

Cultural Determinants of Human Fertility: A Study of Tribal Population in Orissa

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ABSTRACT This is an endeavour to study the plausible causal relationship between cultural factors and human fertility in a more or less non-industrial rural population (schedule tribes) in Orissa, an Eastern Indian state. The bivariate and multivariate statistical analyses showed that lower level of child loss showed significant association with lower fertility. Other categorical variables such as higher age at woman's marriage, self-choice of mate by woman and nuclear family showed negative effect on fertility, both before and after adjustment for other independents and covariates. The observation of fertility by different villages and tribes/caste gives an impression that the population composition, distance from urban centres, community size, distribution and aborigine ness have some bearing on fertility.

1. INTRODUCTION

Though fertility is a biological event, sometimes various cultural traits and sub-traits act as 'intermediate factors' in determining the level of human fertility. The whole mechanism involved in this process is often very complicated, varying by time and space. In the case of the planned as well as unplanned fertility, whether the perception variables play major roles or the practice (performance) variables have greater impact is still unexplored. The norms and values in human society that influence the perception and practice are also important aspects of fertility research. The interaction of these two kinds (perception and practice) may be manifested on fertility at individual as well as community/population level. The collinearity of one or more particular cultural variables with biological variable(s) may have some amount of additive or interactive impact on fertility.

Sometimes, cultural variables may act merely as catalysts inducing other type of variables to influence fertility. The examination of such mechanisms involving traits and sub-traits of culture are not relatively easier. But there have been endeavours by different researchers such as Srinivas, Nag, Lorimer etc. in this line. Different theories have been propounded over time regarding the determinants attributing to the differential fertility. The socio-cultural theories have focussed on the attitude and motivational factors at community level for explaining the reproductive behaviour (Dumont,

1890; Davis, 1956; Carlsson, 1966). In a cultural set-up, many times the fertility of a married woman is altered after passing through a series of 'Hierarchical Social Structures' viz., society, community, family, and the husband (Nanda and Ram, 2003).

Rath, Ray and Mohanty (1983) carried out a study on the delineation of fertility strategies in Koya tribal population of Koraput District, Orissa. They found that in spite of higher offspring mortality they do not have a higher value of son survivorship. Nag (1962) has given an elaborate classification of a number of physiological, socio-cultural and economic factors affecting fertility, based on a cross-cultural analysis of 61 non-industrial societies of different regions of the world. He has identified the factors affecting the probability of coitus, probability of conception (fecundity) and general socio-cultural, economic and physiological factors affecting the fertility and reproductive behaviour viz., the marriage practice, sexual behaviour, general and reproductive morbidity, nutrition, cultural folkways etc. Suparlan (1980) in his study of culture and fertility showed religion and ethnicity predicting fertility in major way. In a study of culture and fertility in sub-Saharan Africa, Sonko (1994) explained the marriage pattern, bride wealth etc. to be important for variations in fertility. Against these backdrops the current paper endeavours to examine the nature and magnitude of association of some cultural characteristics of women with their fertility.

2. DATA AND METHODOLOGY

2.1. Data, tools and techniques

For this study, the primary data were collected from the 'Angul' district of Orissa, which had a comparatively higher proportion of scheduled tribe (ST) population (Census of India, 1991). The currently married women of the age group 13 to 49 years were chosen as the respondents. A total of about 300 such women were interviewed in the sample survey. Besides quantitative data, some qualitative information on fertility preference, perception & practice regarding health and conception period were collected through key-informants, group discussions and informal interview. The data collection was carried out during the year 1997-1998. The primary database provides information on various probable background as well as intermediate factors of fertility. All the currently married women irrespective of children ever born (also infertile) have been considered for analysis. Bivariate analyses like frequency distribution and ANOVA have been undertaken. In addition, MCA (multiple classification analyses) has been carried for fertility level by different categories of the intermediate variables to examine the differential in variance and to find out the sole effect of each of the intermediate factors controlling for other confounding factors (both independent variables and covariates). MCA is a kind of analysis, which takes care of the predictor variables having inter-correlation and/or non-linear relationship with dependant variable. This is a special case of analysis of variance with no interaction term (Andrews et al., 1973). The model consists of overall mean of the dependent variable as a constant term and a series of additive coefficients of each category. That is,

$$Y_{ij...n} = Y + a_i + b_j + e_{ij...n}.$$

Where $Y_{ij...n}$ is the score of a particular individual who falls in the i th category of A and j th category of B...etc. Y is the grand mean, a_i and b_j are the added effect of i th and j th category of predictor A and B respectively. $e_{ij...n}$ is the residual term not accounted for by the variables taken into the model.

2.2. Definition and Conceptualization of the Variables

For the present analysis, the variables such

as woman's marriage type and age, spousal age difference, types of mate choice, family type, child loss and woman's birth-place have been used. A child loss index (CLI) has been constructed standardising for the children ever born (CEB), to study the association of child loss (CL) with fertility. An attempt has also been made to analyse some macro level factors such as village and tribe/caste related characteristics, with respect to fertility.

$$CLI = (CEB - CL) / CEB.$$

Since human fertility is mediated by life style and behaviour, hence in a social set-up many of the norms and cultural traits have major impact on it (Srinivas, 1977). These are the variables, which are either cultural in nature or influenced or operated through cultural components. Child loss is a factor that has dual effect on fertility, such as 'replacement' as well as 'insurance effect'. The insurance effect is that, when there is a higher prevalence of child loss in a community, then it is inbuilt in the mind-set of people that, more children have to be given birth so as to meet the desired family size. When a woman/couple suffers the loss of a child then she may go for another child, which is called replacement effect. Hence fertility may increase with child loss in these situations.

Spousal age difference and age at marriage are some of the important variables, which are affected by cultural values and so affect the individual as well as population fertility. This variable acts in a behavioural pathway that, it can influence the interpersonal communication between spouses, women's decision-making power regarding fertility. Women's birth-place is a cultural variable, which can have significant effect on fertility in a way that, a woman married in the village as her birth-place gets more autonomy so more decision making power; and may have a negative association with fertility. Marriage of the woman with a prior relationship can have impact on fertility in a cultural pathway that, if it leads to woman's autonomy, then there may be a negative association. But, when fertility value of a society/family ('Khandan') comes into picture, then it can show a positive association.

Another cultural variable, the type of family has some impact on fertility through other factors like decision making, economic and opportunity cost of higher fertility etc. In joint or extended families, many times the major decisions are taken by the older family heads, where as in nuclear

families, it may be by the husband and wife. But careful observation has to be there with regard to structural and functional typification of the family. That is, families may be structurally separate when siblings marry off, but functionally they may be still living close to each other and major decisions are taken together. Woman and husbands' current ages are very important variables having cultural and behavioural impact on fertility through fertility knowledge and decision-making. Type of mate choice, that is marriage of the woman arranged with or without her consent or self-choice is also an important cultural factor affecting fertility. This has some bearing on accessibility to fertility decision making and association with level of social development and modernisation.

3. ANALYSIS AND DISCUSSION

3.1. Socio-cultural Background of the Women

There are around 50 types of scheduled tribes live in the study district. Among them, 'Kuda (Kora)' and 'Kondh' tribe formed the major proportion and others being 'Munda', 'Gond', 'Kolho' and 'Situra'. The general socio-cultural characteristics of the sample women has been given in the Table 1. By age at marriage of women, it was found that little less than one third of all women had married in their early teenage, i.e., less than 15 years of age. More than half of all women married during their late teens, i.e., 15-18 years which is also below the legal age at marriage in India. Husbands' age at marriage showed that one fifth of all husbands were married below the age 18 years and 70 percent married in the age group 18-24 years. A breakdown of spousal age difference showed that one-fourth of all women had an age difference less than of 4 years.

It was observed that 10 percent of all women had married in the same village as their birth-place. Only 11 percent of women were found to had married with a prior relative. Around 40 percent of all ST women belonged to nuclear families. The child loss index showed that more than half of all women experienced higher incidence of child loss (depicted by higher value of child loss index) and 20 percent of women had less number of child loss. Regarding mate choice, 22 percent of all women reported that

Table 1: General socio-cultural characteristics of the sample women.

Background characteristics	Percentage (N=300)
<i>Woman's Age at Marriage (in Yrs.)</i>	
<15	30.3
15-18	57.7
19+	12.0
<i>Husband's Age at Marriage (in Yrs.)</i>	
<18	21.4
18-24	69.3
25+	9.3
<i>Spousal Age Difference (in Yrs.)</i>	
<4	25.3
4+	74.7
<i>Place of Birth Same Different</i>	
Marriage without prior relationship	10.0
Marriage with a prior relationship	90.0
<i>Type of Family</i>	
Nuclear	11.0
Extended	40.3
<i>Child Loss Index</i>	
Low	59.7
Medium	20.7
High	27.3
<i>Mate Choice</i>	
Arranged with woman's consent	22.3
Arranged without woman's consent	74.0
Self choice by the woman	3.7

their consent was taken before marriage and around two-third reported their consent was not taken.

3.2. Average Family Size of the Women

A bivariate analysis of mean children ever born (CEB) by different socio-cultural characteristics of the sample women has been carried out and the result is shown in the Table 2. For women who had married at early teenage, i.e., less than 15 years, the CEB was higher and this came out to be statistically significant (MCA). It may also be observed that average CEB was lower among those who married late, though this differential was not found to be very consistent. By husbands' age at marriage, the people who married in middle age group, i.e., 18-24 years have got little higher number of children compared to those married below 18 years and also for higher age category. The spousal age difference of more than 3 years showed significantly higher fertility.

The mean CEB was found to be slightly more for women whose birth-place was different than the current residence. For the women who married with their prior relatives, the fertility was found

Table 2: Mean CEB by socio-cultural characteristics of the sample women.

<i>Variables</i>	<i>Mean CEB</i>
<i>Woman's Age at Marriage (in yrs.)</i>	
<15	3.03*
15-18	2.83
19+	1.86
<i>Husband's Age at Marriage (in yrs.)</i>	
<18	2.62
18-24	2.87
25+	2.39
<i>Spousal Age Difference</i>	
< 4	2.42
4 +	2.89
<i>Place of Birth</i>	
Same	2.73
Difference	2.78
<i>Type of Marriage</i>	
Marriage without prior relationship	2.80
Marriage with a prior relationship	2.54
<i>Type of Family</i>	
Nuclear	2.89
Extended	2.59
<i>Child Loss Index</i>	
Low	0.12*
Medium	5.14
High	2.58
Total	2.77

Note: * refers to significant F value (at 90 per cent CI) for age group 13-49 yrs.

to be lower. However, these variables did not bring out significant variation in fertility, not even by different age groups. By type of family, for the women from nuclear families, the fertility was found be higher. The fertility was found to be much higher for the women having a medium value of child loss index. The women with lower child loss were found to have lower fertility.

3.3. Multivariate Analysis for Women's Socio-cultural Factors

To study the mechanism involved in association of different cultural factors with fertility, multiple classification analyses were carried out taking CEB as dependent variable, and the selected cultural factors as independent variables. The result presents the sole effect of each cultural variable on fertility, when the influence of other confounding (intermediate) factors are controlled. Two variables such as woman's current age and marital duration were taken as covariates.

The Table 3 shows the result of MCA for cultural variables for scheduled tribe population.

The grand mean CEB was found to be 2.77. The multiple R^2 showed that all the independent predictors together could explain about 39 percent of the variation in the dependent variable CEB, whereas the same along with covariates could explain about 52 percent of variations in fertility (CEB).

The unadjusted deviation of the category mean from the grand mean CEB is shown in col. 3 of the Table 3. The variable child loss was found to be the most important predictor variable affecting the fertility (CEB) since the deviation by category means was found highest. Eta value (col. 4) was also highest for this variable. Even after adjusting for other independent variables the category means (col. 5) for this variables remain same. Beta value (col. 6) also did not show much difference. However, when adjusted for other independents as well as covariates, the category means showed a change so also the Beta value. For women who experienced less child loss have lower fertility i.e., the category mean declined to 1.64 and for those who had moderate level of child loss, the category mean was 4.72 (col.7). Thus the real effect of the lower child loss was to decline the fertility. However, very higher child loss also showed an weak negative association on fertility. The variables such as higher age at woman's marriage (more than 19 yrs.), nuclear family and lower spousal age difference showed decline in category mean CEB both before and after adjusting for the independents and covariates. Mate choice arranged with prior consent of the woman showed decline in fertility, but after adjusting for covariates the result found different.

3.4. Macro Level Fertility Analysis

Besides individual level, other macro level such as village and community level influence on fertility has been emphasised by some studies. There has been endeavours to understand the importance of social structure (Srinivas, 1977), norms and values etc. in designing the human fertility. How much effect the village composition has on the fertility of the inhabitants, the amount of bearing the community (Caste/tribe) has through its composition and norms are also coming under the domain of fertility research.

3.4.1. Village Fertility: An attempt has been made to analyse fertility and associated factors at village level. The Table 4 gives a categorisation

Table 3: Summary result of Multiple Classification Analysis (MCA).

(Dependant variable = CEB (continuous),
Covariates- Woman's current age, Marital duration.
Grand mean CEB- 2.77, N=300.

Variables with category	N	Unadjusted Dev'n Eta		Adjusted for Inde- pendents Dev'n Beta		Adjusted for Inde- pendents +Covariates Dev'n Beta	
		(3)	(4)	(5)	(6)	(7)	(8)
<i>Child Loss Index</i>							
Low	88	-1.33		-1.34		-1.03	
Medium	56	2.63		2.62		1.95	
High	156	-0.19	0.61	-0.18	0.61	-0.12	0.45
<i>Spousal Age Difference (in yrs.)</i>							
< 4	76	-0.36		-0.10		-0.03	
4 +	224	0.12	0.09	0.03	0.02	0.01	0.01
<i>Woman's Age at Marriage(in yrs.)</i>							
<15	91	0.26		0.11		0.05	
15-18	173	0.06		0.04		0.07	
19+	36	-0.92	0.16	-0.46	0.08	-0.48	0.08
<i>Type of Marriage</i>							
Without prior relationship	267	0.03		-0.06		-0.06	
With a prior relationship	33	-0.23	0.04	0.51	0.08	0.46	0.07
<i>Type of Family</i>							
Nuclear	121	-0.18		-0.12		-0.06	
Extended	179	0.12	0.07	0.08	0.04	0.04	0.02
<i>Mate choice</i>							
Arranged with woman's consent	67	-0.12		-0.05		0.09	
Arranged without woman's consent	222	0.07		0.06		0.00	
Self choice by the woman	11	-0.69	0.07	-0.92	0.08	-0.48	0.05
Multiple R ² Multiple R				0.389		0.516	
				0.624		0.718	

of villages by low, moderate and high fertility (average CEB). It was intended to examine whether some of the characteristics of villages can explain the level and differentials in fertility. The villages found in low fertility groups are characteristically situated beside the national highway and more or less closer to the places (some what urban) where physical amenities like education, market and medical facilities, transport and communication are available. Again these comprise of almost one caste (all ST or all SC). In contrast most of the villages falling in high fertility category are quite far from the main road (National Highway) and are devoid of many of the physical amenities. Higher proportion of the population in these villages belong to scheduled caste which itself have a high fertility. Explicitly six out of 8 villages have no electricity at all. However, the villages falling into moderate fertility are not very far from the small towns and, also almost one-community villages.

Table 4: Village level fertility.

Categorisation of villages by fertility	Avg. CEB	No. of women	Population
<i>Low Fertility</i>			
Panchamahar	2.2075	53	3000
Badahisara-Santrapur	2.2727	11	450
Talasahi-Karadagadia	2.3182	22	150
Amantapur-Sanhinsar	2.5231	65	1500
Susab-Bamur-Dalapaka	2.5745	47	800
<i>Moderate Fertility</i>			
Chhendipada	2.6027	73	1063
Tukuda	2.6923	26	600
Saradhamunda	2.8214	28	600
Rantalei	2.8776	49	1200
Kusabani	2.9	30	150
Champapur	2.9167	24	500
<i>High Fertility</i>			
Ogi	3.1176	17	3000
Odkapa	3.1333	15	360
Nuamouza-Siturasahi	3.1538	26	2000
Katada	3.1915	47	354
Kadalimunda	3.3684	19	400
Laxmidharpur	3.3929	28	300
Para	4.0	17	1800

3.4.2. Caste/Tribe Fertility: The fertility (average CEB) by individual castes/tribes (Table 5) also showed similar trend. The castes/tribes in low fertility category were characterised by some kind of a unsettled life and a smaller group of people who are not the aborigines and taken anchorage on the current land few years back. The two kind of scheduled tribes viz., Munda and Situra are found to be in low fertility group and rest two scheduled castes are also some kind of minor groups among almost all villages in the studied district. This gives an impression that whether community size, distribution and aborigine ness has some thing to do with fertility. The castes/tribes having moderate and higher fertility are more or less the aborigines of the villages now they inhabit in and are much bigger in population size with wider distribution among villages. However the factual mechanism behind the supposition can be explored by in depth Anthropological researches.

Table 5: Average CEB by type of caste/tribe

Categorisation of caste/ tribe by fertility	Avg. CEB	No. of women
<i>Low Fertility</i>		
Kela	1.9091	11
Situra	2.1250	16
Munda	2.3095	42
Other (Tanla, Khajuria)	2.5667	30
<i>Moderate Fertility</i>		
Kondh/Kandha/Kandh	2.7591	137
Kuda (Kandhia)	2.9655	29
Hadi	3	45
<i>High Fertility</i>		
Kuda (Kishan)	3.0133	75
Dhoba (washerman)	3.0476	21
Kolho	4.6	5

4. CONCLUSION

From the present study, which focused mainly to examine the cultural variables; those act at societal level, then household level and individual level in designing the fertility. The analysis endeavoured to develop a kind of culture-fertility pathway. Both in bivariate and multivariate analyses lower level of child loss showed significant association with lower fertility. The other variables like higher age at woman's marriage, self choice of mate by woman and nuclear family showed negative effect on fertility, sometimes both before and after adjustment for other independents.

At societal level, the factors such as village distance, marriage with prior relatives and woman's birthplace have shown some effect on fertility level, if not always significant. At household level, the nuclear family showed a significant negative association with fertility. This accounts for the cultural influence on decision making in a way that in nuclear family there is a higher chance that the fertility decisions is taken by the wife and husband and less intervened by other kin heads, leading to higher level of fertility regulation. This may also be an outcome of some other factors. Among the family level factors, lower spousal age difference could show significant decline in fertility. Then at individual (woman) level, child loss showed significant relationship.

The observation of fertility by different villages gives an impression that the population composition and distance from urban centres may have some bearing on fertility. A similar observation by caste/tribe warrants further research on whether community size, distribution and aborigine ness have some thing to do with fertility. However, the factual mechanism behind the supposition can be explored by in depth Anthropological researches.

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