FERTILITY TRANSITION IN ODISHA, INDIA

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Extended Abstract:

Demographic diversity of India poses a challenge to planners and policy makers. Considerable variations in nuptiality patterns and fertility behaviour are found across states of India. Some states i.e., Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Delhi, Himachal Pradesh, Punjab, Maharashtra and West Bengal have reached replacement level fertility and recent trends indicate that some more will reach such a level in near future. The fertility decline in Odisha, a socio-economically deprived state of India seems to be a paradox because of various reasons. Given the low level of social development and poor economic setting, with a large proportion of population living below the poverty line (about two-fifths of the population), low level of industrialization and urbanization (17 percent) and moderately high rate of infant mortality (61 per 1000 live births in 2010), the TFR in Odisha is expected to be well over three as evidenced by the regression analysis for states in India but the actual TFR of 2.3 indicates that fertility is much lower than what is predicted for the socio-economic conditions. Thus the fertility transition in Odisha is increasingly getting attention. In order to get a perspective on the magnitude and nature of fertility decline, it is useful to situate the changes in recent decades. However, using the data from Censuses, Sample Registration System and National Family Health Surveys, this paper examine the timing and nature of fertility transition in the state.

The Crude Birth Rate (CBR) and Total Fertility Rate (TFR) in Odisha have declined considerably between 1971 and 2008. The CBR declined from 34.6 in 1971 to 21.4 in 2008 and the TFR declined from 4.7 in 1971 to 2.4 in 2008. Till the mid 1980s the pace of decline in fertility was slow in Odisha. This slow pace to a large extent may have been the effect of strong coercion during emergency period (1975-77), that brought the programme standstill. But the process of fertility transition was reasonably smooth and the CBR and TFR started falling substantially after mid 80's (Figure 1 and Figure 2). During the period of 1986 and 2008, the CBR dropped by 34 percent from 32.5 to 21.4 and the TFR by 43 percent from 4.2 to 2.4. The trends in TFR show that the rate of decline is substantially higher since the mid

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1980s. Overall, the percentage of annual decline in CBR and TFR during the period 1971-2006 was 1.05 and 1.34 respectively for the state as against 1.04 and 1.32 for. Hence, the process of fertility decline in Odisha can be divided into two phases, such as slow decline during 1971-86 and faster decline thereafter.

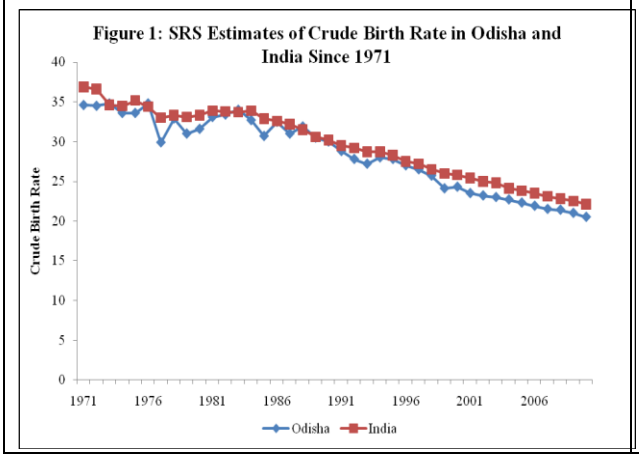


Figure 1: SRS Estimates of Crude Birth Rate in Odisha and India Since 1971

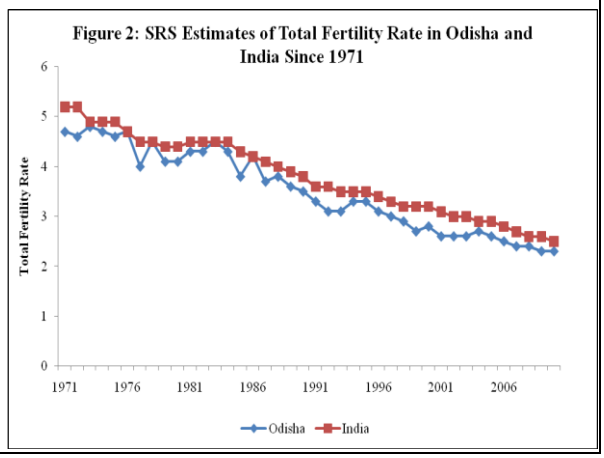


Figure 2: SRS Estimates of Total Fertility Rate in Odisha and India Since 1971

Sources: For 1971-2007: India, Registrar General (2009a)
For 2008: India, Registrar General (2009b).
For 2010: India, Registrar General (2012)

During the course of transition, age pattern of fertility in Odisha have changed substantially. Interestingly, 15-19 age group shows that ASFR have declined from 118 in 1971 to 39 in 2010, that is, by 67 percent. This is entirely on account of the rise in age at marriage. The fertility limitation is increasingly common at relatively old ages. In 2010, the contribution to fertility has mostly been from women in the age group 20-24 and 25-29 years. Fertility in the age group 45-49 was negligible in 2010. The fertility decline in Odisha was steep at the age groups 35-39, 40-44 and 45-49; a fall of over 79 percent between 1971 and 2010.

The decomposition analysis revealed that in Odisha marital fertility has played a more dominant role than nuptiality in accounting for recent fertility decline. Age at marriage rose gradually, with the singulate mean age at marriage for females going up from 17.5 in 1961 to 21.7 in 2001. Proportions married in Odisha declined at the younger reproductive ages and increased at the older reproductive ages. Marital fertility declined at all ages, but especially at the middle and older reproductive ages.

The analysis of Bongaarts proximate determinants of fertility revealed that the contribution of use of contraception to depressing the total fecundity (TF) was 3.1 during 1992-93 which has increased to 4.4 during 1998-99 and again to 4.6 during 2005-06. Contraception inhibits TF by 27 percent, 33 percent and 35 percent in Odisha in NFHS I, II and III respectively. The fertility inhibiting influence of delayed marriage on total fecundity (17, 17 and 15 percent in NFHS I, II and III respectively) is much less than that of contraception (Table 1).

Table 1: Values of Fertility Indices for Odisha, NFHS I, II and III

Fertility Indices	NFHS I	NFHS II	NFHS III
TFR	2.92	2.46	2.37
C(m)	0.549	0.520	0.546
C(c)	0.617	0.522	0.490
C(a)	0.995	0.990	0.990
C(i)	0.697	0.676	0.687
TF	11.5	13.5	13.0
TM	4.91	4.73	4.34
TN	8.8	9.2	8.9
TM – TFR	2.0	2.3	2.0
TN – TM	3.1	4.4	4.6
TF – TN	3.5	4.4	4.1

Source: Computed from NFHS data.

Age at marriage plays a crucial role in determining the fertility trends. In a country like India, where celibacy is not practiced, premarital and extramarital relations are illegal and child bearing outside the marital union is virtually non-existent, the age at marriage plays an important role in determining the patterns and levels of fertility. A delay in the age at marriage can lead to decline both in natural fertility and volitional fertility, natural fertility due to reduction in reproductive span and volitional fertility because delayed marriage could possibly reduce the desire and demand for children. The NFHS III obtained the age at marriage for all ever married women interviewed in the survey. Besides, from household records it is possible to compute the proportion never married at specified ages. These proportions were used in conjunction with the data on age at marriage to compute proportion of women married before specified ages. The results show that there is overall decline in the proportion married in younger ages. Among women born during 1956/57-1960/61 proportion married before the age 15 years was 0.32 but for the birth cohort of 1986/87-1990/91 the proportion was only 0.09 (Table 2). It also shows that there is a gradual decline in proportion married by very early ages over time (Figure 3). Similarly, there is a remarkable decline in

proportion married before the age of 18 from the cohort 1956/57-1960/61 (0.75) to the cohort 1981/82-1985/86 (0.42). By the age of 25 almost all women are married. It is also evident that among women born during 1956/57-1960/61, 1961/62-1965/66 and 1966/67-1970/71 proportions married were 0.99, suggesting that marriage is universal across the state. The median age at marriage in Odisha also shows that there is a sharp increase over the period.

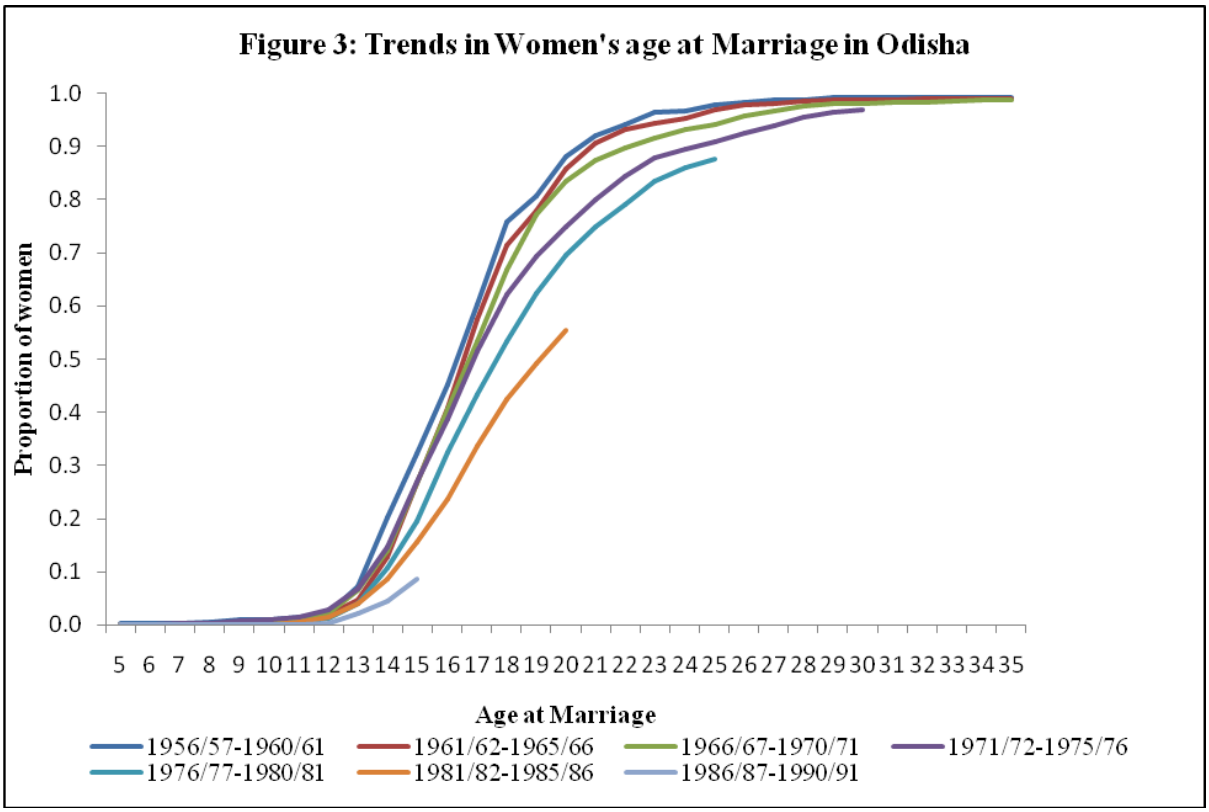
Table 2: Trends in Women's age at marriage in Odisha

(Cumulative proportion of women married before exact age)

Women's age	Birth Cohort (Women's Year of Birth)						
	1956/57-1960/61	1961/62-1965/66	1966/67-1970/71	1971/72-1975/76	1976/77-1980/81	1981/82-1985/86	1986/87-1990/91
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.01	0.00	0.00	0.00	0.00	0.00	0.00
9	0.01	0.00	0.00	0.01	0.00	0.00	0.00
10	0.01	0.00	0.00	0.01	0.00	0.00	0.00
11	0.01	0.00	0.01	0.01	0.01	0.00	0.00
12	0.02	0.02	0.02	0.03	0.01	0.01	0.00
13	0.07	0.05	0.07	0.07	0.04	0.04	0.02
14	0.20	0.13	0.14	0.15	0.11	0.09	0.05
15	0.32	0.27	0.27	0.27	0.20	0.15	0.09
16	0.45	0.41	0.41	0.39	0.33	0.24	
17	0.60	0.58	0.53	0.51	0.43	0.34	
18	0.76	0.72	0.67	0.62	0.53	0.42	
19	0.81	0.78	0.77	0.69	0.62	0.49	
20	0.88	0.86	0.83	0.75	0.70	0.55	
21	0.92	0.91	0.88	0.80	0.75		
22	0.94	0.93	0.90	0.84	0.79		
23	0.96	0.94	0.92	0.88	0.83		
24	0.97	0.95	0.93	0.90	0.86		
25	0.98	0.97	0.94	0.91	0.88		
26	0.98	0.98	0.96	0.93			
27	0.99	0.98	0.97	0.94			
28	0.99	0.99	0.98	0.96			
29	0.99	0.99	0.98	0.96			
30	0.99	0.99	0.98	0.97			
31	0.99	0.99	0.98				
32	0.99	0.99	0.98				
33	0.99	0.99	0.99				
34	0.99	0.99	0.99				
35	0.99	0.99	0.99				
Median age at Marriage[1]	17.0	17.4	17.4	17.6	18.5	19.6	a
No. of ever married women	326	465	571	648	683	558	192
Prop. Married	0.99	0.99	0.99	0.97	0.90	0.64	0.20
Total adj. no. of women in the birth cohort including never married women	328	469	579	667	757	873	976

Sources: Computed from NFHS III data file, [1] IIPS and Macro International (2008)

Note: a=Not computed because less than 50 percent of women in the cohort were married by the date of survey.



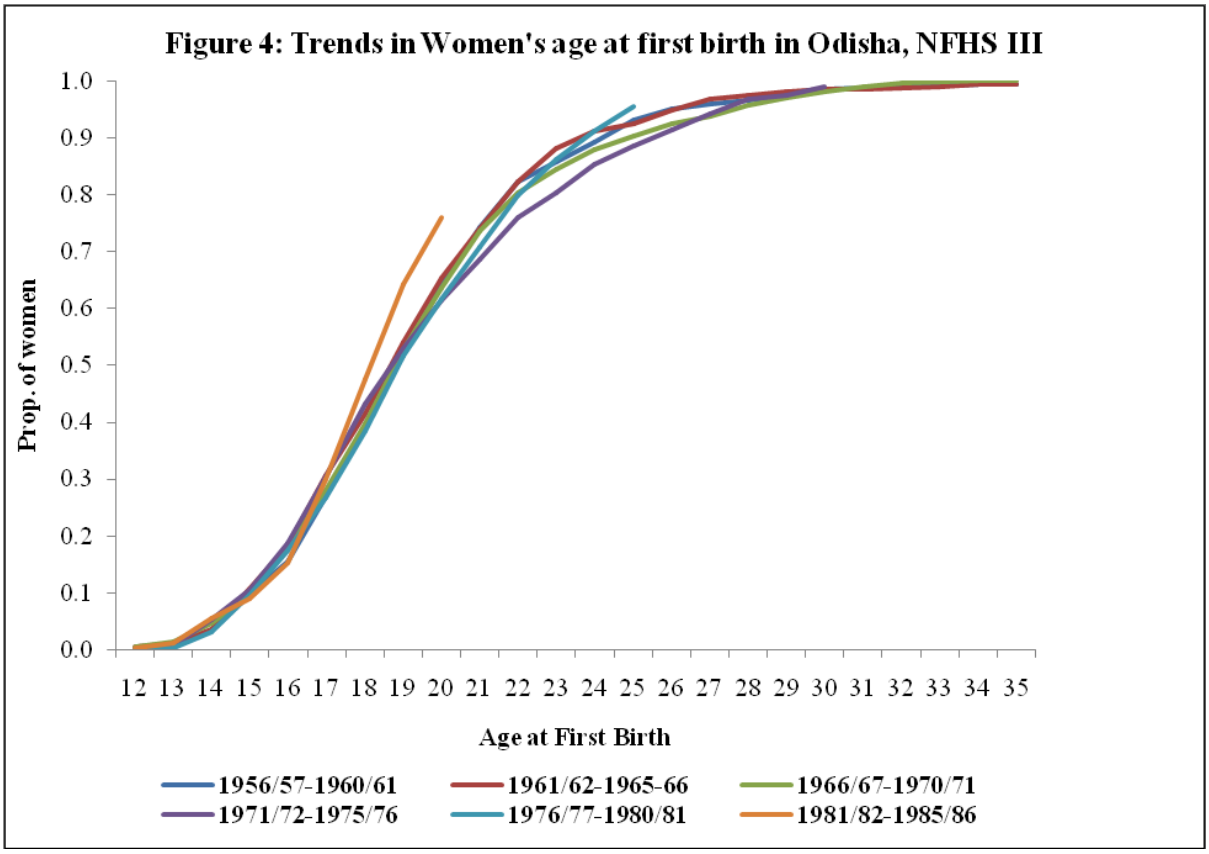
Source: Table 2

The age at first birth is important in studying fertility because the first birth marks the initiation of childbearing and also it has the implications for maternal and child health as a low age at first birth is associated with relatively high maternal and infant mortality. The results reveal that woman's median age at first birth in Odisha has remained almost the same over the period (Table 3). Almost all women in the state have had experienced at least one child birth before attaining the age of 35. Proportions of women who have had their first birth by the age of 15 are not very large (around 10 percent) while more than half of women have their first birth by the age of 20 years (Figure 4). More surprisingly, though the women's age at marriage has increased by more than two years in the last three decades the age at first birth has remained nearly constant, which shows that delayed entry into the sexual union has not affected the age at initiation of childbearing in Odisha.

Table 3: Cumulative proportion of women who have had their first birth by the specified age

Age at first Birth	Birth Cohort					
	1956/57-1960/61	1961/62-1965-66	1966/67-1970/71	1971/72-1975/76	1976/77-1980/81	1981/82-1985/86
12	0.00	0.00	0.01	0.00	0.00	0.00
13	0.01	0.01	0.01	0.01	0.00	0.01
14	0.03	0.04	0.05	0.05	0.03	0.05
15	0.10	0.11	0.10	0.10	0.10	0.09
16	0.16	0.18	0.18	0.19	0.18	0.15
17	0.27	0.31	0.28	0.30	0.27	0.30
18	0.39	0.42	0.40	0.43	0.38	0.47
19	0.52	0.54	0.53	0.53	0.52	0.64
20	0.64	0.65	0.64	0.61	0.62	0.76
21	0.74	0.74	0.74	0.68	0.71	
22	0.82	0.82	0.80	0.76	0.80	
23	0.86	0.88	0.84	0.80	0.86	
24	0.89	0.91	0.88	0.85	0.91	
25	0.93	0.92	0.90	0.89	0.96	
26	0.95	0.95	0.92	0.91		
27	0.96	0.97	0.94	0.94		
28	0.97	0.97	0.96	0.97		
29	0.98	0.98	0.97	0.97		
30	0.98	0.98	0.98	0.99		
31	0.99	0.98	0.99			
32	0.99	0.99	1.00			
33	0.99	0.99	1.00			
34	0.99	0.99	1.00			
35	0.99	0.99	1.00			
36	0.99	0.99				
37	0.99	1.00				
38	0.99	1.00				
39	0.99	1.00				
40	0.99	1.00				
Median Age at First Birth	19.7	19.6	19.7	19.6	19.8	19.1
No. of ever-married women	322	453	551	622	628	438

Source: Computed from NFHS III data files.
Note: Based only ever-married women with at least one child.



Source: Table 3

The above analysis demonstrates that fertility has declined in Odisha since the 1970s and it is on a level lower than the national average. Till the mid 1980s the decline in fertility was stalled in Odisha but the process of fertility transition was reasonably consistent and the CBR and TFR started falling substantially after that point. A major portion of the fertility decline is due to a fall in marital fertility but proportions married has also declined in Odisha due to a rise in the female age at marriage. Contraceptive use is the key determinant which has a greater inhibiting effect on fertility in Odisha. Though the women's age at marriage has increased by more than two years in the last three decades, the age at first birth has remained nearly constant, which shows that delayed entry into the sexual union has not affected the age at initiation of childbearing in Odisha. This revealed that women who marry at later ages tend to start family building earlier than others, presumably in an attempt to make up for lost time.