Determinants of Motherhood in Teenagers and Fate of their Pregnancy Outcome: Evidence from National Family Health Survey, India

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ABSTRACT

The very environment for childbirth is not conducive and safe in teen ages, having highest probability of hazardous consequences to mother as well as to child from both medical and social point of view. Data from National Family Health Survey (NFHS), 1992-93, India has been analyzed to find out the factors associated with motherhood in teen ages and determinants of survival and health status of children to teenage mothers. The proportion of teenage mothers did not vary much with place of residence, but those who are illiterates or mere primary school completed, Muslims, Buddhists, Christians and scheduled tribes constituted higher proportion than other categories. Teenage married women having medium and higher standard of living were found less likely to attain motherhood than those with lower standard of living. Women educated up to primary school and above were found less likely to have child loss, pregnancy wastage and ill health to children as compared to illiterate women. Women who used kerosene or other oil for lighting were found more likely to have child loss than those used electricity or gas. The odds of the status of pregnancy wastage were higher in case of women who have had delivery complications and childbirth before time (pre-term) in comparison to those who had not. Women's education and standard of living have significant and strong bearing on the demographic and health situation of teenage women and their pregnancy outcomes.

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I. INTRODUCTION

The very phenomenon of motherhood primarily requires a suitable and healthy physiological environment. At the teen age of a woman, this environment is often not assured, leading to the highest probability of hazardous circumstances both medical and social, to the fetus as well as mother. Mothers at these ages are much more vulnerable to several social customs and beliefs that hamper the access to the household resources and the utilization of many of the available services. The teenage motherhood is often not a direct function of socio-economic or other characteristics of the women; rather use to be their indirect manifestation. Precisely, most teenage (effective) marriages lead to the teenage motherhood. Once the marriage is over during teen age, it seldom leaves any space for a planned motherhood, particularly in a patriarchal kind of society. In this situation, the fertility decision of the married woman or the expression of her background characteristics barely gets chance to be manifested after passing through a series of `Hierarchical Social Structures" *viz.*, society, community, family, then her husband; and the immediate motherhood is hardly planned (by the woman herself).

The incidence of teenage pregnancy is still quite high around the globe. According to the United Nations (2001) every year, adolescents give births to 15 million infants. In African countries, the prevalence is much more as compared to the rest of the world. A number of studies on consequences like maternal mortality, unplanned fertility, child loss etc. out of teenage motherhood has been carried out on different populations over time. Pathak and Ram (1993) in their study based on Indian census data could observe prevalence of a higher proportion of infant and maternal mortality as a consequence of adolescent motherhood. They have tested the

possible correlation of the supply factors of health care with the infant and maternal mortality. The study suggests that spread of education particularly to females can create awareness against risks out of motherhood at teen ages. Further, the use of family planning methods has been recognized as a combat to minimize the hazardous effects, within the prevailing framework of adolescent marriage. Atwood and Hussein (1997) in their theoretical framework on priority steps for adolescent mothers described the stage of adolescence and identified the vulnerability *viz.*, the dichotomy of roles and societal expectations. They emphasized on the adolescent women of both rural as well as urban area in terms of poverty, illiteracy, and lack of proper nutrition and health care. The paper foreshows the hazardous consequences of premature motherhood, such as the maternal mortality and infant deaths through malnutrition of mother, prematurity of pregnancy outcome, low birth weight and pregnancy complications. They have identified three strategic steps for adolescent women such as delay of marriage, delay of first pregnancy and that of subsequent pregnancies, through proper IEC (information, education and communication), social mobilization and operation research.

A study in U.S (1978) showed that the rate of decline in fertility among teenagers is lower than that in the overall reproductive age group and the pregnancies are often unintended, *e.g.*, in 1974 half of all teenage pregnancies were unintended in spite of the unmet need for contraception. In this study the intended and excess fertility was calculated for finding the unmet need. Pathak and Singh (1994) in their paper on adolescent motherhood and maternal mortality in India, studied the trend of births to adolescent mothers in different states of India from 1971 to 2001. Through path analysis and test of correlation between MMR (maternal mortality ratio) and some maternal characteristics they found that MMR was directly associated with the care during delivery. The paper recommends the dissemination of education and awareness to avoid pregnancy and about family planning methods, to the adolescent women, which may successfully bring down the MMR.

McDevitt (1996) in a study focusing on the adolescent fertility in developing world carried out comparative analyses on the internationally comparable survey data collected over 25 years to show how adolescent reproductive behaviour has changed over time, and to quantify current levels and regional variation in teenage fertility. According the study, about 15 million babies are born to young women ages 15 to 19 each year. These have been considered high-risk births from the perspective of the health of both mother and child. They have been termed as high-cost births when the associated negative effects on the quality of life and role of women in the society are concerned. The analysis of this study revealed that about 8 in every 10 of these babies, or 13 million, are born in the developing countries of Asia, Africa and Latin America. Thirteen percent of all children born in these countries are born to teenage mothers. It was identified by the study that the health risks associated with adolescent pregnancy and childbearing include higher risks of maternal and child morbidity and mortality.

Young women are more likely than more mature women to suffer pregnancy related complications that endanger their lives and lead to infertility. Infants born to adolescent mothers face great risks of low birth weight, prematurity, birth injuries, still births and mortality than do babies born to older women (Bledsoe and Cohen 1993:6; WHO 1989:5). McDevitt (1996) has observed the infant mortality rates for teenage births are as much as 80 percent higher than those for women in the age group 20 to 29 years. Infant mortality among babies born to adolescent mothers is highest in those countries with the largest proportions of early teenage births. Apart from the health risks, adolescent childbearing and the conditions associated with it are fundamental factors determining the quality of life and role of women in society. Untimely pregnancy can force young women to discontinue their education, reducing their employment options later in life.

The impact of education on adolescent child bearing has well been recognized by a number of studies. McDevitt (1996) has observed that women with more education marry later and have lower fertility within marriage. The United Nation's analysis of World Fertility Survey data indicated that in the late 1970"s and early 1980"s women with seven or more years of schooling married nearly 4 years later, on an average, that women with no education – reducing adolescent and, potentially, lifetime fertility.

Within the framework of teenage marriage and motherhood, women's exposure to several rigid social customs and beliefs can influence the fate of their pregnancy outcomes and health of their children. These social factors added with women's lower level of education and awareness and limited access to the household resources and health services, can have heightened negative impact on their pregnancy outcomes and health of their children. The biological inconsistency of the teenage motherhood may lead to pregnancy wastages.

The present paper is a modest attempt to find out the probable socio-economic and demographic determinants of teenage motherhood and consequential pregnancy wastage (still birth and abortion). It also endeavors to explore the possible correlates of survival and health status of the children to the teenage mothers.

II. DATA AND METHODOLOGY

For the present research paper, data from the woman's questionnaire of the National Family Health Survey (NFHS), India, 1992-93 has been analyzed to understand the process of teenage motherhood and its consequences. The NFHS, India, 1992-93 has collected information

about 89,777 ever-married women in the age group 13-49 years. To find out the probable socio-economic and demographic determinants of teenage motherhood and possible correlates of survival and health status of the children to the teenage mothers, multivariate statistical analyses have been carried out over this data. Since the selected dependant variables of the study are dichotomous in nature, logistic regression analyses have been used to estimate the relative risks out of the predictors (Retherford & Choe, 1993.)

In order to get a comparative picture of some background characteristics associated with teenage motherhood and child survival in two different time periods, data from NFHS-2, India, 1998-99 has also been studied along with the data from NFHS, India, 1992-93. However, for all multivariate statistical analyses of this paper, the data from the woman's questionnaire of the National Family Health Survey (NFHS), India, 1992-93 alone has been used. The analysis of teenage motherhood therefore, confines only to 9447 ever-married women presently in their teen, *i.e.*, from 13 to 19 years of age. The concept of teenage motherhood has been considered here for the women with at least one live birth during teen age. In NFHS, information regarding delivery, ANC, child health and treatment, has been collected for maximum last three births occurred in last four years. Hence for the analyses of child loss and pregnancy wastage, women who had given birth in last four years have been considered. In the survey, information regarding child health and treatment has been collected only for the living child out of all the births occurred in last four years. Hence for the analyses of child health, only the women, who had at least one live child during the interview have been considered. While studying the health of children to teenage mothers, the dependant variable "disease" was created by cumulating 5 diseases asked in the NFHS, India, 1992-93 *viz.*, fever, cough, diarrhea, acute respiratory infection (ARI) and blood in stool. This has been done for all the three births to see the proportion of mothers at least one or more of whose children are affected with at least one or more disease(s). Logically, by making a

combined analysis for the children and diseases, we may not loose much information because of the fact that first order children dominate over other births to teenage mothers and also some of the diseases listed may be quite common among children.

Taking into account the household amenities and assets a "standard of living index (SLI)" has been created and has been used as an economic indicator. The nutritional status of the children to the teenage mothers has been assessed by the Body-Mass Index (Gopaldas and Sheshadri., 1987).

BMI= weight in kg. / Height^2 in m.

III. CONCEPTUAL FRAMEWORK

Considering the overall socio-economic background of the teenage married women, a conceptual framework has been worked out and shown in Figure 1. This demonstrates the possible mechanism behind the motherhood in teenage and its consequences *viz.*, pregnancy wastage, child health and survival. Plausible impact of different variables on the study events has been explained in five stages. They are the fixed social factors, premarital factors, post-marital & pre-reproduction factors, reproduction factors and reproductive outcomes.

The characteristics of woman, such as, caste, religion and childhood place of residence have been considered here as the "fixed social factors". Because, in most cases if not always, these characteristics are social by nature and more or less remain unchanged. Features like woman's educational status, economic condition before marriage, work participation before marriage and age at menarche have been termed as "premarital factors"

in this conceptual framework. As in many cases the education of the woman stops before marriage and marriage takes place after she attains menarche. In the "post-marital & pre-reproduction factors" the framework has included variables such as woman's age at marriage, her economic condition, work participation, residence, household environment after marriage and availability of health and family planning facilities, with the hypotheses that these may directly or indirectly affect the events of reproduction and the outcomes. The variables such as, parity, antenatal care, history of previous delivery complications, history of previous premature birth, lactation, maternal and child immunization have been considered as "reproduction factors", as these are the factors that comes to state with the event of reproduction. In the final stage, variables such as age at motherhood, pregnancy wastage, child health and child survival have been kept under the term "reproductive outcomes".

The framework shows how different sets of biosocial, economic and behavioral factors influence the motherhood at teen ages and its aftermath, starting right before the marriage up to the post-marital phases. In a relatively unidirectional flow, fixed social factors (Stage I) of the woman such as caste, religion and childhood place of residence can influence the woman's individual and household features before (Stage II) and in turn upon the same after marriage (Stage III) also. Woman's socio-economic background can affect her behavioral and reproduction factors (Stage IV) and the consequences (Stage V) such as pregnancy outcomes and child health.

Caste and religion may have a social/cultural impact on the age at marriage, but the result can be intervened by education or economic status of the woman. The age at menarche too can be a mediator. Age at menarche as a premarital factor can affect the age at marriage and so the age at motherhood, since in some societies, the marriage is dependant on the age at

menarche. Woman's place of residence before marriage (rural or urban) has a plausible effect on educational status and economic life of woman and so may alter the reproduction events. Sometimes the place of residence and economic condition before marriage affects the same after marriage due to linked nature. Ultimately woman's age at marriage, her economic condition, work participation, place of residence and availability of health and family planning facilities can affect the possibility of motherhood at teenage.

The possible effect of different socio-economic and demographic factors have also been illustrated in the conceptual framework with regards to the reproduction outcomes, such as pregnancy wastage, child health and child survival. Woman's economic condition, work participation and residence after marriage added with the availability of health and family planning facilities can affect the parity (intended fertility), antenatal care, delivery complications, lactation, maternal and child immunization and these in turn influence the fate of pregnancy outcome. The household environment of women can directly affect the child health and survival.

In the present demonstration not necessarily the variables or set of variables have direct impact on others, rather may have indirect influence also. For example education can directly influence age at marriage and also can affect through economic condition or work participation before marriage. Besides direct and indirect impact, there can be interaction between variables within one set or among the sets of variables, which in turn may affect the final consequence such as motherhood in teenage, and health and survival of children to teenage mothers. However in the current paper, the analyses have been carried out to find only the direct effects of the potential predictors.

IV. ANALYSIS AND DISCUSSION

It may be noted that in India, 46 per cent of all teenage ever-married women are mothers (IIPS, 1995). An observation (Table 1) of the background characteristics of the teenage mothers reveals that their proportion does not vary much with the place of residence, but categorically those who are illiterates or mere primary school completed, Muslims, Buddhists, Christians and scheduled tribes[1] form the relatively higher proportion of teenage mothers than other social categories. It was observed that more than half of all teenage ever-married women in India are married with consanguineously related men.

But some amount of disparity could be observed with regard to the demographic features of teenage mothers (age 15-19 years) and delivery characteristics associated with the teenage mothers by place of residence. In addition, data from both the phases of NFHS *i.e.,* 1992-93 (Tables 2a and 2b) and 1998-99 (Tables 2c) do show variations in some of these characteristics over the period of time. It was found from Table 2a that, although the average number of births and surviving children to teenage currently married women did not vary by residence, still a disparity could be observed in terms of the birth order 2 or more. In total, more than 12 % of all teenage currently married women were found to have such higher birth orders. More than 14 percent of all teenage mothers have given birth at less than 17 years of age and this proportion is more than double in rural area as compared to urban areas. The observation regarding the fate of pregnancy outcomes of teenage mothers presents quite a grave situation. It was found that (Table 2a) more than 11 per cent of all conceptions end with stillbirths or abortions. The neonatal

[1] The variables "scheduled caste (SC)" and "scheduled tribe (ST)" used in the present paper are subdivision of "caste". Caste is an age-old categorisation of people particularly in Hindu society based on occupation. SC and ST are the two type of such categorisation, which has been mainly defined by the constitution of India afresh after the year 1956 according to special directive of the President of India. These two groups are often comparatively at a very lower level of socio-economic development than rest group of people in the society. Scheduled tribes are the tribal aborigines (Vidyarthi and Rai, 1985).

mortality and under-five mortality rates with respect to teenage motherhood are also very high. The infant and under-five mortality rate and fertility rates are abnormally higher for women residing in rural area compared to those in urban area. Little less than one fourth of all mothers have birth interval of less than 17 months. More than one-third of all teenage mother did not receive any antenatal care (ANC) at all.

Regarding the health and nutritional status of children to teenage mothers, it was observed (Table 2a) from an analysis by the Body-Mass Index (BMI) that more than half of all children (youngest living child) to the teenage mothers are severely malnourished and undernourished (IIPS, 1995). This often gives an impression of "little mothers: little children". Perhaps it reflects the fact that there is a higher probability of teenage mothers" children getting diseases like fever, cough and diarrhea, due to a poor level of awareness about hygienic practice and lack of basic household amenities like toilet, safe water etc. with the mothers. Latter may also be attributed to the preconditioning lower educational status and standard of living of the teenage mothers to a considerably higher extent. In the same line, it was observed that only 36 percent of teenage women know about the ORS (oral dehydration solution) that is essential for childcare during diarrhea.

The characteristics of birth to teenage mothers showed that the frequency of PMBs (premature births) is relatively higher. The NFHS, India, 1992-93 (Table 2b) revealed that the delivery complications specifically `long period of Labour" and `use of forceps" are relatively high to teenage mothers. What is shocking is that less than one fourth of all births are delivered in a health institution and more than two-third of all deliveries are not assisted by any trained personnel.

The NFHS-2, India, 1998-99 data (Table 2c) showed that there is almost no change in fertility characteristics like children ever born, higher birth orders and smaller birth intervals compared to 1992-93. But there was some improvement in the child survival probably due to a marked progress observed in ANC coverage and ORS knowledge dissemination as well as institutional delivery and increased delivery assisted by trained personnel.

4.1. Motherhood in Teen age

To find out the determinants of teenage motherhood and their causal relationship with the later, a logistic regression analysis was carried out taking the socio-economic and demographic characteristics of the teenage ever-married women as independent variables. The findings in Table 4, show the relative risk of motherhood explained independently by the predictor variables after controlling for other potentially confounding factors. This showed that the women belonging to ST reported a higher likelihood of motherhood in teenage compared to those belonging to castes other than SC and ST, which may be due to many facts like higher value of children and immediate motherhood (fecundity), lower cost of life, lower child survival etc. The odds of the motherhood were found to be little lower in case of the women lived in rural areas depicting a relatively lower likelihood of child birth in teenage than those lived in urban areas. This kind of result needs in-depth study on the background characteristics of the teenage married women living in urban area and the quality of data reporting in rural area. Nevertheless it is possible that the socio-economic background of the teenage married women in urban areas (like underdeveloped slums and urban outgrowths), do not differ much from those in rural areas.

The economic characteristics of teenage married women showed that the women having

medium and higher standard of living are less likely to attain motherhood than those with lower standard of living. Even the odds of motherhood were lower for the women whose household possessed any agricultural land as compared to those who didn't. Here also the economic condition played a role in creating a declined probability of motherhood, possibly through the mechanism of "higher the living standard, better environment (family education, mass media etc.) for awareness". The women educated up to middle school and those up to high school & above were found less likely to be mothers in teenage as compared to the illiterate women. Obviously, education at least up to the standard of middle and high school influences the teenage motherhood, through knowledge and awareness about the planned family and hazards behind adolescent motherhood. An examination into the age at menarche showed that women whose age at menarche was 13 or more are less likely to attain motherhood at teenage than those who had menarche at less than 13 years of age. The reasons may be both biological as well as social in nature. That is, the women with higher ages at menarche may go for a late (effective) marriage thereby having a decreased exposure to teen age for motherhood. Secondly, the higher age at menarche is often associated with a lower nutritional status of women and that probably could lead to a reduced fecundity and so a longer adolescent sterility. Of course this hypothesis need further in-depth research.

In the analysis the variables such as husband's education and occupation, consanguinity etc. did not show significant impact on teenage motherhood. In another model, when the marital duration was controlled, independent variables such as, current place of residence (rural/urban), middle school education, standard of living, caste, age difference between spouse and husband's education and occupation did not emerge as significant predictors of motherhood at teenage.

4.2. Child loss to Teenage Mothers

Survival of child in the context of teenage motherhood is always at an elevated risk. To find out the determinants of child loss to teenage mothers, a logistic regression analysis was carried out taking the socio-economic and demographic characteristic of teenage ever-married women who had given birth in last four years, as potential predictor variables. Table 5 show that the teenage women educated up to primary school and above standard are less likely to have child loss as compared to the illiterate women. Implicitly, education influences the child survival within teenage motherhood through knowledge and awareness about childcare. It affects the child loss indirectly through factors like birth interval, maternal age at childbirth and prenatal health care. The odds of the child loss to women (ratio of those who lost vis-à-vis those who did not) were found to be higher in case of the women living in rural areas in comparison to those living in urban areas. The difference was also found statistically significant. With regard to household environment, it was found that the women who used kerosene or other oil for lighting were more likely to have child loss than those used electricity or gas. The mechanism behind this may be such that, the smoke coming out of burning oil comprises of harmful oxides of carbon which is inhaled by the infant or toddler, leading to hazardous health consequences or even death. Further under the prevailing lower socio-economic condition, and poor level of childcare, the incidence of accidents out of oil lighting-containers can be a few of the probable causes of child deaths (Nanda & Stephenson, 2001). The odds of child loss were lower for the women whose household possessed any agricultural land as compared those who didn't, which may be attributed to a better economic condition providing adequate physical care to the mother as well as the child.

The delivery characteristics of the women showed that women who had given birth

prematurely or had history of delivery complication(s), have more likelihood of child loss than those who had not. Against this backdrop, it has been found that premature births are often lesser than the optimum weight and size at birth. Further the births preceded by maternal delivery complications also show some health hazards in future. These may attribute to some probability of child deaths. The maternal physiological factors emerged to have significant impact on child loss, since the odds of child loss were found lesser for the women whose child (ren) received vaccination than those whose child (ren) didn't receive any vaccination. Other characteristics of the teenage women *viz.*, caste, media exposure, occupation, consanguineous kind of marriage, quality of drinking water, fuel used for cooking, and places of delivery did not explain significant influence on the child loss to the teenage women.

4.3. Pregnancy Wastage to Teenage Mothers

The fate of pregnancy outcomes particularly still births and abortion (pregnancy wastage) accounts lot more importance in case of teenage mothers. To find out the determinants of pregnancy wastage to teenage mothers, a logistic regression analysis was carried out taking the socio-economic and demographic characteristic of teenage ever-married women who had given birth in last four years, as potential predictor variables. The summary result given in Table 6 depicted that the women having education up to high school and above are less likely to have pregnancy wastage than illiterate women. The difference is found to be statistically significant. However women with education up to primary and middle school standard did not show any significant difference than illiterate women.

The odds of the status of pregnancy wastage (ratio of women who experienced one or

more still births and/or abortions vis-à-vis those who did not) were higher in case of women who have had delivery complications and childbirth before time (pre-term) in comparison to those who had not. The differences were significant statistically. The odds of pregnancy wastage were significantly higher for women who were engaged in agricultural type of works than unemployed women. This may be due to improper posture that are involved in sowing, weeding etc., lack of proper health care and rest to the body during the pregnancy leading to probability of endogenous hazards to the fetus. A small contradiction was observed when higher odds values were found for women who had received antenatal care and had got exposure to mass media than those who had not. This kind of results requires further examination of the quality of reporting and data. Other characteristics of the teenage women such as consanguineous kind of marriage and quality of household environment *i.e.,* drinking water, fuel used for cooking and lighting facility etc. did not explain any significant influence on the status of pregnancy wastage of the teenage women.

4.4. Health of Children to Teenage Mothers

To study the factors responsible for disease to the children of teenage mothers, a logistic regression analysis was carried out dichotomizing the health status of the children to the teenage mothers (Table 7). The summary results showed that the odds of the health status of the children (ratio of women at least one or more of whose children got at least one or more diseases vis-à-vis those whose children did not get any disease) were found to be lower in case of women educated up to high school and above as compared to the illiterate women. The difference was found statistically significant. There was no significant difference in child health of the illiterate women and women with high school education.

The Study into the economic characteristics of teenage married women revealed that the women having medium standard of living are less likely to have their child(ren) sick than those with lower standard of living. The odds value was found to be little lower in case of the women living in rural areas in comparison to those living in urban areas. These results suggest an in-depth enquiry into the level of awareness and the health care practice of the teenage married women in urban areas and the quality of reporting in rural areas.

V. CONCLUSION

This paper has tried to identify the factors responsible for teenage motherhood and the consequences to the pregnancy outcomes within the prevailing societal framework of teenage marriage in India. From the multivariate statistical analyses, it was be observed that education and the standard of living of the teenage women have significant and strong bearing on their demographic and health behavior. These two factors can be geared in such a way that it will reduce the probability of motherhood already within the framework of teenage marriage.

Further, these two variables have also been recognized as the intervention areas to bring down the risk of child loss, pregnancy wastage and ill health of the child(ren) to women already entered into the framework to teenage motherhood. This step in turn can act through the mechanism of awareness regarding household environment, sanitation, nutrition and maternal and child health care. It is presumed that, the phenomenon involved in the very event of "teenage motherhood within a given marital (or like) framework" occurs often in similar socio-economic milieu and is more or less universal. Again the consequences studied here such as pregnancy wastage and child loss to teenage mothers operate largely inside the physiological mechanism and it is expected not to change significantly with time and space. Hence findings of the present analysis may be useful in policy making for other communities or population within the said framework.

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Table 1. Percentage of ever-married women age 13-19 years who are mothers or pregnant with their first child, by selected background characteristics, India, 1992-93.

Background characteristics		Percentage mothers	Started motherhood (pregnant)	No. of ever-married women
Age				
	13-16	24.5	11.7	2170
	17-19	52.4	11.7	7277
Residence				
	Urban	47.1	13.8	1418
	Rural	45.8	11.8	8029
Education				
	Illiterate	48.1	10.2	6359
	Literate,<middle completed	45.1	13.7	1778
	Middle school completed	39.3	15.6	787
	High school +	33.0	17.3	52
Religion				
	Hindu	45.2	11.6	7858
	Muslim	51.4	10.9	1261
	Christian	47.3	16.0	104
	Sikh	34.6	22.9	75
	Buddhist	50.1	11.7	87
	Other	48.2	15.5	45
Caste/tribe				
	SC	46.2	11.1	1419
	ST	52.4	11.6	939
	Other	45.1	11.8	7089
* Consanguineous marriage		58		
Total		46.0	11.7	9447

* - Information about teenage ever married women only.
Source: NFHS, 1992-93, India Report, 1995.

Table 2a. Demographic features of Teenage mothers (age 15-19 years) by residence, India, 1992-93.

Characteristics		Percentage mothers		
		Urban	Rural	Total
Mean Children Ever Born				
All women (incl. never married)		0.13	0.28	0.24
Currently married women		0.6	0.63	0.62
Mean Child Survival				
All women (incl. never married)		0.12	0.25	0.21
Currently married women		0.55	0.55	0.55
Birth Order				
Ever married women	one	8.1	15.9	13.8
	2 +	2.1	5.8	4.8
Currently married women	one	37.1	35	35.3
	2 +	10.5	12.7	12.4
Age at first birth				
< 15 years		1.6	3.4	2.9
15-17 years		5.9	13.5	11.4
18-19 years		2.9	4.8	4.3
@ Pregnancy outcome				
Spontaneous abortion		*9.5*	*6.8*	*7.3*
Induced abortion		*3.3*	*1.4*	*1.7*
Stillbirth		*1.9*	*2.5*	*2.4*
* Infant-Child Mortality				
Neonatal mortality rate		48.1	76	70.8
Post-neonatal mortality rate		31.0	37.8	36.5
Infant mortality rate		79.1	113.8	107.3
Child mortality rate		23.3	41.2	37.6
Under-five mortality rate		100.5	150.3	140.9
Birth Interval				
< 17 m		-	-	22
18-47m		-	-	75
48 m +		-	-	3
* Not received ANC		-	-	34.6
# Age at first cohabitation < 15 years		4.5	14.6	14.2
# Fertility Rate		0.075	0.131	0.116
* Knowledge about ORS		-	-	36.1
* Having youngest living child severely malnourished (BMI<0.15)		-	-	57.3

@ - Percentage (in Italic) is given by number of pregnancies to mothers aged 15-19 years.
* - Information is given for women < 20 year of age.
#- Information is for all ever-married women in 15-19 year.
Source: NFHS, 1992-93, India Report, 1995.

Table 2b. Delivery Characteristics of Teenage mothers (age 15-19 years) India, 1992-93.

Characteristics		Percentage of births
Premature delivery (PMB)		4.6
Delivery Complications		
	Long period of labour	7.3
	Use of forceps	1.3
Place of delivery		
	Health centre	24.4
	Home/other	75.6
Delivery assistance		
	Doctor and/or nurse	34.5
	Traditional Birth Attendant	35.2
	Relatives & other	31.3

Source: NFHS, 1992-93, India Report, 1995.

Table 2c. Demographic and Delivery characteristics of Teenage mothers (age 15-19 years), India, 1998-99.

Characteristics		Percentage mothers
Mean Children Ever Born		
	All women (incl. never married)	0.21
	Currently married women	0.63
Mean Child Survival		
	All women (incl. never married)	0.19
	Currently married women	0.57
Birth Order		
Ever married women	one	11.9
	2 +	4.5
Currently married women	one	34.8
	2 +	13
* Infant-Child Mortality		
	Neonatal mortality rate	63.1
	Post-neonatal mortality rate	29.7
	Infant mortality rate	92.7
	Child mortality rate	31.0
	Under-five mortality rate	120.8
Birth Interval		
	< 17 m	25.2
	18-47m	72.3
	48 m +	2.5
* No ANC		31.7
# Fertility Rate		0.107
# Knowledge about ORS		55.7
# Severely malnourished (BMI < 0.18)		38.8
# With anaemia		56.0
* Place of delivery		
	Health centre	31.8
	Home/other	68.2
* Delivery assistance		
	Doctor and/or nurse	41.7
	Traditional Birth Attendant	34.8
	Relatives & others	23.5

* - Information is given for women < 20 year of age.
#- Information is for all ever-married women in 15-19 year.
Source: NFHS-2, 1998-99, India Report, 2000.

Table 4: Factors associated with motherhood in teenage.
(summary result of logistic regression)

Predictor Variables (N=9447)	Coefficient	Odds Ratio
1. Scheduled Tribe	0.1918**	1.2115
2. Rural place of residence	-0.1445*	0.8655
3. Women's household possessing agricultural land	-0.1492**	0.8614
4. Middle standard of living	-0.1746***	0.8398
5. High standard of living	-0.2689**	0.7642
6. Middle School Education	-0.3676***	0.6924
7. High Education	-0.5334***	0.5866
8. Age at Menarche 13 years or more	-0.4714***	0.6241

Dependent variable: motherhood=1, No motherhood =0

Reference categories:

1. Other than SC and ST.
2. Urban place of residence.
3. Women's household without possessing agricultural land.

4 & 5. Low standard of living.

6 & 7. Illiterate.

8. Age at Menarche < 13 years.

Note: * refers to 95 % confidence intervals (CI).
** refers to 99 % CI.
*** refers to more than 99 % CI.

Other independent variables in the model but with no significant effect: 1. Husband's education & occupation, consanguinity; 2. After marital duration controlled - place of residence (rural/urban), middle school education, standard of living, caste, age difference between spouse and husband's education and occupation.

Table 5: Correlates of Child loss to the Teenage Mothers.
(summary result of logistic regression)

Predictor Variables (N=4344)	Coefficient	Odds Ratio
1. Rural place of residence	0.3689*	1.4461
2. Primary Education	-0.5025***	0.6050
3. Middle School Education	-1.0060***	0.3657
4. High Education	-0.9627**	0.3819
5. Women using kerosene or oil for lighting	0.3746***	1.4545
6. Women's household possessing agricultural land	-0.2478*	0.7805
7. Women experienced any delivery complication	0.3295**	1.3903
8. Women experienced any birth before time (pre-term)	1.8149***	6.1405
9. Women whose child(ren) received Vaccination	-0.7822***	0.4574

Dependent variable: Child loss =1, No child loss =0

Reference categories:

1. Urban place of residence.
2,3,4 Illiterate.
5. Women using electricity or gas for lighting
6. Women's household without having agricultural land.
7. Women who didn't experience any delivery complication.
8. Women who didn't experience any birth before time (pre-term).
9. Women whose child(ren) didn't receive Vaccination.

Note: * refers to 95 % confidence intervals (CI).
** refers to 99 % CI.
*** refers to more than 99 % CI.

Other independent variables in the model but with no significant effect: caste, media exposure, occupation, consanguineous kind of marriage, quality of drinking water, fuel used for cooking, and places of delivery

Table 6: Correlates of Pregnancy Wastage (Still births & Abortion) to teenage mothers (summary result of logistic regression)

Predictor Variables (N= 4344)	Coefficient	Odds Ratio
1. High Education.	-0.7477**	0.4739
2. Scheduled Tribe	-0.5396**	0.5829
3. Exposure to mass media	0.3665***	1.4427
4. Women engaged in agricultural works	0.4963*	1.6433
5. Women received Antenatal care	0.2156*	1.2295
6. Women experienced any delivery complication	0.3536*	1.4226
7. Women experienced any birth before time (pre-term)	0.5262*	1.6951

Dependent variable: Pregnancy Wastage =1, No Pregnancy Wastage =0

Reference categories:
1. Illiterate.
2. Other caste.
3. No exposure to mass media.
4. Unemployed women.
5. Women not received Antenatal care.
6. Women who didn't experience any delivery complication.
7. Women who didn't experience any birth before time (pre-term).

Note: * refers to 95 % confidence intervals (CI).
** refers to 99 % CI.
*** refers to more than 99 % CI.

Other independent variables in the model but with no significant effect: consanguineous kind of marriage, quality of household environment i.e, drinking water, fuel used for cooking and lighting facility

Table 7: Correlates of disease to children of the teenage mothers.
(summary result of logistic regression)

Predictor Variables (N=4193)	Coefficient	Odds Ratio
1. High education	-0.346*	0.707
2. Medium standard of living	-0.264***	0.768
3. Rural place of residence	-0.153*	0.858

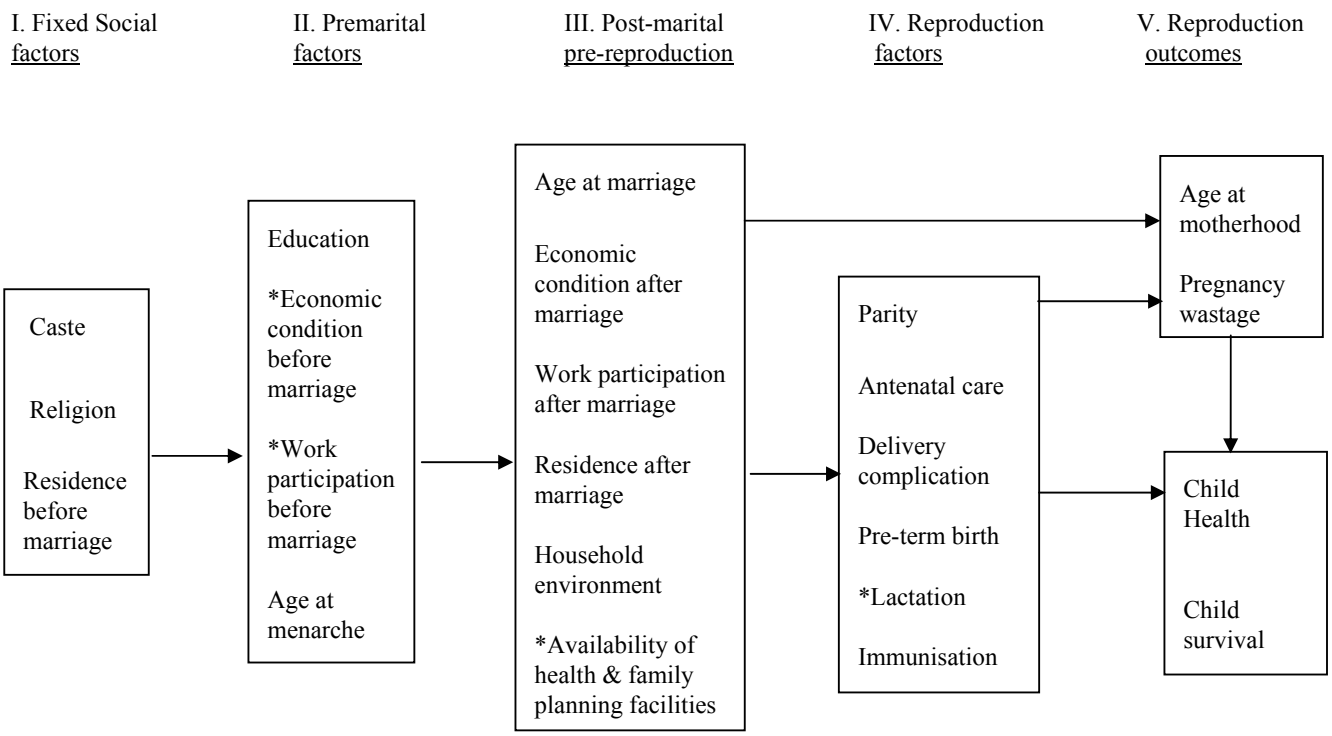
Dependent variable: disease to children =1, No disease to children =0

Reference categories:
1. Illiterate.
2. Low standard of living
3. Urban place of residence.

Note: * refers to 95 % confidence intervals (CI).
*** refers to more than 99 % CI.

Figure 1

An Operational Framework of Teenage Motherhood and its Consequences (* indicates the variables not analyzed in the present study).



APPENDIX

Specification of variables used in regression analysis:

1. Religion	Others = 0 Hindu = 1
2. Woman's Education	Illiterate (no formal education)= 0 Primary (1 to 5 years of schooling)= 1 Medium (6 to 7 years of schooling)= 2 High (8 and above yrs. of education)= 3
3. Caste	SC/ST = 0 Others = 1
4. Current Place of Residence	Rural = 0 Urban = 1
5. Age at Menarche	Lower (less than 13 years)= 0 Higher (13 years or more)= 1
6. Consanguinity	No = 0 Yes (marriage with prior relatives) = 1
7. SLI (standard of living index)	Low = 0 Medium= 1 High= 2
8. Woman's Household possessing agricultural Land	No = 0 Yes = 1
9. Woman's Occupation = 1	Agriculture = 0 White/blue collar (salaried job, formal business) Other low income = 2
10. Source of lighting	Electricity or gas = 0 Kerosene or oil = 1
11. Woman experienced any delivery complication	No= 0 Yes =1
12. Women whose child(ren) received vaccination	No= 0 Yes =1
13. Woman's exposure to mass media	No= 0 Yes =1
14. Woman received antenatal care during last pregnancy	No= 0 Yes =1
15. Women engaged in agricultural works	No= 0 Yes =1