

Demography of the Tribal Groups of Rajasthan: 3. Levels, Differentials and Trends in Mortality

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ABSTRACT Measures of mortality especially for infant and child mortality among Scheduled Tribes of Rajasthan are presented in this paper. These are relevant for demographic assessment as well as identification of segments of population that are at high risk and in need of corrective actions. Mortality differences across Scheduled Tribes reflect influence of independent economic, socio-cultural, physical environmental determinants, which is revealed in the differential child survival analysis as well.

INTRODUCTION

Mortality is the major negative force in the balance of vital processes as opposed to fertility. Even though unlike fertility, men's attempt to regulate the mortality component has been relatively successful, mortality levels are still quite high in many regions, particularly in the developing world, like India and states like Rajasthan, in spite of various efforts. Mortality also plays a major role in defining the health and fitness, survival and growth of a population. Mortality particularly infant mortality is an excellent indicator of economic, social status and "well-being" of peoples of a region (in the absence or incompleteness of morbidity data, mortality statistics denoting total absence of well-being are very useful), or to be precise, a pointer of development. Detailed information on mortality and morbidity can be used to identify segments of the population that are at high risk and in need of health services. In spite of being a biological phenomenon, and an inexorable force, mortality is also influenced by the interplay of a host of physical environmental, economic, socio-cultural factors that are directly or indirectly influencing the population components.

In this project, following "current" (period) levels, trends and differentials in measures of mortality have been studied to ascertain the health scenario among the Schedule Tribes of Rajasthan: (a) Crude Death Rate; (b) Age-Specific Death Rate; (c) Infant Mortality Rate; (d) Child Mortality Rate; and (e) Perinatal Mortality Rate.

Apart from these estimates, interplay between child survival (indicator of infant and child mortality) and several physical environmental, economic and socio-cultural determinants have been investigated.

It may additionally be noted that morbidity statistics (or the disease incidence/prevalence statistics) are also an intrinsic part of the study of demographic structure, since these indicate the health scenario or rather the absence of health in populations/regions.

MATERIALS AND METHODS

The study sample comprised Scheduled Tribes, Sahariya, Mina, Bhil, Kathodi, Damor and Garasia belonging to 46 villages in Baran, Sawai Madhopur, Udaipur, Dungarpur and Sirohi districts, in Rajasthan. Altogether, a total of 900 nuclear families belonging to 661 households were randomly selected for the study (200 each from the first three Scheduled Tribes and 100 each from the last three Scheduled Tribes). A nuclear family was taken as the unit of the study.

For data collection, structured schedules developed for the purpose were utilized in addition to drawing genealogies and participant observation. All child mortality and survival data as well as pregnancy wastage data have been obtained from the complete pregnancy/birth history of ever-married respondents which includes the survival status of all births, the age at death (in case of offspring death) etc. The primary respondent was the ever-married woman in the household aged 15-54 years. However, the collected information was crosschecked from other members of the household as well as other

locally important persons including paramedics. For details, refer to Bhasin and Nag (2007).

RESULTS AND DISCUSSION

Measures of Mortality

Crude Death Rate: Crude death rate is the commonly used measure of mortality level of people residing in any region. In the present Scheduled Tribe population, it is estimated as 22.13 per thousand population. For India, in 1992, the death rate was 10.1 per thousand population, and varied from 12.9 in Madhya Pradesh to 6.3 in Kerala. The state of Rajasthan registered a crude death rate of 10.5 (SRS, 1992). [In the year 2000, India seems to register a crude death rate of 8.6 deaths per thousand population (UN, 2001)]. Therefore, it is evident that these estimates are much lower than that estimated for the study population, which, in turn, indicate relatively worse health and well-being scenario among the Scheduled Tribes of Rajasthan. Most probably, relatively lower economic returns, educational status, lesser access to health services including qualified medicos, traditional beliefs, strong faith in folk medicine, unsatisfactory hygienic and sanitary conditions as well as living conditions (majority among the Scheduled Tribes studied live in cramped and kuchcha houses with no separate kitchen, lavatory) etc. among them than among other population groups within the state or outside, are contributing to higher mortality. However, the possible effect of the chance factor due to small sample size cannot also be ruled out.

At the individual level, the death rate seems to vary from a low of 18.70 among Minas to 27.18 among Sahariyas, similar to the trend noticed earlier in case of crude birth rate (Table 1). In fact, Minas and Sahariyas occupy the two ends of the scale regarding most of the above-mentioned

factors, with the former at a more advantageous position than not only the latter but also other Scheduled Tribes studied.

In India, the death rates classified by sex, in the year 1992, were not much different (10.0 per thousand male population and 10.2 per thousand female population). However, in rural areas, the death rate for females was higher (11.1) than the one for males (10.7). Among the major states, the death rate for females have been found higher than that for males in Bihar, Madhya Pradesh, Orissa, Uttar Pradesh as well as in Rajasthan, whereas the opposite holds true for states like Kerala, Tamil Nadu, Andhra Pradesh, Karnataka and West Bengal. In the present Scheduled Tribe population, the death rate for females is lower than that for males, which probably point out the fact, that tribal females may not be as disadvantaged as their counterparts in other population groups. All the tribal groups studied, excepting Kathodis have shown the same trend. Among them, the death rate for females (21.16), is slightly higher than that for males (20.62).

Age-Specific Death Rate: Table 1 shows the age-specific death rates for the various tribal groups. For the Scheduled Tribe population on the whole, the age – specific death rates form more or less “U” pattern with high mortality among the young and the old age groups of the population, typical of developing regions. Mortality is high in the 0-4 age group (62.91), after that it mostly recedes in the following age groups, barring minor exceptions, and again picks up at around age 60 onwards.

The death rate for children below 5 years for India, according to SRS, 1992 is 26.5 and the child death rate varies from 3.9 in Kerala to 38.5 in Madhya Pradesh. In Rajasthan, the death rate for children aged 0-4 years has been estimated as 33.6. All these estimates are again lower than that calculated for the study population group. However, the overall trend is similar, i.e. the death

Table 1: Measures of mortality among Scheduled Tribes of Rajasthan

Measures of Mortality	Sahariyas	Minas	Bhils	Kathodis	Damors	Garasias	Total
<i>Crude Death Rate</i>							
Male	35.71	26.09	27.94	20.62	26.32	24.15	28.16
Female	18.07	10.95	14.03	21.16	19.05	19.70	15.84
Total	27.18	18.70	21.00	20.89	22.83	21.95	22.13
Infant Mortality Rate	263.16	148.15	250.00	272.73	142.86	250.00	224.64
Neonatal Mortality Rate	157.89	111.11	138.89	181.82	71.43	83.33	130.43
Post-Neonatal Mortality Rate	105.26	37.04	111.11	90.91	71.43	166.67	94.20
Child Mortality Rate	105.26	259.26	55.56	90.91	142.86	83.33	123.19
Perinatal Mortality Rate	159.09	142.86	131.58	166.67	71.43	76.92	134.23

rates for India and Rajasthan register an 'U' shaped pattern, with relatively high morality at the younger and the older ages. On the other hand, the age-specific death rates for the demographically advanced state of Kerala, have shown a J-shaped pattern, typical of developed regions, with relatively more mortality at the older than at the younger ages.

It may further be mentioned that male mortality is higher than female mortality in the vulnerable 0-4 years age group, amongst the present Scheduled Tribe population on the whole, as well as individual tribes, excepting Kathodis.

Infant Mortality Rate: Infant mortality consists of two components: (i) neonatal mortality (deaths up to 28 days of life); and (ii) post-neonatal mortality (from 1 month to 1 year of life); the causes and intensities of which vary markedly from each other. The neonatal phase is prone to such endogenous causes as genetics, damage during gestation, physiological weakness of new born associated with pre-maturity, birth injuries and conditions arising from delivery hazards, and also to some extent antenatal care of the mother, post-birth practices in the first month of life. On the other hand, post-neonatal mortality is attributable mostly to exogenous causes, such as, physical environmental, nutritional, economic and socio-cultural factors. Lack of medical care, neglect, and faulty care may raise post-neonatal mortality greatly. This is particularly true in case of developing countries like India and states like Rajasthan. Infant mortality component therefore, has come to be considered as a sensitive index of overall development of a region and health status of its people.

In the present Scheduled Tribe population, the infant mortality rate has been found rather high at 224.64 per thousand live births (Table 1). Even though this can be due to the interplay of several factors including unfavourable living conditions, economic and educational scenario, relatively lesser access to qualified modern medical care, unsatisfactory pre-natal care, infant care at birth and post-natal stages, continuation of folk beliefs and medicine, traditional occupational pattern (less people in the service sector), early age at marriage and childbearing, high parity, lesser contraception usage, etc., the effect of small sample size can not also be ruled out completely.

Among the individual tribal groups, the infant mortality rate is found varying from a low of 142.86 among Damors to a high of 272.73 among

Kathodis. This trend is slightly different from those seen in case of other measures although Minas show the second lowest estimate at 148.15 and the Sahariyas register the second highest estimate at 263.16 per thousand live births. These differentials are reflection of the differences in the environmental, economic and socio-cultural factors, with the Damors and Minas at a more advantageous position than Sahariyas, Kathodis and Garasias. It may also be recalled that more men and women among Damors than others are literate, which may be proving to be a conducive factor in case of child survival.

For India, the infant mortality rate in SRS, 1992 was 80 per thousand live births and varied from 17 in Kerala to 115 in Orissa. The state of Rajasthan has also returned a relatively high infant mortality rate of 90 per thousand live births. However, all these estimates appear lower than that estimated for the present Scheduled Tribe population.

In this state, female infants (88) experienced higher mortality than male infants (92), unlike in the state of Kerala, where the opposite has been noticed (21 and 12, respectively).

Infant mortality also show a sharp decline with increasing education of mother from a high of 77.8 per thousand live births for illiterate women to a low of 36.4 for mothers with at least a high school education. The other morality indicators (Table 1) also vary by education in a similar fashion. Scheduled Castes have higher levels of infant mortality than Scheduled Tribes, who in turn have higher levels than non-SC/ST women.

Neonatal Mortality Rate: For the Scheduled Tribe population on the whole, the neonatal mortality rate (deaths less than a month) is quite high at 130.43 per thousand live births. Between the individual tribal groups, it varies from 83.33 among Garasias to 181.82 among Kathodis (Table 1).

At the national level, the neonatal mortality rate is 50, and varies from 73.0 in Orissa to 10.9 in Kerala (SRS, 1992). The rate for Rajasthan is 55.7. These estimates are much lower than the above - mentioned one for the Scheduled Tribe population studied. Again, it may be pointed out that even though adverse environmental condition including unhygienic surroundings and practices and economic, socio-cultural factors may be proving detrimental for child survival, the possible effects of the chance factor due to small sample size can not also be ruled out.

Post-Neonatal Mortality Rate: The post-

neonatal mortality rate in the present Scheduled Tribe population is estimated as 94.20 per thousand live births (Table 1). And, it varies from 37.04 among Minas to 166.67 among Garasias. It may also be noted that post-neonatal mortality rate is higher than neonatal mortality rate among Garasias only, while the opposite appears to be true among Sahariyas, Minas, Bhils and Kathodis. Among Damors, both neonatal and post-neonatal mortality rates are same. However, it also needs to be mentioned that all these deaths seem to have occurred due to exogenous causes.

The post-neonatal mortality rate for India is 29.0 per thousand live births. And, while it is found rather low for Kerala state at 6.1, for Rajasthan, it is comparatively much high at 34.3. However, these rates too are lower than that observed for the present Scheduled Tribe population, where children may be dying due to adverse environmental and socio-economic conditions, or high rate can be attributed to the chance factor, which in turn, can be due to small size of the sample.

Child Mortality Rate: Child mortality rates takes into consideration deaths of children from one year old to under five years. This mortality measure also shows that it is quite high in the present Scheduled Tribe population at 123.19 (Table 1), which can also be due to small sample size. According to the National Family Health Survey, 1992-93, despite improvements in infant and child mortality, in India 1 in every 13 children still dies in the first year of life and 1 in 9 dies before reaching five years. According to this survey, in India and Rajasthan child mortality is 9.7 and 33.3, respectively. These estimates are much lower than that in the study population.

Perinatal Mortality Rate: The perinatal mortality rate in the present Scheduled Tribe population is also found quite high at 134.23 per thousand births. And, it seems to vary from 71.43 among Damors to 166.67 among Kathodis (Table 1). At the national level, the perinatal mortality rate has been estimated as 47.5 (SRS, 1992). And, among major states, it ranges from 18.9 in Kerala to 68.8 in Orissa. In Rajasthan, this rate has been estimated moderately high at 48.2. All these rates again are much lower than that found in the study population group.

Exploratory Mortality Analyses

As already mentioned, in the present project

an attempt has also been made to investigate the factors influencing the mortality component, particularly the infant and child mortality. For this, interaction between several physical environmental, economic and socio-cultural factors and child survival ratio (proportion of children surviving out of children even born alive), which is an indicator of infant and child mortality, has been studied.

Mosley and Chen (1984) had identified five factors as the determinants of child survival: maternal factors, environmental contamination, nutrient deficiency, injury and personal illness control. All these are influenced by socio-economic determinants. Stockwell and Wicks (1984) have highlighted the important relationship between infant mortality and socio-economic status. According to them, infant mortality rate exhibits a pronounced inverse association with a wide variety of socio-economic variables. "Of all the variables examined, the one factor that emerged as the strongest and most consistent determinant of census tract variations in infant mortality was the proportion of low income families". According to Kost and Amin (1992), infant and child mortality can be said to be affected by two sets of factors – factors related to reproductive or maternal characteristics and socio-economic factors. In rural Punjab, they found that reproductive and socio-economic factors affect mortality at differing ages of children. Socio-economic factors do not appear to be associated with the neonatal period whereas reproductive factors dominate only in the neonatal period and the rest of first six months. The socio-economic factors significantly affecting child mortality were education level of head of household, caste and family income.

Jain and Nag (1985) found that for rural India mother's education and poverty level are important factors in explaining regional differences in infant mortality. According to him, these two indicators explained about 60 percent of the regional variation in rural India. Other determinants of infant mortality in rural India are availability of medical facilities and medical care at village level. Kulkarni et al. (1990) also found that socio-economic variables (education and income) are highly (negatively) correlated with mortality rate. Bourne and Walker (1991) in her analysis involving education of mothers and child mortality in India confirmed the association. Similarly, Natarajan (1989) has also found that

female literacy and availability of protected drinking water are important factors in determining child mortality. Whereas Nag (1983) in his comparative study of West Bengal and Kerala has attributed Kerala's low infant mortality to its more advanced social development, Dyson and Moore (1983) had linked female autonomy and child mortality. According to them, differences in kinship structure and female autonomy between north and south India may influence patterns of child care, and hence child mortality. Das Gupta (1990) in a study in rural Punjab found that child mortality is highly clustered within families. According to her, death clustering is due to the basic abilities and personality characteristics of the mother – the primary carer. An incompetent mother is unable to take after the child effectively and hence lose children. In the present study too, several such interplay between child survival ratio (an indicator of infant and child mortality) and some independent determinants have been studied.

Survival Ratios by Occupation of Husband:

In the present Scheduled Tribe population, the highest proportion of surviving children is seen when the husbands are in the service sector, while lower and much lower proportions are noticed when they are engaged in cultivation or petty business and when they are working as labourers, respectively. Since occupation often is a reflection of personal economic status and educational level, it exhibits effects on fertility and mortality. Along with income, it often defines the socio-economic class or status of an individual. At the individual tribal level (Table 2) as well, more or less similar trend is seen as already mentioned.

Survival Ratios by Occupation of Wife:

The proportion of surviving children in the Scheduled Tribes, is found to be higher when women are engaged in cultivation or when they are economically inactive than when they are engaged in the service sector or are working as agricultural/casual labourers (Table 2). This can be explained in terms of longer separation of mother from infants/children – who is the primary carer, especially in the absence of extended kin, in case of the service sector women or those working as labourers away from home than in the other instances. However, the number of service sector women is too less to arrive at a firm conclusion. Individual tribal groups have shown varying trends, most probably due to small number of cases in many categories.

Survival Ratios by Income: In the present Scheduled Tribe population, in general, the interaction between survival ratios and income is not very clear-cut, which can be due to small number of cases in many categories, owing to small sample size (Table 2). However, broadly speaking, the proportions of surviving children out of children ever born alive, seem higher at the higher income slabs than at the lower ones. The same trend is noticeable at the individual tribal groups as well.

Many research findings have also shown that the lower income groups are characterised by high infant mortality and low child survival. These groups have inadequate access to health services and have poor knowledge of proper health care practices; as well as more traditionally oriented leading to a staunch faith in folk than in modern medicine. Besides, their houses tend to be kuchcha and crowded ones, with unsanitary surroundings in general, having no separate kitchen, cattle shed etc. Income can determine the nutritional levels and access to modern medical care of children as well, which in turn, are determinants of child survival.

Survival Ratios by Cultivable Landholding:

In case of this variable too, the trend is not very clear-cut (Table 2). However, broadly it appears that proportions of survivors are higher when the size of landholding is relatively larger, reflecting relatively better socio-economic standings, than when it is smaller, or when the families are landless in the present Scheduled Tribe population as a whole. Individually, however, the trend appears fluctuating, which seems to be due to small sample size.

Survival Ratios by Family Structure: In the present Scheduled Tribe population, on the whole, the survival ratio is noticed higher in joint family set-ups than in nuclear family organisation. Even the individual tribal groups, barring Sahariyas, have shown such a trend (Table 2). It seems the presence of additional kin in family may be conducive to child survival, as they can take care of the infant/child when the mother is busy with household or outside work.

Survival Ratios by Education of Husband:

The proportion of surviving children by the education of husband increases with the education of husband (Table 2). That is, children have lesser chances of survival when husbands are illiterate or less educated than when they are more educated. At the individual tribal level as

Table 2: Child mortality differentials (child survival ratios) among Scheduled Tribes of Rajasthan, by some independent determinants

<i>Independent determinants</i>	<i>Sahariyas</i>	<i>Minas</i>	<i>Bhils</i>	<i>Kathodis</i>	<i>Damors</i>	<i>Garasias</i>	<i>Total</i>
<i>Occupation of Husband</i>							
Economically Inactive	0.714	1.000	0.833	-	-	-	0.836
Agricultural/Casual Labour	0.717	1.000	0.824	0.810	0.839	0.913	0.793
Cultivation	0.703	0.819	0.840	0.835	0.902	0.809	0.819
Petty Business	0.750	0.769	0.760	1.000	0.924	1.000	0.819
Service	0.695	0.984	0.845	0.875	0.952	1.000	0.876
<i>Occupation of Wife</i>							
Economically Inactive	0.637	0.770	0.833	0.794	0.865	0.868	0.818
Agricultural/Casual Labour	0.720	1.000	0.710	0.844	0.935	1.000	0.749
Cultivation	0.609	0.883	-	0.828	0.877	1.000	0.866
Petty Business	-	-	-	-	-	-	-
Service	0.643	1.000	0.900	-	1.000	-	0.741
<i>Income (in Rs. per annum)</i>							
0-10000	0.713	0.800	0.836	0.808	0.867	0.876	0.824
10001-20000	0.693	0.725	0.787	0.952	0.944	0.824	0.734
20001-30000	0.739	0.809	0.901	-	1.000	0.890	0.792
30001-40000	-	0.955	-	-	-	-	0.955
40001-50000	-	0.797	-	-	0.750	-	0.794
50001-100000	1.000	0.864	1.000	-	-	1.000	0.867
100000+	-	0.885	-	-	-	-	0.885
<i>Cultivable Landholding (in kanals)</i>							
0	0.764	-	-	0.837	0.533	-	0.764
1-5	0.679	0.743	0.816	0.807	0.903	0.867	0.794
6-10	0.713	0.797	0.876	0.846	0.847	0.925	0.815
11-15	0.654	0.814	0.849	-	1.000	1.000	0.792
16-20	0.747	0.834	0.734	-	0.961	1.000	0.821
21-25	0.750	0.911	-	-	1.000	0.777	0.898
26-50	-	0.909	-	-	0.750	0.080	0.893
51+	-	0.828	-	-	-	-	0.828
<i>Family Structure</i>							
Joint	0.702	0.852	0.865	0.826	0.883	0.887	0.825
Nuclear	0.706	0.814	0.819	0.810	0.872	0.846	0.791
<i>Education of Husband</i>							
Illiterate	0.711	0.829	0.822	0.812	0.858	0.870	0.798
Literate	0.758	0.890	0.873	1.000	0.932	0.917	0.884
Primary	0.752	0.848	0.909	1.000	0.936	0.833	0.871
Middle	0.713	0.903	0.844	1.000	0.919	1.000	0.887
High School	0.873	0.800	-	1.000	0.950	-	0.890
Higher Secondary School	-	0.955	1.000	-	-	-	0.957
<i>Education of Wife</i>							
Illiterate	0.706	0.835	0.830	0.816	0.875	0.874	0.803
Literate	0.750	0.800	-	1.000	0.956	-	0.913
Primary	0.750	-	-	-	0.875	-	0.770
Middle	-	1.000	-	1.000	1.000	-	1.000
High School	-	-	-	-	-	-	-
Higher Secondary School	-	1.000	-	-	-	-	1.000
<i>Age at Marriage of Husband(in yrs.)</i>							
6-10	0.704	0.800	-	-	-	-	0.782
11-12	0.745	0.821	0.895	-	-	-	0.784
13-14	0.737	0.831	0.895	1.000	-	0.800	0.787
15-16	0.626	0.895	0.842	0.889	0.909	0.837	0.775
17-18	0.824	0.947	0.824	0.806	0.895	0.918	0.853
19-20	0.873	0.824	0.805	0.838	0.841	0.916	0.834
21-29	1.000	0.800	0.845	0.783	0.800	0.571	0.817
<i>Age at Marriage of Wife (in yrs.)</i>							
6-10	0.683	0.815	-	-	-	-	0.755
11-12	0.758	0.852	0.803	0.600	-	0.800	0.788
13-14	0.668	0.930	0.851	0.878	0.862	0.845	0.800
15-16	0.896	0.931	0.816	0.814	0.891	0.896	0.845
17-18	-	-	0.848	0.797	0.850	0.952	0.852
19-20	-	1.000	0.880	0.500	1.000	0.752	0.867
21-29	1.000	-	0.781	1.000	-	-	0.826

Table 2: Contd....

<i>Independent determinants</i>	<i>Sahariyas</i>	<i>Minas</i>	<i>Bhils</i>	<i>Kathodis</i>	<i>Damors</i>	<i>Garasias</i>	<i>Total</i>
<i>Educational Facility Available</i>							
None	0.715	-	-	-	-	-	0.715
Primary	0.699	0.812	0.811	-	-	-	0.774
Primary/Middle	0.671	0.897	0.878	0.815	0.879	0.874	0.844
Primary/Middle/High School	-	0.869	0.873	-	-	-	0.872
Prim./Mid./High/ Hr. Sec. Schools	0.729	-	0.825	-	-	-	0.760
<i>Approach to Village (Road)</i>							
Kuchcha	0.673	0.802	-	0.765	-	-	0.763
Pucca	0.716	0.924	0.830	0.837	0.879	0.874	0.816
<i>Post /Telegraph Facility Available</i>							
No	0.665	-	1.000	-	-	-	0.667
Yes	0.713	0.830	0.830	0.815	0.879	0.874	0.812
<i>Telephone Facility Available</i>							
No	0.665	0.746	-	0.765	-	-	0.698
Yes	0.713	0.846	0.830	0.837	0.879	0.874	0.815
<i>Medical Facility Available</i>							
None	0.668	-	-	-	-	-	0.668
Sub-Centre/Medical Aid Centre	0.754	0.818	0.831	0.886	0.868	0.874	0.844
PHC / Regd. Pvt. Practitioner	0.702	0.851	0.878	0.787	0.916	-	0.815
Community Health Centre/ Hospital etc.	0.729	0.786	0.761	-	-	-	0.747
<i>Housing Conditions</i>							
<i>Type of House</i>							
Kuchcha	0.704	0.813	0.830	0.816	0.878	0.874	0.799
Pucca	-	0.848	0.846	0.846	0.750	-	0.845
<i>Separate Cattleshed Present</i>							
No	0.689	0.802	0.789	0.823	0.885	0.863	0.789
Yes	0.739	0.843	0.840	0.773	0.848	0.954	0.824
<i>Ventilation Condition</i>							
Unsatisfactory	0.704	0.819	0.833	0.820	0.881	0.874	0.804
atisfactory	0.701	0.865	0.765	0.693	0.800	-	0.826
<i>General Sanitary Condition</i>							
Unsatisfactory	0.702	0.824	0.823	0.820	0.881	0.874	0.798
Satisfactory	0.735	0.844	0.860	0.667	0.800	-	0.829
<i>Number of Rooms</i>							
1	0.703	0.762	0.834	0.821	0.846	0.853	0.786
2	0.722	0.838	0.791	0.883	0.928	0.940	0.840
3-9	-	0.855	0.859	0.682	0.895	0.802	0.849
<i>Source of Water Supply</i>							
River	-	0.829	0.818	-	-	-	0.818
Well/Water tank	0.699	0.845	0.812	-	-	-	0.798
Hand pump	0.707	-	0.844	0.815	0.879	0.874	0.807
<i>Refuse Disposal to Nearby Surroundings</i>							
Yes	0.702	0.855	0.845	0.791	0.904	0.868	0.790
No	0.000	0.813	0.820	0.866	0.865	0.899	0.835

well, similar trend is noticed barring minor exceptions, which can be due to the small sample size or overriding or simultaneous effects of other factors on child survival.

Survival Ratios by Education of Wife: The proportion of surviving children by the education of wife too reveals that in general as the education of women increases, the proportion of child survivors also increases. In other words, children of an illiterate mother have lesser chances of survival, than when they are literate. The proportion of survivors when the level of education is beyond primary is also relatively

high. However, the estimate is relatively low when they have only primary education, which can be due to small sample size. As mentioned earlier, a number of studies have shown that education, particularly, mother's education is important for the level and trends on infant and child mortality of a population. The negative effect of women's education in infant and child mortality is mainly attributed to lesser usage of available health services like immunization. Also, lack of education or low levels of educational attainment refers to lesser exposure to information and knowledge and inability to effectively utilize the available

resources. Individual tribal groups have also shown more or less similar trend (Table 2).

Survival Ratios by Age at Marriage of Husband: The proportion of surviving children in the present Scheduled Tribe population, seems to increase with the increase in age at marriage of husband from below 10 years, and peaks, when it is 17-18 years, followed by a slight decline, when the age at marriage is higher. Individual tribal groups however, have registered varying trends (Table 2).

Survival Ratios by Age at Marriage of Wife: In the present Scheduled Tribe population, the proportion of surviving children seems to increase with the increase in age at marriage of women, from below 10 years to 19-20 years, while slight decrease is seen at the 21-29 years age group, which most probably is due to very small number of cases in those categories. Individual tribal groups have also broadly shown such a trend (Table 2), barring certain fluctuations, again possibly due to small sample size. It may be mentioned that higher age at marriage of women reflects their greater exposure to the outside world, probably imbibing knowledge of modern health care practices, contraceptive usage, benefits of small family size as well as greater chances of being educated and/or gainfully employed, all of which are conducive to child survival.

Survival Ratios by Educational Facility Available: On the whole, in case of the present Scheduled Tribe population, the proportion of survivors seem to increase from 0.715, when no educational facility is present within 5 km of residence to 0.872, when primary, middle and high schools are present. As mentioned earlier, Nag (1983) has also attributed low infant mortality in West Bengal and Kerala states to more advanced social development, which includes educational facilities as well. However, relatively low survival ratio, when primary/middle/high/ higher secondary schools are present within 5 km of residence, seems to be a function of the small sample size. Similarly, this reason and/or simultaneous or overriding influence of other factors on child survival may be responsible for the fluctuating trends noticed in case of the individual tribal groups (Table 2).

Survival Ratios by Approach to Village (Road): The proportion of surviving children in the present Scheduled Tribe population is found higher when the approach to village is a pucca or

metalled road than when it is Kuchcha or an unmetalled one (Table 2). A metalled road signifies easier access to facilities outside village, which is conducive to survival of children. At the individual level as well, similar trend is seen.

Survival Ratios by Post/Telegraph Facility Available: The presence of this communication facility within 5 km of residence seems to have led to greater child survival than when it is absent, in the population as a whole. Absence of a clear trend in case of the individual tribes is most possibly due to the small size of the samples (Table 2).

Survival Ratios by Telephone Facility Available: As above, the presence of this facility (within 5 km of residence) as well seems to positively influence the child survival, possibly indicating greater exposure to the outside world and facilities. Even Sahariyas, Minas and Kathodis have shown similar trend (Table 2). [Other Tribes do not have access to such a facility within 5 km of their residence].

Survival Ratios by Medical Facility Available: In the present Scheduled Tribe population, the influence of presence of certain types of medical facility within 5 km of residence on children survival is not very clear, although the proportion of survivors is the lowest, when there is no medical facility within 5 km of residence (on account of the Sahariyas). Individual tribal groups have also shown such varying trend (Table 2). It seems many other factors may be having overriding influence on child survival, including the continuing faith of tribals on folk medical care, or these can be a result of the chance factor due to small sample size.

Survival Ratios by Type of House: When the house type of pucca, i.e., one with cemented floor and concrete roof, the proportion of surviving children seems higher than when the house type is a kuchcha one, with mud/clay floor and thatched roof, in the present Scheduled Tribe population as a whole. This may be reflective of the relatively better hygienic and sanitary conditions in pucca houses than in kuchcha ones, which is conducive to child survival. This seems to be true in case of the Minas, Bhils and Kathodis, but not in Damors, amongst whom the opposite trend is seen. It seems that despite the pucca houses, the cleanliness level may be low, or other factors are playing more important role in determining child survival (Table 2).

Survival Ratios by Presence of Separate

Cattle shed: The proportion of surviving children is found higher when there is a separate cattle shed than when the cattle are kept indoors in the Scheduled Tribe population under study (Table 2). In the former case, the state of sanitary conditions is relatively better, than in the latter one, which may be reflecting in the higher child survival. At the individual tribal level as well, similar trend is seen amongst all excepting Kathodis and Damors.

Survival Ratios by Ventilation Condition: In the present Scheduled Tribe population, the proportion of surviving children seems to be higher when the ventilation is satisfactory in houses than when it is not. But, this trend appears to have come out on account of the Minas only. Among other tribes, the opposite trend seems to be true (Table 2).

Survival Ratios by General Sanitary Condition: It seems satisfactory general sanitary condition in the house leads to greater child survival than when it is unsatisfactory in the Scheduled Tribe population on the whole (Table 2). However, at the individual tribal level, only Sahariyas, Minas and Bhils have registered similar trend, while the other three have shown a varied one, most probably due to small sample size.

Survival Ratios by Number of Rooms Present: In the present Scheduled Tribe population, the survival ratios seem to be lower when there is only one room, i.e., when the family is living in crowded condition than when the number of rooms is more, i.e., two or more (Table 2). The individual tribal groups show more or less similar trend.

Survival Ratios by Source of Water Supply: In the present Scheduled Tribe population, the proportion of surviving children is higher when the source of drinking water is hand pump, than when it is a well or a water tank. In fact, the water from hand pump is relatively safer than from well/tank, as the latter are mostly unprotected and rarely cleaned, which may be leading to water-borne diseases and eventually morbid conditions. Although the survival ratio is found relatively quite high when water is drawn from river, larger sample size is required for proper assessment as only two families have reported drawing water from that source (Table 2).

Survival Ratios by Disposal of Refuse Nearby: The proportion of surviving children is found higher when refuse is disposed nearby or

in the immediate surroundings than when it is done outside the village or far away from the settlements, in the present Scheduled Tribe population (Table 2). However, at the individual level, varying trend is seen excepting in Kathodis and Garasias, most probably due to small sample sizes, and/or overriding effects of other factors on child survival.

Therefore, it is evident that mortality level, particularly infant and child mortality levels, are quite high in the present Scheduled Tribe population of Rajasthan, as shown by various measures of mortality, which indicate, their poor health status and well-being, as well as relatively, low level of development. Also, a variety of physical environmental, economic and socio-cultural factors seem to be influencing infant and child mortality and differentials in those are responsible for inter-and inter-group differences. These factors need to be manipulated in a proper manner so that the overall health scenario improves. However, based on the findings a priori action may be taken among those tribes who require them most.

The health infrastructure particularly in tribal areas requires immediate attention and any lacuna in terms of paucity of staff due to unfilled vacancies and unwillingness among many non-local staff continue in tribal areas; shortage of supply of medicines and other aid materials, absence of proper buildings, must be rectified. Both quality and quantity need to be considered and monitored effectively at the micro-level. Quality improvements will ensure that proper communication is made to the patients and their relations about different aspects of hygiene, sanitation and management of diseases leading to behaviour change. Quantity improvements will mean providing proper diagnostic and treatment facilities at all levels.

There is an urgent need to spread messages about preventive and promotive health including hygienic and sanitary awareness, separation of cattleshed/cattles and living quarters, proper refuse disposal method. These should include need for immunization of the children and pregnant women to prevent several diseases and morbid conditions. Attention is also to be given to promote ante and post-natal care among the tribals. Under the present Reproductive and Child Health (RCH) programme, there is a strong need to adapt the generalized messages under the programme to suit the cultural behaviour and

intellectual level of the tribal groups. Promotion of small family norm among the tribals is required urgently.

The role of local traditional faith healers, priests, herbalists in the society is to be studied and their structural position is to be explored further to develop guidelines as to how they can be utilized to disseminate and prevent common preventable maladies and also to form a bridge between the authorities and the community. The traditional birth attendants may be trained through workshops, so that scientific and hygienic routines are followed before and after birth.

Incidence of Diseases

This involves the study of incidence of various diseases in the present Scheduled Tribe population. The morbidity statistics are immensely important in assessing the health status or rather the absence of health and well-being in a population, and can eventually be used for health and development planning.

In case the study population, the most important debilitating disease among males seems to be 'Coughs/Bronchitis/Asthma' (29.3 percent), followed by 'Tuberculosis' (16.4 percent). Among females, however, 'Body ache/Headache' seem to show the highest incidence (26.3 percent), followed closely by 'Coughs/Bronchitis/Asthma' (24.4 percent), while 'Tuberculosis' appears to be the third most frequent one (7.1 percent).

At the individual tribal level, the highest and second highest incidence of diseases among Sahariya and Mina males seem to be the same as above; but among others slight variations are seen. Amongst them, 'Coughs/Bronchitis/Asthma', 'Diseases of Skin', 'Bodyache/Headache', 'Tuberculosis', 'Fever', 'Gastro-enteritis', 'Diseases of Eye', 'Hernia', 'Mental/Psychiatric Diseases' seem to show either the highest or the second highest incidence.

In case of females, relatively high percentages are found afflicted from 'Coughs/ Bronchitis/Asthma', 'Bodyache/Headache', 'Tuberculosis',

'Diseases of Reproductive System', 'Diseases of Skin', 'Fever'. Thus, barring one or two diseases, the types of disease afflicting the individual tribes irrespective of sex seem more or less similar, and therefore, more or less generalised plans can be chalked out to counter the same.

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