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Reproductive Morbidity, Treatment Seeking Behaviour and Fertility: A Study of Scheduled Caste and Tribe Women

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ABSTRACT This paper attempts to study the prevalence of reproductive morbidity, treatment seeking behaviour and their plausible causal relationship with human fertility. The primary data for this study has been collected through a survey conducted on scheduled caste and tribe population in Orissa. The bivariate and multivariate analyses showed that certain health problems impose negative effect on fertility, although few did not show common association possibly due to reverse causation. Menstrual irregularity consistently emerged out to be a significant attribute of lower fertility and some others such as smallpox, sickling, malaria and gynecological problems showed negative effect on fertility. These phenomena for some were not very consistent when adjusted for other confounders.

1. INTRODUCTION

Majority of the events in the process of human fertility operates more or less within a biological framework. There are factors, which manifest directly through the body physiology of human beings and some others do so through intermediate factors such as behaviour, culture etc. The factors, which are behavioural by origin and physiological in function, have been the interest of many demographers. Both at individual as well as population level, there are a number of small factors, which can affect the fertility in differential magnitude, may be termed as the 'micro determinants' (Nanda and Rob, 2001). This is an area of fertility research that has got utmost interest recently by many demographers, social scientists and medical researchers like Nag, Bongaarts and Clarke etc.

The factors, which are common in most societies and are explicit in nature, have got more importance in terms of the feasibility of research. Nutrition, health, alcohol/narcotics behaviour, sexual practice, physical and mental strain, and fertility regulation are some of these factors. These are often the function of human behaviour, but they can act at physiological level to design the fertility. Fertility in its biological process is the function of various phases such as production of gonads, successful union and fertilisation of ovum by sperm, embryo formation, proper implantation, successful gestation and delivery of a live birth. Each phase is affected by different factors in shaping of the fertility and the impact may be individual or interactive (additive) in nature. The magnitude of fecundity-impairment or some kind of relative sterility acts as an important physiological determinant of differential fertility. This may occur due to certain pathological conditions or accidents. Though some studies on the extent of secondary sterility or sub-fertility have been carried out, their exact contribution to the relatively low differential fertility in India is not known.

There have been some studies by demographers and medical researchers on impact of health, nutrition and alcohol/narcotics consumption on fertility. Bongaarts (1986) in his study on '!Kungs' fertility; Randal (1996) in a study on two non-industrial societies of Mali; and Gray (1979) have found various diseases like malaria, venereal syphilis, gonorrhoea, genital tuberculosis and other STIs (Sexually Transmitted Infections) and RTIs (Reproductive Tract Infections) affecting the fecundity and thereby fertility, and indirectly through prolonged spouse separation. Mascie Tylor (1992) in a study showed that diseases other than STDs (Sexually Transmitted Diseases), *viz.*, malaria, TB (Tuberculosis), anaemia and leprosy can reduce fertility through different mechanisms like oligospermia, foetal mortality and menstrual disorders. Masani (1971) in another study inferred that menstrual irregularity may lead to anovulatory cycles and in turn decrease the probability of fertilisation.

Against these backdrops the current paper

endeavours to study the prevalence of reproductive morbidity, treatment seeking behaviour. It is also attempted to examine their plausible causal relationship with human fertility along with the nature and magnitude of association.

2. DATA AND METHODOLOGY

2.1. Data, Tools and Techniques

For this study, primary data were collected from the 'Angul' district of Orissa, which had a comparatively higher proportion of scheduled caste[1] (SC) and 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 600 such women, 300 each from scheduled castes and scheduled tribes were interviewed in the sample survey. Besides quantitative data, some qualitative information on aspects like fertility preference, perception and practice regarding health and particularly on reproductive morbidity, 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 of the present research 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 (Analysis of Variance) 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 Variables

In this particular study, 'reproductive morbidity' has been referred to those health problems that have direct or indirect effect on fertility. For this study, the health problems such as malaria, anaemia, mumps, measles, smallpox, sickling, menstrual irregularity and problems, gynaecological problems, obstetric problems, tuberculosis (TB) and Leucorrhoea were considered. These were pre-determined by the study of literatures and information from medical researchers, with regard to their potential influence on women's fertility. In this kind of study the reference period has a methodological importance and this varies for chronic and casual morbidity. Some of diseases or health problems which occur or manifests in a longer duration but do affect considerably the fertility afterwards are given longer reference period. Some of the problems such as mumps, TB, Jaundice, diabetes, and prolapse and obstetric problems during previous pregnancies have been given longer reference period *i.e.* from puberty or last pregnancy till interview dates. For malaria, anaemia, measles, smallpox, sickling, menstrual irregularity and gynaecological problems, 2-3 years reference period has been considered. The study of self-reported morbidity is often affected by perception of the respondents. In the current study, the information was collected by spontaneous as well as on-probing method of self-reported symptomatic approach.

One category of factors that are biological in nature and influence the human fertility both at physiological level as well as behavioural level is, the health problem/disease/morbidity. The individual impact of a particular disease and effect due to its interaction with other disease and/or other factors can result into some variations in fertility. The nature and magnitude of the variation can be of different in each case. Though different diseases and health problems some or the other way affect various physiological processes in human body, not all have considerable impact on fertility. Different diseases/health problems have

impact of different nature and magnitude, acting through separate mechanisms. Some such morbidities variables have been selected for analysis in the present study with regard to fertility.

Studies have shown that, malaria, particularly that from the parasite *Plasmodium falcifarum* besides that from *Plasmodium vivax;* anaemia, genital tuberculosis, mumps after puberty, measles and smallpox can affect the pituitary gland and hinder the endocrinal processes responsible for health of gonads, fertilisation, implantation and successful gestation. The impact is more prominent when there is subsequent and chronic occurrence. These can have indirect effect on fertility through prolonged spouse separation or sexual abstinence. Menstrual irregularity and problems, gynaecological problems, Leucorrhoea, obstetric problems prior to present conception can hinder fertilisation and successful implantation. Menstrual irregularity may lead to anovulatory cycles and in turn decrease the probability of fertilisation (Masani, 1971). The impact of different diseases on fertility and the mechanism involved may differ by sex of the person. Typhoid fever, undulant fever, mumps and diabetes can lead to male infertility. But a careful understanding is needed in case of deviations out of reverse causation, insignificant effect or sometimes an opposite result under an exceptional mechanism. Morbidities like anaemia, gynaecological and obstetric problems sometimes can be the outcome of a reverse causation from disturbed fertility history.

3. ANALYSIS AND DISCUSSION

3.1. Reproductive Morbidity

Information regarding the prevalence of different diseases to the sample women is presented in Table 1. It was observed that around 37 percent of scheduled caste women perceived not to have almost any disease in the reference period. Even 41 percent of such women perceived that their husbands did not get almost any disease in the reference period. Compared to scheduled caste women, more scheduled tribe women perceived not to have got any health problem both to themselves and their husbands. In reality, more than 94 percent of both scheduled caste as well as scheduled tribe women were found to have got some kind of health problems in the reference period.

Table 1: Prevalence of diseases and treatment in the sample women (in percentage)

Background characteristics	*SC (N=300)*	*ST (N=300)*
Perception-Disease to Woman		
Very Frequent	21.5	19.5
Less Frequent	41.9	38.4
Rare/no disease	36.6	42.1
Perception-Disease to Husbands		
Very Frequent	20.5	17.5
Less Frequent	38.3	37.4
Rare/no disease	41.2	45.1
Health Problems		
No disease	5.7	5.3
Malaria	73.8	77.8
Anaemia	54.01	38.1
Mumps	4.4	14.6
Measles	9.7	18.2
Small pox	6.7	8.6
Sickling	10.4	11.9
Menstrual Problem	22.1	24.8
Gynaecological Problem	20.1	24.5
Obstetric problem	20.5	17.9
Tuberculosis (TB)	1.7	2.0
Hypertension	1.0	1.0
Leucorrhoea	2.3	2.7
Menstrual Irregularity	27.9	26.8

The analysis of 'free-listing' by some local Allopathic doctors, ANMs (Auxiliary Nurse Midwives), adult male and female villagers, private Homeopathic doctors, RMPs (Registered Medical Practitioners), untrained local (traditional/modern medicine) medicine men, and gynaecologists provided information about the prevalence of diseases in the study area. Malaria was reported to be the most important illness prevailed in the locality, followed by anaemia, TB, diarrhoea and cough/cold. However, the male reproductive health problems were reported less.

Similarly, the analysis of survey data on prevalence of diseases/health problems to the sample women (Table 1) showed that the health problems *viz.*, malaria, anaemia, menstrual problem, gynaecological problems and obstetric problems prevailed in higher proportion. About three quarter of all women reported to have malaria and half of all Scheduled Caste women got anaemia in the reference period. Compared to Scheduled Caste women, little higher proportion of Scheduled Tribe women got malaria in the reference period. For anaemia however, this trend is opposite and relatively lower proportion of Scheduled Tribe women got this health problem. Though lesser in magnitude, still some 12 percent of all Scheduled Tribe women reported sickling problem which is often a function of deficient

nutrition or genetical problem (sickle cell gene 'S'; Park and Park, 1990). Comparatively lesser proportion of Schedule Caste women reported this problem. About 14 percent of all women reported mumps. Around 18 percent of all Scheduled Tribe women, which is comparatively much higher than SC women, reported to have measles in the reference period. About 25 percent of all Scheduled Tribe women, which is comparatively higher than proportion of SC women, reported to have Menstrual and Gynaecological Problems in the reference period. About 21 percent of all Scheduled Caste women, which is comparatively higher than proportion of ST women, reported Obstetric Problems in the reference period. A smaller proportion of women reported tuberculosis (TB), hypertension and Leucorrhoea. Irregularity of menstrual cycle was reported by 27 percent of ST women and comparatively more Scheduled caste women reported this problem.

3.2. Treatment Seeking Behaviour

It was found that (Table 2) eighty-six percent of all Scheduled Tribe women, who had morbidity or health problems, sought some kind of treatment including self-treatment and that from traditional medicine persons. Comparatively more Scheduled caste women sought treatment compared to scheduled tribe women. Among those who sought treatment, 80 percent of ST women and 91 percent of SC women went to allopathic doctors at hospital/clinic at least for one health problem, 5-7 percent received Ayurvedic/Homeopathic medicine and rest got treatment from any other medically unqualified or traditional health persons. Only 2 percent of all ST women went for self-treatment. The reasons for no treatment were reported as the unaffordibility of expenses, feeling of not customary of treatment or some other problems.

Table 2: Treatment of diseases among the sample women (in percentage)

Background characteristics	*SC (N=300)*	*ST (N=300)*
Treatment sought	91	86
Source of Treatment		
Self treatment	0	2
Other traditional health persons	4	11
Nurse/Homeopathic /Ayurvedic	5	7
Doctor	91	80

3.3. Bivariate Analysis

A diseases-wise breakdown of average children ever born (CEB) along with ANOVA test, showed significant variation in fertility in case of many diseases (Table 3). The incidence of health problems, such as sickling, menstrual problems and irregularity in menstrual cycle showed significant decline in fertility. However, from an age-wise breakdown it was found that malaria attributed to lower average CEB among Scheduled Tribe women, who were in their teens and in the age group 35-49 years. Anaemia showed a slight increase in average CEB among women in middle age group in case of Scheduled Caste women and in teen ages for Scheduled Tribe women. This need to be understood through examination of data reporting and further research on biological and behavioural process in case of the sample women. It may also be a case of reverse causation; where a higher fertility might lead to anemia.

Measles showed decline in fertility among Scheduled Tribe women in later part of their reproduction span. Sickling, menstrual problems

Table 3: Mean CEB by morbidity characteristics of the sample women.

Variables		*SC*	*ST*
Malaria	Yes	2.85	2.70[ac]
	No	2.74	3.01
Anaemia	Yes	2.94[b]	2.85[a]
	No	2.68	2.72
Mumps	Yes	3.02	2.53
	No	2.79	2.81
Measles	Yes	3.11[b]	2.54[c]
	No	2.79	2.82
Smallpox	Yes	3.35	2.96[c]
	No	2.78	2.75
Sickling	Yes	2.60[b]	2.37
	No	2.85	2.82
Mens. Problems	Yes	2.53	2.15*[b]
	No	2.90	2.97
Gynac. Problems	Yes	2.98	2.52
	No	2.78	2.84
Obstetric problem	Yes	2.80	3.03
	No	2.83	2.71
Mens. Irregularity	Yes	2.40*	1.97*[bc]
	No	2.99	3.06
Total		2.82	2.77

Note:

a refers to significant F value (at 90 per cent CI) for age group 13-19 yrs.

b refers to significant F value (at 90 per cent CI) for age group 20-34 yrs.

c refers to significant F value (at 90 per cent CI) for age group 35 yrs. and above.

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

and irregularity of menstrual cycle were found to be associated with decline in fertility more among middle-aged women. Irregularity of menstrual cycle showed substantial reduction in fertility for all age group women. The ANOVA result showed that sickling was found to be significantly associated with low fertility among Scheduled Caste women whereas occurrence of menstrual problems and irregularity were found to decline significantly fertility among Scheduled Tribe women.

3.4. Multivariate Analysis

To understand the mechanism involved in association of different diseases or health problems with fertility, multiple classification analyses (MCA) were carried out taking CEB as dependent variable, and the diseases as independent variables. The result gives the sole effect of each disease on fertility, when the effect of other confounding factors (both independent variables and covariates) is controlled. The variables woman's current age and marital duration were taken as covariates. The summary result of MCA for morbidity characteristics for scheduled caste women are shown in the Table 4. The grand mean CEB was found to be 2.82. The multiple R^2 indicates that all the independent predictors together could explain only 4 percent of the variation in the dependent variable CEB, whereas the independent variables along with the covariates could explain 34.7 percent of the variation in CEB.

The unadjusted deviation of the category mean from the grand mean CEB (Children Ever Born) is shown in column 3 of the Table 4. In the first instance, before the adjustment for independent and covariates, Menstrual irregularity was found to be the most important predictor variable affecting the fertility (CEB) since the deviation by category means was found higher. Eta values (column 4) were also highest for these variables. But after adjusting for other independent variables the category means (column 5) for these variables changed. Beta value (column 6) also show some variation. When adjusted for other independents as well as covariates, the category

Table 4: Summary result of Multiple Classification Analysis (MCA) for morbidity characteristics for SC women.
(Dependant variable = CEB (continuous)
Covariates- Woman's current age and Marital duration.
Grand mean CEB- 2.82, N=300.

Variables	*N*	*Unadjusted*		*Adjusted for independents*		*Adjusted for independents +*	
with category		*Dev'n*	*Eta*	*Dev'n*	*Beta*	*Covariates Dev'n*	*Beta*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Malaria							
No	78	-0.08		-0.11		-0.20	
Yes	222	0.03	0.02	0.04	0.03	0.07	0.06
Anaemia							
No	139	-0.13		-0.16		-0.14	
Yes	161	0.11	0.06	0.14	0.07	0.12	0.06
Measles							
No	271	- 0.03		-0.05		-0.03	
Yes	292	0.31	0.05	0.43	0.07	0.32	0.05
Smallpox							
No	79	- 0.05		-0.05		0.00	
Yes	212	0.61	0.08	0.69	0.09	-0.01	0.00
Sickling							
No	69	0.03		-0.05		0.04	
Yes	312	-0.27	0.04	0.42	0.07	-0.38	0.06
Menstrual Irregularity							
No	15	0.17		-0.21		0.09	
Yes	85	-0.42	0.13	0.53	0.16	-0.23	0.07
Gynaecological Problems							
No	243	-0.02		-0.03		-0.03	
Yes	57	0.11	0.02	0.14	0.03	0.14	0.03
Multiple R^2				0.040		0.347	
Multiple R				0.199		0.589	

Table 5: Summary result of Multiple Classification Analysis (MCA) for morbidity characteristics for ST women.
(Dependant variable = CEB (continuous)
Covariates- Woman's current age and Marital duration.
Grand mean CEB- 2.77, N=300.

Variables	*N*	*Unadjusted*		*Adjusted for independents*		*Adjusted for independents +*	
with category		*Dev'n*	*Eta*	*Dev'n*	*Beta*	*Covariates Dev'n*	*Beta*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Malaria							
No	67	0.24		0.13		0.12	
Yes	233	-0.07	0.06	-0.04	0.03	-0.03	0.03
Anaemia							
No	185	-	0.06	-0.11		-0.14	
Yes	115	0.10	0.04	0.17	0.06	0.23	0.08
Measles							
No	245	0.06		0.05		0.05	
Yes	55	-0.27	0.06	0.24	0.05	-0.22	0.05
Smallpox							
No	275	-0.01		-0.02		0.04	
Yes	25	0.10	0.01	0.25	0.03	-0.46	0.06
Sickling							
No	264	-0.05		0.05		0.02	
Yes	36	0.36	0.06	-0.39	0.06	-0.14	0.02
Menstrual Irregularity							
No	221	0.29		0.29		0.19	
Yes	79	-0.81	0.22	-0.82	0.20	-0.52	0.14
Gynaecological Problems							
No	232	0.06		0.03		-0.07	
Yes	68	-0.22	0.05	0.12	0.03	0.25	0.06
Multiple R^2				0.061		0.374	
Multiple R				0.247		0.611	

means showed some change for 'menstrual irregularity' and a drastic change for 'smallpox'. For women who did not get menstrual irregularity, the category mean rose to 2.91 and for those reported this, the category mean declined to 2.59 (column7). Thus it showed that the real effect of the particular health problem is to decline the fertility. Sickling showed a decline in category mean CEB both before and after adjusting for the independents and covariates and effect (Eta and Beta values) did not vary much.

The result of MCA for morbidity characteristics for scheduled tribe women is presented in the Table 5. The grand mean CEB was found to be 2.77. The multiple R^2 means, all the independent predictors together could explain only 6.1 percent of the variation in the dependent variable CEB, whereas the independent variables along with the covariates could explain 37.4 percent of the variation in CEB.

The unadjusted deviation of the category mean from the grand mean CEB is shown in column 3 of the Table 5. Menstrual irregularity was found to be the most important predictor variable affecting the fertility (CEB) since the deviation by category means was found highest. Eta value (column 4) was also highest for this variable. Even after adjusting for other independent variables the category means (column 5) for this variables showed little variation. Beta value (column 6) also did not show much difference. However, when adjusted for other independents as well as covariates, the category means showed a change. For women who did not get menstrual irregularity the category mean rose to 2.96 and for those reported this, the category mean declined to 2.25 (column7). Thus it showed that the real effect of the particular health problem is to decline the fertility. Malaria, Measles and Sickling showed decline in category mean CEB both before and after adjusting for the independents and covariates and effect (Eta and Beta values) did not vary much. Gynaecological problem showed decline in fertility before adjustment, but after adjusting or independents and covariates the result was found different, which means that in this case there was external influence of other factors.

4. CONCLUSION

The present study focused mainly to examine the effect of morbidity situation among Scheduled Caste and Scheduled Tribe women on their fertility. It is also studied here about the treatment seeking behaviour in these two groups of population. Malaria, anaemia, menstrual and other gynaecological and obstetric problems were found to be dominant in these populations. The bivariate and multivariate analyses of the morbidity variables vis-à-vis fertility (Children Ever Born) showed that certain health problems impose significant effect on fertility, though few did not show expected associations due to reverse causation. Menstrual irregularity consistently emerged out to be a significant attribute of lower fertility. Some others such as sickling, malaria and gynaecological problems showed negative effect on fertility, which were not very consistent when adjusted for other cofounders. This paper is very important both in terms of research as well as policy related reasons as it endeavours to find out possible 'micro determinants' of relative fertility or sub-fertility in disadvantaged and marginalized section of human society.

NOTE

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

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