CHANGES IN THE INITIATION OF CHILDBEARING DURING EARLY PHASE OF NUPTIALITY TRANSITION - AN ASSESSMENT FOR NORTH-CENTRAL INDIA

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ABSTRACT

There has been concerned about the low age at marriage of women because of its implications for fertility and woman's health. In India, where there was a tradition of formal marriage followed after sometime by consummation, it is the latter that is important. This paper analyses data from National Family Health Survey, 1998-99 in north central states in India that are characterized by low age at marriage. The results show that the recent changes in age at consummation and first birth in India are caused by both socio-economic changes and purely temporal secular changes. Further, there is gradual increase in age at formal marriage but age at consummation has not change to the same extent and the age at first birth has declined marginally, thus, the rise in age at marriage has not been translated into rise in the age of initiation of childbearing in India.

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INTRODUCTION

In recent years, social scientists, mostly demographers, have been deeply concerned about the rapid growth of population in developing countries and their main focus is on the consequences of high fertility. In many societies including India, marriages are almost universal in nature and sexual relations outside marriage are not socially acceptable. In such populations, early age at marriage gives woman a longer reproductive life span and concomitantly higher risk to pregnancy and higher fertility (Davis and Blake, 1956).Therefore, in India, marriage is the only social institution, which allows reproduction, family formation and leads to kinship organisation to the human being. In some societies consummation takes place immediately after the marriage but in India there is often a marked gap between marriage and consummation, i.e., effective marriage. The *Grhyasutras*, while dealing with the marriage rites, referred to a rite called *Cathurthikarma,* which has to be performed on the fourth day of marriage and which involves the consummation of marriage (Kapadia, 1966). This cultural practice prevails where a girl gets married before menarche but starts cohabiting with her husband after attainting puberty. In case of child marriages, "…… conjugal relations are generally preceded by a second ceremony called *gauna* or *vida*. Between the time of marriage and *gauna* the bride lives with her parents"(Agarwala, 1977; p.87). It has been observed that 95 percent of Muslim marriages were consummated within twenty four hours but among Hindus the median delay was three months, with only 25 percent of couples having sexual relations within the first month (Caldwell *et al*, 1983). Therefore, a raise in woman's age at marriage is basically the effort to raise the age at consummation, because lower age at consummation and consequent child birth is deemed to be harmful for woman and her children. Lower age of mother has adverse effect on the health of the mother and most of the complications at the time of the pregnancy and birth occur among young mothers. Besides, infant mortality is high among births to young mothers.

The Child Marriage Restraint Act, commonly known as the *Sarda Act*, was introduced in 1929 to restrain the child marriage and later, in 1978, amended and the minimum age for marriage was raised to 21 years for boys and 18 for girls because it was felt these would be the ages at which

physical and mental maturity is reached generally (Mathew, 2002).There has been a marked rise in the woman's age at marriage in recent years, mostly during the last few decades. The mean age at marriage for female increased by 1.0 year over the decade in 1961-71 (Goyal, 1975,1988), by 1.2 year and 0.9 year between 1971-1981 and 1981-91 respectively (Zavier, 2002).

There is a reason to believe that a small advance in age at marriage does not materially effect the age of woman at birth of her first child. In two Brahmin groups, two investigations inquired into the question on the basis of maternal and child birth data for two or three generations (Ghurye, 1984). These found that though the woman's age at marriage had advanced by about three years in three generations, her age at first birth had remained mostly the same. Thus, the gap between woman's age at marriage and birth of the first child is a poor index of the pace of child bearing if the consummation or the effective marriage takes place at a higher age after a formal marriage. So the first birth interval could effectively be considered as the gap between the age at consummation and age at the first birth in the Indian context. But again the cultural differences influence the length of first birth interval.

It is also recognised that the age at effective marriage is strongly influenced by a variety of social and economic factors like place of residence, standard of living, educational level of the woman, employment status etc. As the socio-economic conditions of the society change over time this change could, in turn, cause a rise of age at effective marriage for women. On the other hand, there are changes in cultural norms and rituals in the society over time and these may also lead to a rise in the age at consummation. So the overall rise in woman's age at consummation may plausibly be caused by a secular rise in the age at consummation or be attributable to change in characteristics of women, especially education. If the overall rise has occurred with the same magnitude among all the women irrespective of the educational level and other characteristics, then time is the contributing factor, which caused the change.

The present paper examines the trends in age at consummation and age at first birth in the recent decades and also examines the influences of socio-economic and temporal factors on woman's age at consummation, age at first birth and the gap and estimates the extent to which the rise in

age at consummation and first firth is attributable to changes in socio-economic structure and purely to the temporal factor.

THE STUDY AREA

The concept of Child marriage and *Gauna* (consummation) are mostly prevalent in north-central region in India. Therefore, the study area has been restricted to four north-central states, viz. Bihar, Uttar Pradesh, Rajasthan and Madhya Pradesh where woman's age at marriage is relatively low in comparison to other states in India. To examine the trend consummation and first birth in these states, data have been used from the ***National Family Health Survey-2 (NFHS-2), 1998-99***. Background characteristics in the area are from the 2001 census data for states, where Uttar Pradesh and Madhya Pradesh include Jharkhand, Uttaranchal and Chattisgarh respectively. According to the 2001 census, together these four states consist more than one third (41.1 percent) of India's total population and more than one third (39.6 percent) of India's total land area and with large increase in population growth in 1991-2001. These four states have lower percentage of urban population than the all India level, i.e., 27.9 percent and low sex ration than national level i.e., 933, except Madhya Pradesh (India, Registrar General, 2004). The birth rate is also very high in these four states. The highest birth rate among the Indian states is observed in Uttar Pradesh (India, Registrar General, 1999).Total Marital Fertility Rates (TMFR) are also higher in these states compared to India (4.7). It also indicates the lower age at marriage with a longer reproductive span for the female in the region (India, Department of Family Welfare.2003).Educational level of women as seen from the female literacy rate is low in these states compared to all India level (53.6 percent) at the time of the census 2001(India, Registrar General, 2004). According to the 1991 census, female Singulate Mean Age at Marriage (SMAM) was very low in these states. Rajasthan and Bihar had the lowest female mean age at marriage (17.5 years). Other states also had lower mean age at marriage, Uttar Pradesh (18.0 years) and Madhya Pradesh (17.8 years). Whereas, the mean age at marriage of women in India (19.3 years) was also low (IIPS and ORC Macro, 2000).

The health conditions in the region are miserable. The mortality rate is high in these states. The infant mortality rate (IMR), which indicates the prevailing health condition of the state, is higher in Uttar Pradesh (83), Rajasthan (79), Madhya Pradesh (88) and lower in Bihar (62) than the national average (68). However, the national average is also very high compared to other

developed countries (India, Department of Family Welfare, 2003). A higher proportion of children (age between 0 to 4 years) die in all the states in the region than in India (20.4 per 10000), the level is the highest in Madhya Pradesh (30.4 per 1000). It depicts that the social and economic conditions that prevail in the area are not favourable for this vulnerable section of the society (India, Department of Family Welfare, 2003). Moreover, maternal mortality is also high in these states, indicating inadequate maternal and child health care facilities. Lower age at the time of child birth, untrained birth attendants, unhygienic condition at the place of birth, lack of pre natal and post natal check up lead to the high maternal mortality in the region. It is the highest in Uttar Pradesh (707) and the lowest in Bihar (452) and it is higher than the national average (407) in all four states in the area (India, Registrar General, 1999).

DATA SOURCE

For this analysis, the data have been obtained on woman's age at consummation and first birth from the ***National Family Health Survey (NFHS-2)*** conducted in 1998-99 by International Institute of Population Sciences (IIPS) and ORC-Macro (IIPS and ORC-Macro, 2000). The NFHS-2 collected data from a representative sample of 30070 ever married women of age group 15-49 years residing in the study area. They have used three types of questionnaires, *(1) Household questionnaire, (2) Woman's questionnaire,* and *(3) Village questionnaire.* Beside the published reports, NFHS-2 has made the household, individual and village level data available to the researchers. These form the principal source for the individual level analysis in this study.

METHODOLOGY

The study has been divided into two major parts. Firstly, it assesses the trends in woman's consummation, age at first birth. Lastly, it studies with the help of regression analysis whether the rise in age at consummation and first birth is due to the change in socio-economic factors or is a purely temporal effect.

The trends in woman's age at consummation and first birth will be examined by computing proportion ever married from household file and woman's file from NFHS-2 data. A question has been asked to the ever-married woman of age group 15-49 years. In order to ascertain the age at consummation, the question ***How old were you when you started living with your first husband?***

(Q. No.112) was asked. To compute the woman's age at first birth question has been asked on woman's year of birth and as well as the year of the birth of her first child.

To show the trends in woman's age at consummation from data, it was necessary to calculate the proportion of ever-married in the different age groups. In order to obtain trends in proportion ever married by age, it is necessary to have data on all women, ever married and never married. The NFHS-2 obtains information on the age at consummation of ever married women. The household files of sample household provide data on all persons. These could in principle be used to obtain proportion ever married. However, not all of those who are ever married in the selected households could be interviewed. Thus, we have data on ages of all women of sample household and ages of consummation of interviewed women. Therefore, first proportion married by single year of age is obtained from the individual data from the household files. The number of interviewed ever married women by single year of age was divided by respective proportion ever married in that age group. This was used as a denominator to appropriately compute cumulative proportion ever married by single year of age. It is notable that sexual intercourse outside the marriage is not permissible in India.

For example, in Bihar, 58 (n) ever-married women of age 15 year have been interviewed. But the proportion ever-married in that age group is 0.22 (p). Therefore, the estimated number of women in that age is 264 (N).

[N = n/p] = 58/0.22 = 263.6 = 264

For each year of age a, cumulative proportion married before exact age a (that is, at ages $x \leq a$) has been computed from this data.

For woman's age at first birth, only those who had at least one birth have been taken into account.

Differentials in woman's median age at consummation and first birth by selected socio- economic variables have been presented. It has been observed that in these four states, almost 99 percent women were married by the age of 25 years. Thus, non- inclusion of never married women would have little impact on the median if computed only for women of age 25-49 years at survey. To examine the net effect of the socio-economic and demographic (mainly year of birth of the respondent) variables on woman's age consummation and first birth, ***Multiple Regression***

Analysis has been carried out, because there are more than one predictor variables. But here the dependent variables (woman's age at consummation and first birth), all are continuous variables (quantitative in nature), whereas, the predictor variables are combination of continuous (respondent's year of birth) and categorical variables (place of residence, religion, caste, education level of the women and household standard of living). These qualitative variables usually indicate the presence or absence of a "quality" or an attribute, such as Hindu or Non Hindu. One method of "quantifying" such attributes is by constructing artificial variables that takes on values of 1 or 0, 0 indicating the absence of an attribute and 1 indicating the presence of that attribute. For example, 0 may indicate that a person is Hindu and 1 may designate a Non Hindu. Variables that assume such 0 and 1 values are called *Dummy Variables*. The category with assigned value 0 is called the *reference category* (see Retherford and Cho, 1993; Gujarati, 1995). To analyse the gap between consummation and first birth two regression Models have adopted. To examine the gap between consummation and first birth, in Model 2, age at consummation has been taken as an explanatory variable.

RESULTS AND DISCUSSION

Census of India also collects information marital status by current age. Singulate Mean Age at Marriage (SMAM) has been computed from there according to the *Hajnal Method* (Hajnal, 1953). The SMAMs have been computed by the census organization and demographers and are presented in the NFHS reports (IIPS, 1995; IIPS and ORC Macro, 2000). The trends show that there is an increase of more than three years in SMAM within the last three decades, 1961 to 1991 in India. Whereas, in 1961, the mean was 15.9 years, the mean rose to 19.3 years in 1991. However, the Singulate Mean Age at Marriage is still very low in India (Table 4.1). It is always below the national average in the four states of the study area (Bihar, Uttar Pradesh, Rajasthan and Madhya Pradesh). In 1961, the lowest SMAM was observed in Madhya Pradesh (13.9 years) and the state continued at that rank in 1971 also (15.0 years). But in 1981 and 1991, Rajasthan has the lowest SMAM, 16.1 years and 17.5 years respectively. Bihar also joins Rajasthan for the lowest SMAM in 1991. National Family Health Survey (1992-93 and 1998-99) also computed Singulate Mean Age at Marriage (SMAM) for ever-married women in India.. The small differences (actually a small decline from 20.0 to 19.7 years for India) need not be considered as real rise or decline, but probably sampling fluctuations. The NFHS estimates also

show woman's mean age at marriage is low in north-central states in India, mainly in Bihar, Uttar Pradesh, Rajasthan and Madhya Pradesh. It was the lowest in Madhya Pradesh (17.4 years) at the time of NFHS-1 and Rajasthan (18.3 years) in NFHS-2, whereas, national average was 20.0 years and 19.7 years in NFHS-1 and NFHS-2 respectively. Child marriage is still prevailing in some north-central states in India, though the singulate mean age at marriage has crossed the minimum legal age at marriage for women in these states. It shows that these states are at the stage of the first stage of the nuptiality transition, where age at formal marriage has increased.

The National Family Health Survey (NFHS-2) in 1998-99 shows by the age of 30 years only 0.2 percent of women were not married in Bihar, which is the second lowest level among the seventeen major states in India. Rajasthan (0.1) has the lowest never married at the age of 30 years onwards for females. Uttar Pradesh (0.5) and Madhya Pradesh (1.0) also have very low proportion of never married by the age of 30 years (IIPS and ORC Macro, 2000).

Age at marriage is an important factor in reproductive health but age at consummation is more important than that because actual sexual relations begin only with the consummation. In India, where child marriage is prevalent and there is a gap between age at marriage and age at consummation, often marriage occurs before reaching puberty and consummation takes place after puberty. This gap gives time to develop biologically and psychologically to enter the sexual union. The trends in age at consummation in the last three decades in Bihar, Uttar Pradesh, Rajasthan and Madhya Pradesh has been observed that woman's age at puberty is around 12 years, but it varies across individuals and depends on the genetic as well as the nutritional condition of the girl. National Family Health Survey assumed that none of the respondent has started cohabiting before reaching her 12^{th} birthday; therefore, it has taken this as a cut off point. However, the proportion, who consummated marriage before age 13 is small (between 0.02 to 0.10) in these four states for all the cohorts of age 15- 49 years at survey.

In Bihar, where age at marriage is low, half of the women are married by the age at 16 years and also have consummation by the age of 17 years. Most surprisingly, there is no major shift in this proportion over the last three decades (Fig 1). It shows that almost the same proportion of women of age group 20-24 years (0.49) had consummated marriage before 17 years of age as

the women of the older age groups, 45-49 years (0.58). The data reveal that almost all the women have consummated by the age of 25 years, as the age at consummation is low in the state. There is a gradual decline in the proportion who had consummation by the age at 15 years from the older cohort, 45-49 years (0.29) to the younger, 15-19 years (0.14) over time. But still the situation is not quite favourable to the women in terms of reproductive health, mainly for the mother and the infant, because a non-negligible proportion of marriages are consummated at a very early age. The condition is similar in the neighbouring state of Uttar Pradesh. Along with the low at age at marriage, girls are entering the effective marriage system at a very young age. Proportion of women who had consummation by age 25 (0.97 to 0.99) is almost the same for all the age groups over the time. There is also decrease in the proportion of women who have entered in the effective sexual union at very younger age, i.e., 14 years (Fig. 2). It has declined the proportion of women for the age group 45-49 years (0.16) to in the age group of 15-19 years (0.06), which shows the better maternal and child health in future. But still girls are cohabiting below the prescribed age, which is harmful for the physical and mental development of the girl. Rajasthan does not go along with the trend in other three states. The situation has stagnated over the last 30 years (Fig. 3). Proportion of women who enter the effective marriage by the age at 15 years (0.16 to 0.22) is quite high and is almost the same for younger as well as for older cohorts. The data reveal that half of the women in the state start staying with their husband by the age at 17 years, which is also below the minimum legal age at marriage. That clearly pointed out the practice of child marriage and no awareness about the adverse effect of early marriage as well as consummation on maternal or reproductive health. Proportion of women, who have consummated by the age of 20 years remains the same for the age group 45-49 years (0.87) compared to age group 20-24 years (0.82) at the time of survey. Therefore, it is necessary to look upon the issue that what is the major cause in the state, which keeps the proportion of woman's age at consummation almost constant for such a long period of time. Female literacy rate is low in the state but is it the sole factor or some other factors are also interplaying to determine the age for the women? If we consider the median age at consummation in different age groups, it has not increased even a year (the rise is only 0.58 year) in the past 25 years for the women in Rajasthan. Some improvements have been noticed in woman's age at consummation over the decades in Madhya Pradesh. The trends show an increase over the period (Fig. 4); however, it is far below the satisfactory level from health point of view for the

women in the society. Proportion of women, who have had consummation by the age at 16 year has become half in the age group of 15-19 years (0.25) compared to older women (0.50) of age group of 45-49 years, at the time of survey. It has been also observed that decline in the proportion of women, who have started staying with husband by age 13 years has fallen to a very low level. But almost all women have consummation by age 25 years and that trend remains the same over the last three decades. Therefore, it is clear that some changes have been occurred in recent years and still there are some universal customs for the women in all the age groups, which remain constant over the time. But it also shows that proportion of women who have started staying with their husband by the age at 20 years has declined, it was higher for the older cohorts (0.90) compared to women of age group 20-24 years (0.78). Therefore, there is up coming trend to increase the age at consummation with the passing years in the future in the state.

Marriage is the gateway to enter the sexual union and consummation is the beginning of the effective marriage for the girls but most important is age at first birth for the women because it affects the health of the mother as well as the child. Lower age of the mother at the time of childbirth leads to several pregnancy complications and also heads towards maternal and infant death. It is more appropriate to examine first birth interval but due to inaccuracy in the data, only age at first birth has been computed and trend over the years in four north central states in India analysed. Only ever married women of age group 15-49 years with at least one childbirth has been taken into consideration in this section of the study. The overall trends show that woman's age at first birth has decreased somewhat over the years in these states and teenage pregnancy is common. In Bihar, proportion of women who had their first child by the age at 25 years has remained almost the same over time (0.95) for the women in the age group of 25-29 years compared to 0.92 for women in the age group of 45-49 years (0.92). The trend shows that by 25^{th} birthday, almost all women in the state (who ever had a birth) have the first birth. More than half of the women have a child by the age at 19 years. The proportion of women, who has a child at very younger age, is also high and it shows little increase in the proportion over the time, because it was 0.08 proportion of women of the age group of 45-49 years, 0.06 for 30-34 and 0.09 for the age group of 15-19 years (Fig 5). However, the age at marriage has increased and age at consummation also shows an increasing trend but surprisingly age at birth has

decreased or remained nearly the same over the time. Uttar Pradesh also shows the same trend in woman's age at first birth. It shows that smaller proportion of women in the age group of 45-49 years (0.04) had their first child at the age by 15 years compared to women of age group 15-19 years (0.08) who had at least a child birth at the time of survey. Almost half of the women have a child by the age at 19 years in last three decades and the trend remains the same over the period (Fig. 6). The major finding of the trend is that more women are into the teen-age motherhood in recent years than the past in the state. It is not clear why, with the rise in literacy, should early childbearing become a little common. Rajasthan, where age at marriage and age at consummation show a stagnation for last 30 years, similarly, age at first birth also remains nearly the same (Fig 7). By the age of 25 years, almost all women (0.90) have experienced at least one child birth. The proportion of women, who has a child by the age of 15 years at the time of survey has increased in the younger age cohort from age group 45-49 years (0.03) to age group of 15-19 years (0.07). The data also reveal that proportion of women having their first kid has increased not only for the lower ages but for the higher ages also over the time. Therefore, it is universal increase in the proportion of women to have their first child at early age. It shows the declining trend in the gap between age at consummation and the age at first birth among the women in the state. It is universal in the region that there is a small decline in the woman's age at first birth. Madhya Pradesh shows the same trend along with the other three states in the region. In Madhya Pradesh, almost all women have experienced at least one child birth by reaching 25^{th} birthday and the trend remains the same in last three decades (Fig. 8). Most surprisingly, the proportion of women has increased more in the early ages at first birth than the higher ages. The proportion of women who have a child at the age by 18 years is higher in the age group of 20-24 years (0.49) than the women of the age group of 30-34 years (0.43), 35-39 years (0.46), 40-44 years (0.43) and 45-49 years (0.37). It reveals that more women willingly or forcefully enter the motherhood at present years at a younger age compared to the past.

National Family Health Survey in 1998-99 has collected data on various aspects from women of age group 15 to 49 years. Therefore, it is easy to compute the birth cohort of women from their current age and look upon in the past trends. This section focuses on the trend in woman's median age at marriage, consummation and first birth over the period with the birth cohort (Table 1). Median age has not been computed for the women in the age group of 15-19 years

because less than 50 percent of women are married in that age. It is a kind of summary analysis of the above discussion of trends.

It shows that median age at marriage has increased in all the four states. Women who were born in first half of the 1950's had lower age at marriage compared to the women born in the 1970's. There is more than three years increase in the median age at marriage in Bihar within this period. Uttar Pradesh and Madhya Pradesh also experienced increase in age at marriage of 2 years and 1 year respectively for between 1950 to 1970. Rajasthan shows a different trend in age at marriage for the girls and situation remains constant for the girls born before or after the independence, in the state. The status of woman has not increased at all in the state in terms of age at marriage. Median age at marriage is still below the 16 years, whereas, it was 15.18 years for those born in between 1948/49 to 1952/53 and become 15.80 years for women of the birth cohort 1973/74 to 1977/78.

Woman's median age at consummation also shows a marginal increase of 0.50 year to 1 year in all these four states over the period. Only Uttar Pradesh shows more than a year increase for the women of birth year between 1948/49 to 1952/53 (16.06 years) compared to those born between 1973/74 to 1977/78 (17.22 years). In Rajasthan, Bihar and Madhya Pradesh, the situation remains almost the same for the past 25 years. Therefore, it has been observed that the gap between age at marriage and age at consummation decreased over the period due to the increase in the age at marriage. It is also clear the age at marriage has been increasing for the girls over time but age at effective marriage remained almost constant, however, age at effective marriage is more important from health point of view and which needs to be raised. Median age at first birth shows a declining trend for women who were born in 1950's to 1970's in all states except Uttar Pradesh in the study area. However, it is higher than the minimum legal age at marriage, but biologically it is too early to bear a child for a woman because the reproductive system of a woman is not fully developed by that age. Surprisingly, over the time median age at first birth declined, younger women who were born in later half of 1960's onwards in Bihar have lower age first birth than who were born before 1968/69 to 1972/73. A gradual decline has been seen in Rajasthan with the women who were born in 1963/64 to 1967/68 onwards. There is marginal fluctuation in Madhya Pradesh but it also has a declining trend. Only Uttar Pradesh has shown a marginal increase over

the last 25 years but also smaller fluctuations in different points of time. It is clear that for women, who were born in the recent years, age at first birth has not advanced.

The overall trends show that almost all women in the study area were consummated marrige by the age of 25 years. Therefore, the analysis was carried out only for the ever married women of the age group of 25-49 years at the time of the survey. Apart from the various socio-economic variables, respondent's year of birth has been considered as an explanatory variable to examine the temporal effect on the dependent variables.

In Bihar, place of residence, educational level and household standard of living have significant effect on woman's age at consummation. But religion and time (respondent's year of birth) do not have any significant effect on it (Table 2). There is a steady increase in the woman's age at effective marriage with increase in the level of education. Woman's age at consummation is significantly lower for the Scheduled Caste (0.39 year) and Scheduled Tribe (0.32 year) women compared to forward caste women but other backward castes do not show any significant difference from the other (forward) castes. In model 2, after controlling age at marriage as an explanatory variable, results show that place of residence, religion, respondent's year of birth, higher educational level of women, scheduled tribe and other backward caste membership, and age at marriage have significant effect on age at consummation in Bihar. Household standard of living, scheduled castes and primary and secondary education don't have any significant effect on it. After controlling age at marriage, respondent's year of birth shows that age at consummation has declined over the year (0.02 year). This shows that higher level of education raises age at consummation even after age at marriage is controlled. Place of residence, religion, caste, respondent's year of birth, high standard of living, women with secondary and higher education have significant effect on woman's age at consummation in Uttar Pradesh (Table 2). Model 1 shows age at consummation is lower in the rural areas than urban areas, among non Hindus compared to Hindus and higher for the women with high standard of living compared to low standard of living by less than one year in the state. But no definite effect of castes and education has been seen on age at consummation in the state. There is marginal increase in age consummation over the time in Uttar Pradesh (0.01 year). However, model 2 shows that many of the socio-economic factors become insignificant after controlling age at marriage as an

explanatory variable. Therefore, it is clear in Uttar Pradesh castes and religion influence the age at consummation primarily via their influence on age at marriage. It seems only higher education raises the age at consummation in the state, and this effect is over and above its influence on age at marriage. There seems to be no temporal effect, the calendar year of birth variable has no significant effect after controlling for age at marriage (Model 2).In Rajasthan, religion, scheduled caste, standard of living women with primary education and respondent year of birth do not have any significant effect on woman's age at consummation (Model1). Rural women, ST, and OBC women have significantly lower age at consummation than the urban women and women from forward castes respectively (Table 2). Only secondary and higher education shows significant effect on woman's age at consummation within the various educational levels. But after controlling age at marriage, only education has significant effect on age at consummation in this state (Model 2). However, age at consummation is lower for the women with primary education compared to the illiterate women. It shows only higher education has an impact of raising the age at marriage and not other socio-economic factors. There is no significant effect of the time factor on age at consummation once age at marriage is included as an explanatory variable. Place of residence, religion, educational level and membership of other backward castes have significant effect on woman's age at consummation in Madhya Pradesh. It is lower for the rural women than urban women, Non-Hindus than Hindus and women from other backward castes than forward castes by less than a year (Table 2). It increases with the increase in the educational level of the women. There are no significant effects of standard of living; membership of scheduled castes and scheduled tribes and woman's year of birth on woman's age at consummation. But model 2 shows that after controlling age at marriage, place of residence, Scheduled Tribes membership, medium standard of living, respondent's year of birth, secondary and higher educational have significant effect on woman's age at consummation.

Place of residence, religion, household standard of living, membership of other backward castes and primary education do not have any significant effect on woman's age at first birth. Women with secondary level of education (0.85 year) and with higher educational level (3.06 year) have significantly higher age at first birth compared to illiterate women, whereas, scheduled caste women have lower (0.40 year) and scheduled tribe women have higher (0.41 year) age at first birth compared to forward castes in the state. However, there is significant temporal effect on age

at first birth, it has significantly declined by 0.03 years annually over the time (Table 3). But there is no significant effect of any socio-economic factors on age at first birth except respondent's year of birth and age at consummation (Model 2) after controlling age at consummation. The time variable has a negative coefficient. In Uttar Pradesh, Scheduled Caste membership, secondary and higher education, respondent's year of birth and high standard of living have significant effect on age at first birth (Table 3). But respondent's year of birth shows that age at first birth is significantly lower (0.05 year) for the younger women than the older women. After controlling age at consummation (Model 2), place of residence and religion show significant effect on age at first birth. But age at first birth has significantly decreased with the decline in the respondent's age. It reveals that the gap between consummation and first birth has become significantly narrower over time even after controlling for age at consummation. In Rajasthan, educational level, high standard of living, and the respondent's year of birth have significant effect on woman's age first birth (Table 3). Age at first birth has significantly risen with the increase in the educational level. Women with higher educational level have given birth to their first child 3.86 years later than illiterate women. Women with high standard of living have earlier age at first birth than women with low standard of living. There is no significant effect of place of residence, religion and castes on age at first birth. However, after controlling age at consummation for first birth, educational level of the women also does not have any significant effect on it (Model 2). Place of residence, high standard of living and time have significant effect on it. Temporal effect remains the same for model 2 as was in model 1, i. e., younger women have lower age at first birth compared to older women. It shows the gap between consummation and first birth has declined irrespectively of the effects of the other factors. There is significant effect of place of residence, caste, woman's level of education, standard of living and respondent's year of birth on age at first birth among the women in Madhya Pradesh (Table 3). Education has a well-defined effect of raising the woman's age at first birth. Women with higher education had first child more than 4 years later than illiterate women, and women with secondary education also have first child 1.40 years later than illiterate women. After controlling age at consummation as an explanatory variable, educational level of women, place of residence, standard of living and caste do not have any significant effect on age at first birth in the state (Model 2).

CONCLUSIONS

As women enter the effective marriage system, age at first birth becomes important due to the reproductive health of the mother and child health is also associated with it. Trends in age at consummation and first birth also give the idea of prevailing nature of the health system as well as the woman's status in the society.

The age at consummation does not show the same trend over the time. It increased during the past thirty years in Bihar, Uttar Pradesh and Madhya Pradesh but in Rajasthan it has not increased at all compared to other three states in the region. The age of the entry to effective marriage in those states remains constant and has increased almost 0.5 years and leads to narrow the gap between marriage and consummation. However, lower age at marriage is not harmful as long as consummation takes place at a later date. But surprisingly the median age at consummation is also lower than the minimum legal age of the marriage. Consummation before 25 years of age is nearly universal in these states; nearly 98 percent women had consummated marriage by the age of 25 years. But the proportion of women has declined in the younger cohort compared to older cohort, in respect of early age at consummation (below 16 years). However, the rate is not the same for all the states and Uttar Pradesh has the larger decline in the proportion of women, who have consummated marriage at younger age. Rajasthan and also Bihar do not show any marked decline in the proportion of women consummated marriage at early ages.

It is the childbirth, which leads to the actual fertility performance for the women. Age at first birth is important to examine the maternal and child health scenario in the state. It has been observed that age at first birth has stagnated in these states in the last three decades and moreover, there is an increase in proportion of women in younger cohort compared to older cohort at the early age of child bearing. Overall age at first birth has also decreased marginally in these states and more proportion of women, have had first birth at a very early age. It has been observed that nearly 95 percent of women have experienced at least a childbirth by the age of 25 years and more than 50 percent women have a child by age 20 years and this trend remains constant over the years in these states. It is more important that the trend shows more women in younger age group have lower age at first birth compared to older women.

The regression analysis shows the net effect of socio-economic factors on age at consummation and first birth. None of the socio-economic as well as temporal factors has well defined significant effect on age at consummation in the region. Education has some significant effect and it increases age at consummation only with higher educational level. But the effect of education also becomes insignificant, specially when age at marriage has been taken as an explanatory variable and there is no such significant temporal effect on it. In Rajasthan, only higher education has significant effect on age at consummation and no time effect has been seen. Age at first birth also gives the same picture but when age at consummation is controlled, there is significant effect of higher education on it. But there is significant temporal effect on age at first birth and it shows that the gap between consummation and first birth has actually declined over the time in the region.

The above discussion leads to the conclusion that, however there is an increase at age at marriage over the time, age at consummation has not increased at the same rate. Moreover, age at first birth has declined over the time, which affects a woman's health adversely. Only higher education, that plays a significant role on age at consummation but for first birth it effects via age at consummation. In the three states Bihar, Uttar Pradesh and Madhya Pradesh, the age at formal marriage has increased over time and the role of education has been substantial in this. On the other hand, the gap between consummation and first birth has decreased which implies that higher proportion of younger women having their first child earlier and education has not been able to effect this factor. So, perhaps it can be concluded that the gains from the increase in age marriage is lost with the decrease in gap between the age at consummation and age at first birth. Time has brought secular change in age at marriage and consummation in the three states, except Rajasthan, but age at first birth has remained the same or has declined over the time. It is necessary to examine in more details further that apart from these factors, what are the other factors, which have effected the age at consummation and first birth in the region. The case of Rajasthan deserves special attention, as the situation has not changed in the last three decades.

These four states have the major share of the total population of India with higher fertility, infant mortality and maternal mortality than most other states. The above discussion reveals that there is

increase in age at consummation but decrease in age at first birth in the region. After International Conference on Population and Development (ICPD) in Cairo in 1994, focus has been shifted more on reproductive health issues and lower age at first birth is also an important factor to look upon. It has been observed that education may have effect on increase in age at marriage and consummation but not on age at first birth. Therefore, adverse effect of early consummation has declined with increase in level of education but it does not reflect on the harmful effect of the early child bearing. It is necessary to take preventive measure with more awareness on maternal and child health care to increase the age at first birth to reduce the maternal and infant mortality in the region.

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Table 1

Woman's Median Age at Marriage, Consummation and First Birth* according to Their Year of Birth in Bihar, Uttar Pradesh, Rajasthan, and Madhya Pradesh, 1998-99

		Year of birth[$]						
	State	1948/49-52/53	1953/54-57/58	1958/59-62-63	1963/64-67/68	1968/69-72/73	1973/74-77/78	1978/79-83/84
Median age at marriage	Bihar	14.28	14.53	14.82	15.06	15.20	15.57	N.C
	Uttar Pradesh	14.30	14.63	14.84	15.15	15.46	16.12	N.C
	Rajasthan	15.18	15.26	15.06	15.20	15.37	15.80	N.C
	Madhya Pradesh	14.10	14.36	14.40	15.00	14.91	15.90	N.C
Median age at consummation	Bihar	15.50	15.37	15.50	15.61	15.66	16.08	N.C
	Uttar Pradesh	16.06	16.16	16.20	16.35	16.53	17.22	N.C
	Rajasthan	16.35	16.52	16.47	16.37	16.64	16.93	N.C
	Madhya Pradesh	16.00	15.87	15.76	16.07	15.93	16.58	N.C
Median age at first birth*	Bihar	18.71	18.84	18.80	18.91	18.64	18.37	N.C
	Uttar Pradesh	18.50	18.76	18.09	18.62	18.71	18.69	N.C
	Rajasthan	19.66	20.00	19.35	19.00	19.23	18.81	N.C
	Madhya Pradesh	18.86	18.58	18.30	18.53	18.00	18.09	N.C

Note: Not Calculated because less than 50 percent women are married/consummated marriage/ have had their first child by age 20

* Only those who has at least one birth

[$]Include both ever married and never married women

Source: Computed from NFHS-2 (1998-99) data files

Table 2

Results of Regression Analysis of Woman's Age at Consummation on Socio-Economic Variables and Calendar Year of Birth, in four Selected States in India, 1998-99

Background Characteristics	States							
	Bihar		Uttar Pradesh		Rajasthan		Madhya Pradesh	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Place of Residence								
Urban(RC)								
Rural	-0.279*	0.255*	-698**	-0.176*	-2.229*	-0.37	-0.435*	0.192*
Religion								
Hindu (RC)								
Non Hindu	0.127	-0.496**	-0.314**	-0.003	-0.038	0.064	-0.655*	0.084
Caste								
Others (RC) (Non SC/ST/OBC)								
Scheduled Caste (SC)	-0.385*	0.111	-0.457**	0.037	-0.198	0.090	-0.436	0.158
Scheduled Tribe (ST)	0.317*	-0.338*	0.679*	-0.147	0.231*	0.123	-0.041	-0.342**
Other Backward Castes (OBC)	-0.183	0.201*	-0.454**	0.092	-0.290*	0.011	-0.215*	0.046
Educational Level								
Illiterate (RC)								
Primary	0.034*	-0.194	0.174	-0.163*	0.207	-0.248*	0.573**	-0.910
Secondary	1.016**	0.173	1.337**	0.603**	1.423**	0.399*	2.139**	0.297*
Higher	3.412**	0.792*	4.293**	2.522**	4.512**	2.407**	5.327**	1.528**
Household Standard of Living								
Low(RC)								
Medium	0.212*	0.081	0.113	0.112	-0.089	0.015	0.073	0.127*
High	0.511*	-0.055	0.544**	0.303**	0.015	0.032	0.141	0.0144
Respondent's year of birth	0.006	-0.021**	0.014*	-0.003	0.003	0.003	-0.000	-0.017**
Age at marriage	N.A	0.638**	N.A	0.347**	N.A	0.315**	N.A	0.564**
Constant	**15.877**	**8.176**	**15.617**	**11.197**	**16.098**	**11.526**	**16.250**	**8.603**
Adjusted R^2	**0.111**	**0.560**	**0.287**	**0.516**	**0.165**	**0.376**	**0.326**	**0.674**
Total No. of ever married women (age group 25-49years)	**4776**	**4776**	**6396**	**6396**	**4844**	**4844**	**4752**	**4752**

Note: **=significant at 1% level,*=significant at 5% level

RC= Reference Category, N.A= Not Applicable

Model 1= without age at marriage, Model 2= with age at marriage as an explanatory variable

Source: Computed from NFHS-2 data files

Table 3

Results of Regression Analysis of Woman's Age at First Birth[#] on Socio-Economic Variables and Calendar Year of Birth, in four Selected States in India, 1998-99

Background Characteristics	States							
	Bihar		Uttar Pradesh		Rajasthan		Madhya Pradesh	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Place of Residence								
Urban(RC)								
Rural	-0.125	0.067	-0.180	0.357**	0.087	0.227*	-0.241*	0.128
Religion								
Hindu (RC)								
Non Hindu	-0.117	-0.148	0.118	0.367**	0.075	0.159	0.126	0.594**
Caste								
Others (RC) (Non SC/ST/OBC)								
Scheduled Caste (SC)	-0.400*	-0.032	-0.368*	-0.055	-0.073	0.058	-0.507*	-0.202
Scheduled Tribe (ST)	0.412*	0.247	-0.276	0.214	0.182	0.005	-0.779**	-0.721**
Other Backward Castes (OBC)	-0.019	0.170	-0.180	0.144	-0.020	0.196	-0.244*	-0.112
Educational Level								
Illiterate (RC)								
Primary	0.187	-0.101	0.141	0.004	0.368*	0.197	0.380*	-0.024
Secondary	0.847**	-0.096	0.885**	-0.149	1.227**	0.071	1.395**	-0.200
Higher	3.059**	0.292	3.734**	0.541*	3.864**	0.216	4.309**	0.189
Household Standard of Living								
Low(RC)								
Medium	0.186	0.015	0.155	0.067	-0.103	-0.082	-0.043	-0.129
High	0.312	-0.125	0.389*	-0.011	-0.334*	-0.385*	0.157*	-0.026
Respondent's year of birth	-0.033**	-0.033**	-0.053**	-0.061**	-0.051**	-0.049**	-0.037**	-0.037**
Age at Consummation		0.853**		0.765**		0.821**		0.806**
Constant	**20.645**	**6.789**	**21.788**	**9.613**	**22.001**	**8.589**	**20.566**	**7.568**
Adjusted R^2	**0.048**	**0.445**	**0.120**	**0.403**	**0.064**	**0.417**	**0.0184**	**0.529**
Total No. of ever married women (age group 25-49years)	**4607**	**4607**	**3220**	**6220**	**4689**	**4689**	**4589**	**44589**

Note: **=significant at 1% level,*=significant at 5% level

RC= Reference Category, N.A= Not Applicable #= Only those who have had at least one child

Model 1= without age at consummation, Model 2= with age at consummation as an explanatory variable

Source: Computed from NFHS-2 data files

Fig. 1

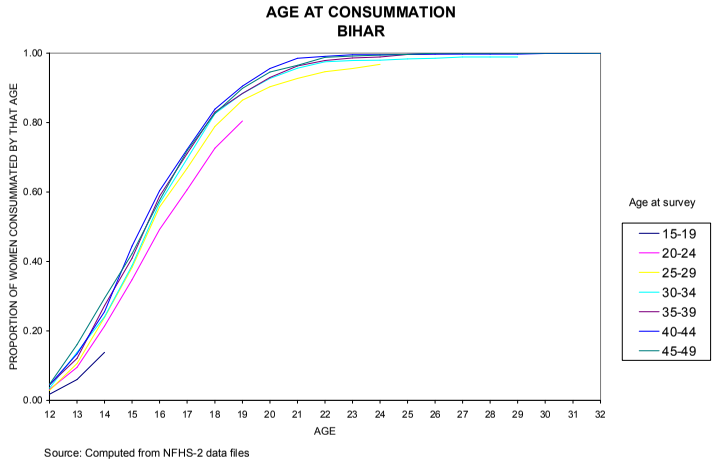

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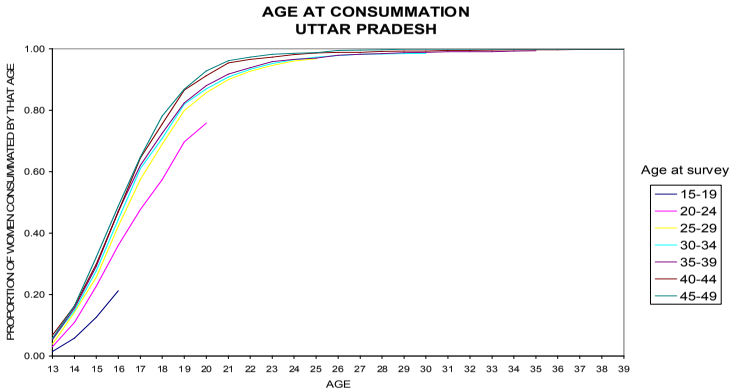
Fig.2



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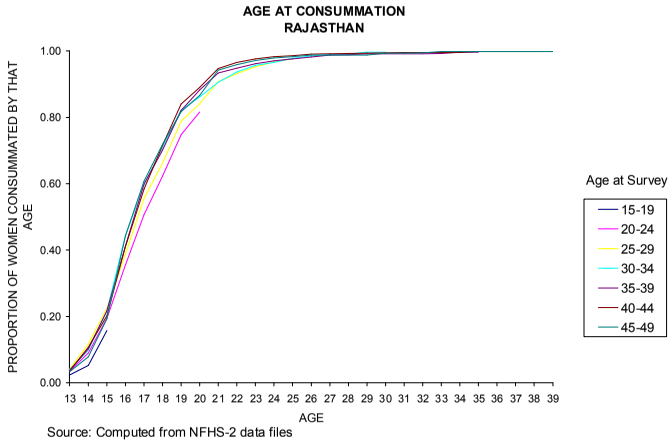

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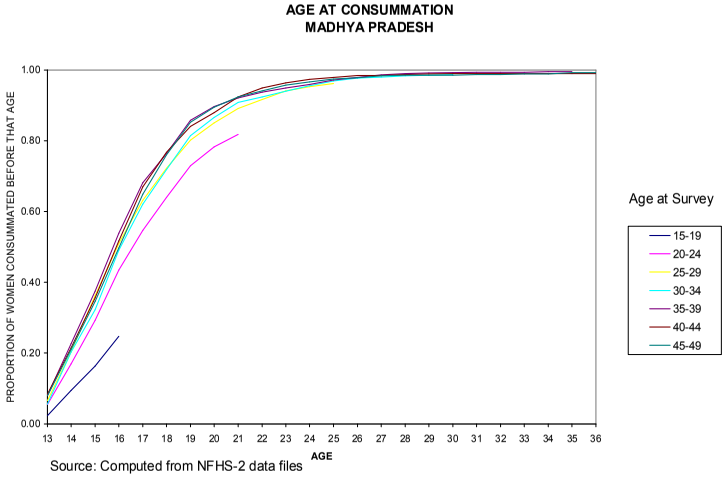

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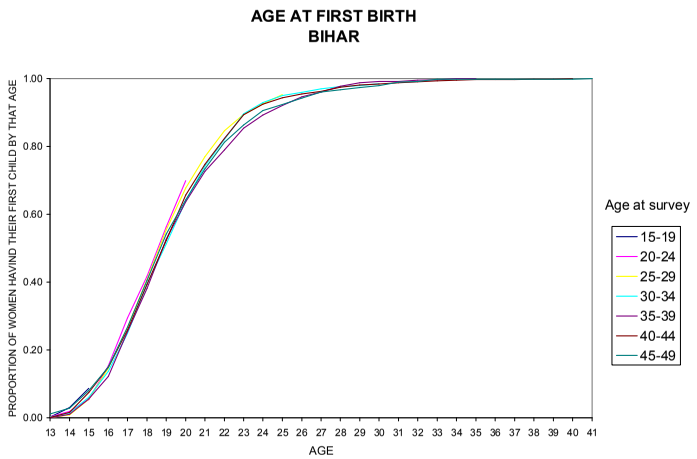

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fig.6

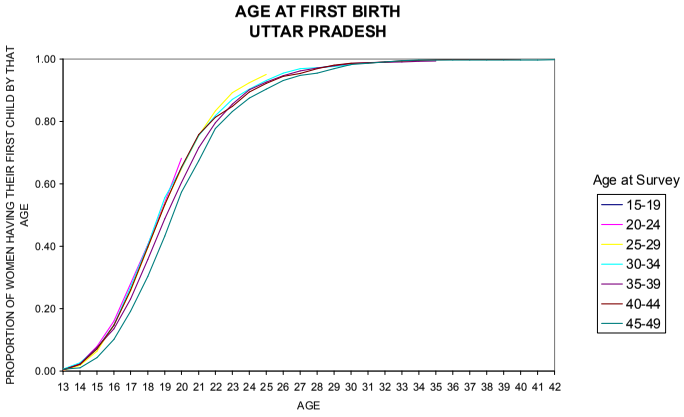

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Fig 7

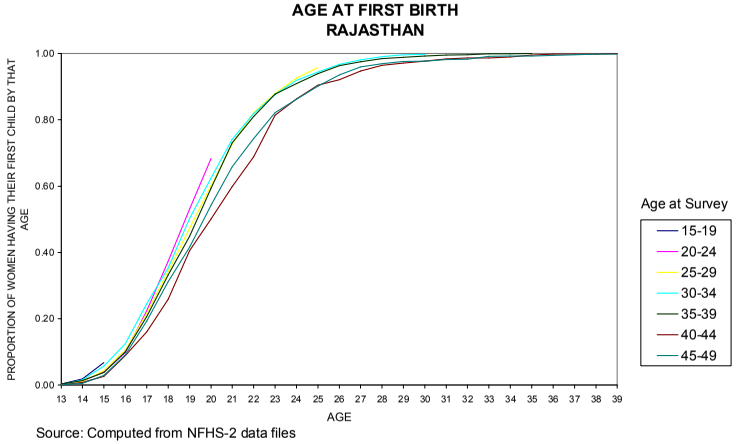

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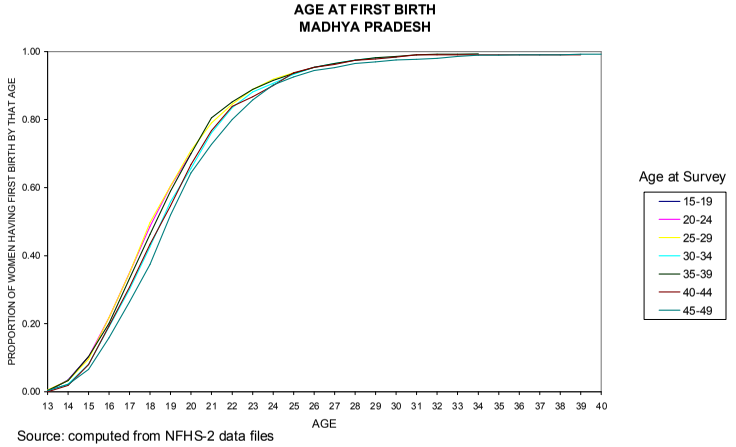
Fig 8



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