, and

- an increase in the use of contraception.

Henry (1961) has termed the number of children a couple will have in the absence of any deliberate attempt to modify fertility as "natural fertility". Cultural practices and biological conditions (that affect fertility) are major determinants of natural fertility. Behavioural factors would include age at marriage (start of exposure to risk of intercourse and conception), pattern of breast-feeding, post-partum abstinence and coital frequency. Biological factors that may affect natural fertility are onset of sterility, intrauterine mortality and fecundity (Parasuraman et al.; 1999).

Schooling, particularly of women, is an important development variable affecting behavioural determinants of fertility. Its most depressing effect is on age at marriage. In the South Asian context, it is invariably related to the onset of regular sexual relations (pre-marital sex is taboo in all South Asian societies). Education delays entry into marital unions (UN, 1987). It has been postulated that better educated women are more likely to delay their entry into marriage unions than less educated ones. In this context, Jeejeebhoy and Cleland (1996) have hypothesised that a few years of schooling can do little to enhance a daughter's prospects in the marriage market, nor does limited schooling necessarily enhance women's autonomy to participate in marriage decision making, or to contribute to the economy of their natal families. This would mean that the impact of schooling on age at marriage may be expected only after completion of a certain number of years of schooling. The data from the National Family Health Survey (NFHS) supports this conclusion. (NFHS was a nation-wide Demographic and Health Survey carried out in India during the years 1992-93).

Table 4: Mean Age at the First Consummation of Marriage among Women Age 13-49 by Women's Years of Schooling, 1992-93

Years of Schooling	Mean Age (Years)
None	16.0
1-4 Years	16.6
5-9 Years	16.6
10 +	20.9
Total	17.1

Source: Parasuraman et al, 1999.

Table 4 shows that the women who have had ten or more years of schooling had a substantially higher age at marriage than less educated women. Further, differences in age at marriage of illiterate or less educated women were almost negligible. Parasuraman et al. (1999) have carried out a multiple regression analysis to study the net impact of schooling on age at consummation of marriage. They have, however, noted that when other associated socioeconomic characteristics are controlled (such as standard of living, type of childhood residence, caste status, etc.), the impact of schooling on age at the first cohabitation reduces substantially. Notwithstanding the fact that the effect of years of schooling on age at nuptiality is less pronounced when it is considered in conjunction with other variables, the former continues to remain the most important depressing factor influencing age at marriage.

Education has an enhancing effect on other determinants of natural fertility, i.e. extent of breast-feeding and post-partum abstinence. Recent observations have led us to believe that educated women have a lower duration of breast-feeding (Martin et al., 1985). Empowered with better knowledge about children's nutrition requirements, educated women probably introduce food supplement in their children's diet at a relatively early stage. The data from the NFHS supports this view.

Table 5: Mean Duration of Breast-Feeding by Years of Schooling of Women, 1992-93.

Years of Schooling	Mean Duration of Breast Feeding (Months)
None	25.9
1-4	24.1
5-9	22.4
10 +	18.2
Total	24.4

Source: Parasuraman et al., 1999.

In the context of its influence on fertility, it is doubtful whether a decline in the mean duration of breast-feeding from 26 to 18 months (from very long to long) will have any differential effect on fertility, because the protection against pregnancy provided by lactation diminishes, when a child is breast-fed for a longer duration (Parasuraman et al., 1999). Moreover, with the recent trend of giving greater emphasis on breast-feeding, its relationship with schooling may get diluted further.

Post-partum abstinence is also associated with schooling (and associated modernization) in the direction of higher fertility (Oni, 1985, Page and Lesthaghe, 1981, Casterline et al., 1984). Schooling (and associated modernization) promotes Western values. The NFHS (1992-93) lends support to these observations. The survey indicates that median duration of the post-partum non-

susceptible period was 6.2 months for women with 10 or more years of schooling. For women with 5-9 years of schooling, it was 8.1 months, for 1-4 years of schooling, 10.1 months and for those with no schooling, 11.4 months.

The demographic literature is full of evidence of a strong negative relationship between education of mothers and child mortality (Cochrane et al., 1980, Caldwell, 1982). It has been noted that the length of schooling required to produce a significant reduction in mortality varies from culture to culture. While explaining the linkage between increased maternal schooling and reduced child mortality, Caldwell (1979) has argued that three factors are important in this regard. These factors are (in ascending order): (a) low fatality in case of child's sickness, (b) greater capacity to seek medical care, and (c) greater decision making power in providing treatment to the child.

In the context of care of the child, the effect of the education of the mother and income are inter-woven with woman's capacity (associated with her schooling) to overcome the hurdles (taken in a negative sense as postulated by Caldwell (1979)) and to use the resources. These factors are crucial to the lowering of child mortality.

Table 6: Infant and Child Mortality Rates by Education of Mother, 1992-93

Education Level	Neonatal Mortality	Post Natal Mortality	Infant Mortality	Child Mortality	Under Five Mortality
Illiterate	60.6	40.0	100.6	44.3	140.9
Literate and up to 8th standard	38.8	23.1	62.5	22.8	83.9
8-10 standard	37.6	18.5	56.1	9.2	64.8
10+ years	25.3	11.9	37.1	6.2	43.2

Source: IIPS (1995) "National Family Health Survey 1992-93, India" IIPS, Mumbai.

As is evident from Table 6, all the parameters of infant and child mortality depict a significant decline with a little rise in the schooling of mothers, and further increases in schooling entail additional reductions in infant and child mortality.

Parasuraman et al. (1999) have examined the effect of several awareness and mediating variables associated with child mortality and schooling. These variables are knowledge of oral rehydration salt (ORS), breast-feeding of the child within 24 hours of birth, pre-natal care received by women, help of a professional in conducting the delivery, complete immunization of children, etc. These authors have noted that all the above parameters are positively influenced by the education of mothers. Though Parasuraman et al. (1999) have not formally examined the inter-relationships among the three (schooling of mothers, infant and child mortality, awareness and mediating variables affecting child mortality), their analysis reflects the facilitating role of these latter variables in strengthening the relationship between education of the mother and infant and child mortality.

However, it is well established that the early stages decline in childhood mortality affects an increase in fertility (Cochrane et al., 1980). It is only when the decline in child mortality is socially established that it may contribute to lowering fertility.

The effect of schooling on natural fertility is, therefore, either weak or at times may lead to an increase in fertility. To a large extent the supply variables may explain why at low levels of female schooling the fertility of educated women may be higher than that of women who have not gone to school (Jeffery and Basu, 1996). But these authors have further argued " ...the supply factors may be important only at low levels of schooling or at the early stages of development in schooling. In other circumstances, the demand factors and use of contraception come into play. At higher levels of female schooling, decreased demand for children seems to be a major determinant of fertility decline... ". The demand for children is conventionally measured by the desired family size. It is, however, a complex issue depending on tastes and preferences. In the Indian context, desire for a son is integral to the overall demand for children. Female schooling is likely to influence the demand by raising the aspiration for quality children rather than their quantity. Since quality implies greater investment in children, particularly for providing better education, nutrition and care, the cost of rearing children rises. If educated mothers are socially mobile, the cost of bearing and rearing of children, particularly the opportunity cost, increases sharply. From an economic perspective, therefore, the demand for children is likely to decline with the schooling of mothers. Education also weakens traditional beliefs regarding family size and desire for sons (Parsuraman et al., 1999)

Women's schooling is likely to reduce the demand for children, including sons. Social norms, particularly governing preferences for sons, may impinge on this transition, and even educated women may find difficult to ignore due to peer and social pressures. Incidentally, societal norms governing family size are in the form of a range. It is possible that educated women may choose the lower end of the norm as completely ignoring the social pressures could be difficult for them. The NFHS (1992-93) data on the ideal number of children support these observations.

Table 7: Mean Ideal Family Size for Currently Married Women Aged 13-49, by Women's Years of Schooling, 1992-93

Years of Schooling	Ideal Family Size
0	3.2
1-4	2.7
5-9	2.5
10 +	2.1
Total	2.9

Source: Parasuraman et al., 1999.

Table 7 indicates that the range of ideal family size from 2.1 (for women with 10 or more years of schooling) to 3.2 (for illiterate women), is relatively small. But it must be read with caution because in the context of social acceptance of a small family size norm, couples desiring a larger number of children may be looked down upon, and they are likely to hesitate in expressing their true desire.

A better understanding of the differential in fertility preferences can be seen in the proportion of women who have already had two children, and who do not want any more children.

Table 8: Proportion of Currently Married Women Aged 13-49 with Two Living Children and Not Desiring More Children by Women's Years of Schooling, 1992-93

Years of Schooling	Percent Women not Wanting More Children
0	45.8
1-4	67.4
5-9	70.1
10 +	83.0
Total	59.8

Source: Parasuraman et al., 1999.

In Table 8, the impact of schooling on the ideal family size has emerged more prominently. Even the women with few years of schooling have favoured the small family size norm in large proportion.

The NFHS also collected data on the sex composition of the desired number of children. The analysis shows that among educated women with 10 or more years of schooling, 23.9 percent were not specific about the sex composition of the children they wanted to have. For women with 1-9 years of schooling, the proportion was 12.1 per cent and for illiterate women, it was 5.1 per cent. Table 9 presents the data on the mean ideal number of sons and daughters by the years of schooling of women.

Table 9: Mean Ideal Number of Sons and Daughters of Currently Married Women Age 13-49 by Women's Years of Schooling, 1992-93.

Years of Schooling	Mean No. of Sons	Mean No. of Daughters
0	1.9	1.2
1-9	1.5	1.1
10 +	1.2	1.0
Total	1.7	1.2

Source: Parasuraman et al., 1999.

Table 9 shows a negative impact of schooling of women on the ideal numbers of sons. It also suggests that the desire for daughters is relatively low and is not influenced very much by the education of the mother.

How many women use contraception to maintain their family size at the desired level? It has been noted that even when the family size equals or exceeds the desired number, a large proportion of women do little to prevent unwanted pregnancies. Cleland and Jeejeebhoy (1996) have noted several obstacles to contraception, such as lack of knowledge, emotional distance between the spouses, inability to counter family objections, the ability to make independent decisions, and the ability to reach family planning services. They have noted that all these are deeply rooted in women's social and cultural situation in South Asia and hence, there are big hurdles in the pathway to adopting contraception. Family planning programmes, by offering easy and free facilities and campaigns to create a favourable public opinion, have attempted to lower some of the resistance, at least at the community level. At the family level, it is expected that educated women by virtue of their higher knowledge, better inter-spousal communication,

autonomy to make decisions and access to family planning services are more likely than uneducated women to overcome these hurdles and adopt contraception to keep their family size within the desired limit.

The inter-relationships of women's education with the knowledge of contraception, inter-spousal communcation, exposure to mass media and attitude towards family planning are well documented (Dandekar, 1965; United Nation, 1987, 1993; Martin et al., 1995). The NFHS has provided substantial data on most of these factors, which are shown in Table 10.

Table 10: Percent of currently Married Women Who Had Exposure to Family Planning Message on Electronic Media, Had Knowledge of Family Planning, Had Discussion with Husband on Family Planning, and Who (along with husband) Approved of Family Planning, by Women's Years of schooling, 1992-93 :

Years of Schooling	Exposure to F.P. Message	Knowledge of F.P. Methods	Husband and Wife discussed Family Planning	Couple Approved of Family Planning
0	27.6	28.0	39.7	45.1
1-4	49.3	52.6	53.9	63.7
5-9	63.9	67.3	60.5	71.3
10+	84.7	90.2	70.6	85.0

Source : Parsuraman et al., 1999.

The impact of schooling is very much evident on all four variables presented in Table 10. These variables have a direct association with the practice of contraception. It can be noted that with a rise in the level of schooling, there is a corresponding rise in women's exposure to family planning messages on the electronic media and their knowledge of family planning methods.

Table 11: Contraceptive Prevalence Rates among Currently Married Women Aged 13-49 by Women's Years of Schooling, 1992-93

Years of Schooling	Contraceptive Prevalence Rate *
0	31.5
1-4	45.9
5-9	43.6
10 +	45.0

Source: Parasuraman et al., 1999.

*Include Vasceting, Tubectomy, IUD, Oral Pills, Condom.

Table 11 presents data on contraception and schooling of women. It shows improvement in the contraceptive prevalence rate with the acquisition of even a little schooling, but no systematic change occurs as the educational level increases. This contrasts with the changes in the intermediate variables of contraception presented in Table 10. Does this mean that even educated women are unable to transform their desire or preference for a specific number of children into the number they actually have? Though the existing data set is unable to provide a satisfactory answer to this question, it is possible that other programme related variables could be influencing the adoption of contraception.

Having analysed the relationship between schooling and various determinants of fertility, we would now like to focus our attention on the influence of education on fertility per se. This can be examined at two levels. Firstly, at the macro level, by taking the Total Fertility Rate (TFR) as an indicator of fertility. Secondly, at the micro level, by considering children ever born to women who have completed their fertility (women of 45 years of age or those who have undergone sterilisation).

The analysis of NFHS data on the TFR with respect to schooling of women is presented in Table 12. The table shows a significant decline in the TFR as the schooling of women increases. The change is particularly evident between illiterate and primary level educated women (1-4 years of schooling) and between 5 to 9 years of schooling and 10 or more years of schooling. Following Bongaarts (1993) model.

Table 12 : Estimated Total Fertility Rate (TFR) by Women's Years of Schooling, 1992-93.

Years of Schooling	Total Fertility Rate
0	4.0
1-4	3.0
5-9	2.8
10 +	2.0
Total	3.4

Source: Parasuraman et al., 1999.

The data on children ever born vis-à-vis the education of women are presented in Table 14.

Table13: Mean Number of Children Ever Born to Women Aged 45-49 by Education Level of Women, 1992-93.

Education Level/ Years of Schooling	Mean Number of Children Ever Born
Illiterate	5.26
Less than 8 years of schooling	4.50
8 to 10 years of schooling	3.51
10 years of schooling	2.80

Source: IIPS (1995) National Family Health Survey: 1992-93, India, IIPS, Mumbai.

Table 13 indicates that the cohort fertility measure also shows a strong inverse relationship with the schooling of women. The rate of change in the fertility level (with the rise in the education level) is quite large. Though fertility has declined rapidly in all education groups, the decline grows when we move from women who are illiterate or who have had only primary level education to women who have had education up to below the high school level.

Discussion

The schooling of children in India has grown several fold during the past four decades. An important facilitating factor has been the creation of education facilities, particularly at the primary and secondary levels, in all areas, and an aggressive campaign to encourage parents to send their children to school. However, in spite of an impressive increase, a large proportion of children still need to negotiate (in rural areas) long distances to reach a secondary school. The socio-cultural milieu of India continues to impede the schooling of women; the environment is

still not very favourable to them. The literacy level of parents has emerged as an important contributing factor in promoting the schooling of children. The economic status of the family / household is less important in this regard.

The framework proposed by Easterlin (1975) is most appropriate for understanding the inter-relationships between schooling of women and fertility. The analysis shows that having only a few years of schooling has little influence on natural fertility (supply of children). This also helps explain why at low levels of schooling of women fertility is sometimes higher than that of illiterate women. With the rise in educational attainments of women, the demand factor and use of contraception come into play. This rise is apparently a major determinant of fertility decline. From the NFHS (1992-93) data it appears that this threshold level for India could be at about ten years of schooling. Though women having completed 5 to 9 years of schooling began to have lower demand for children, it became more evident among women who had 10 or more years of schooling. This lends support to our basic argument that to achieve any appreciable decline in the fertility level, schooling of women at least up to the adolescent age (8 to 10 years of schooling) is a desirable pre-condition. However, as the analysis indicates, a supportive social environment is also desirable, along with schooling of women, to bring a decline in fertility.

The schooling of women, however, has a more linear relationship with child mortality. Even a little improvement in the educational level of women is reflected in declines in all the parameters of infant and child mortality. This is apparently mediated through improvement in ante-natal care of women, the immunization of children, etc.

At the policy level, the study suggests that the schooling of women has a substantial impact on demand for children and fertility regulation. However, a mere shift of women from illiteracy to literacy may not bring about this change; it may, on the other hand, increase the supply of children. To achieve a significant reduction in the fertility level (through lower demand for children and higher use of contraception) a reasonable improvement in schooling of women (to 8-10 years) is very desirable. It must be cautioned here that educational development of women is only a desirable requirement; it should accompany other parameters of development to effect a decline in fertility.

References

Bongaarts, John A. (1993) "The Relative Contribution of Biological and Behavioural Factors in Determining Natural Fertility: A Demographer's Perspective" in Ronald Gray and Alfred Spira (eds.) Biomedical and Demographic Determinants of Reproduction Clarendon Press, Oxford.

Caldwell, J.C. (1979) "Education as a Factor in Mortality Decline: An Examination of Nigerian Data" Population Studies. Vol. 3, No. 3.

Caldwell, J.C. (1982) "Influence of Maternal Education on Infant and Child Mortality: Levels and Causes" Health Policy and Education. Vol. 2.

Casterline, J.B., S. Singh, J. Cleland and H. Ashurst (1984) "The Proximate Determinants of Fertility" World Fertility Survey Comparative Studies Cross National Summaries No. 39. International Statistical Institute, Netherland.

Cochrane, Susan H. (1979) "Education and Fertility: What Do We Really Know? The John Hopkins University Press, Baltimore.

Cochrane, S.H., O'Hara D.J., and Leslie, J. (1980) "The Effect of Education on Health" Staff

Working Papers No. 405, The World Bank, Washington D.C.

Dandekar K. (1965) "Effect of Education on Fertility" in Proceedings of the World Population Conference: 1965, United Nations, Belgrade.

Easterlin, Richard A (1975) "An Economic Framework for Fertility Analysis" Studies in Family Planning. Vol. 6.

Goyal, R.S. and Reena Singh (1998) "Are Children Going to School? An Enquiry into Schooling of Children in India" IIHMR, Jaipur.

Henry L., (1991) "Some Data on Natural Fertility" Eugenics Quarterly Vol. 8 No. 81.

Jain, Anrudh (1999) "Fertility Transition in India: Implications for Social Policies" in Sajroj Pachauri (ed.) Implementing a Reproductive Health Agenda in India: The Beginning. Population Council, New Delhi.

Jeffery, Roger and Alaka M. Basu (1998) "Schooling as Contraception" in Jeffery R. and A.M. Basu (eds.) Girls Schooling, Women's Autonomy and Fertility Change in South Asia. Sage Populations, New Delhi.

Martin, L.G., D. R. Flanagan and A.R. Klenicki (1985) "Evaluation of Bangladesh Female Secondary Education Scholarship Program and Related Female Education and Employment Initiative to Reduce Fertility". International Science and Technology Institute Inc., Washington D.C.

Mason, Karen O. (1984) "The Status of Women. A Review of Its Relationship to Fertility and Mortality" The Rockefeller Foundation, New York.

Oni, Gbolahan A. (1985) "Effect of Women's Education on Post-Partum Practices and Fertility in Urban Nigeria" Studies in Family Planning Vol. 16 Nov.-Dec.

Page, Hillary J., and Ron Lesthaeghe (1981) "Child Spacing in Tropical Africa: Transition and Change", Academic Press, London.

Parasuraman, S. et al. (1999) "Role of Women's Education in Shaping Fertility in India: Evidence from National Family Health Survey" Himalaya Publishing House, Mumbai.

United Nations (1987) "Fertility Behaviour in the Context of Development: Evidence from the World Fertility Survey". Population Studies No. 100, Department of International Economic and Social Affairs, United Nations, New York.

United Nation (1993) "Women's Education and Fertility Behaviour" Population News Letter No. 56, Population Division, UN., New York.