PRINT: ISSN 0972-0073 ONLINE: ISSN 2456-6802
Anthropologist, 2(4): 213-219 (2000)
DOI: 10.31901/24566802.2000/02.04.02

Changing Bio-demography of the Todas of the Nilgiris, Tamil Nadu

K.N. Reddy and K.S.N. Reddy

Department of Anthropology, Sri Venkateswara University, Tirupati 517 502, Andhra Pradesh, India

KEY WORDS Toda. Bio-demography. Socio-economy. Change.

ABSTRACT A bio-demographic survey of the Todas of the Nilgiris, Tamil Nadu, over generations indicate the changes that have occurred not only in the demographic events but also in the socio-economic conditions. The exotic traditional Todas known to the world through their practice of pastoralism and polyandry are also classic in touching zero population growth and at times even negative growth. The present study deciphers the secular trends, if any, in time and space. A survey of the growth rates of the population over nearly ten decades indicates that the population has experienced at times a continuous negative growth during the decades, 1901 to 1931 and again between 1961 and 1971 where the annual exponential growth rates are -0.71, -1.44, -0.67 and -0.44 respectively. A significant positive growth is however established during 1971 and 1991 as the annual exponential growth rates have triggered to 2.85 and 4.25. A significant change is seen not only in fertility and mortality rates but also children ever-born and their survivorship between the two generations, i.e. younger and older. The age-specific fertilities of the younger generation indicate that women on an average stands at 2 to 3, while the older generation exhibit a mean number of 4 ever-born children. Similarly, in terms of sib survivorship, the survival capacity of a child born to woman of older generation is only 50%, while in the younger generation woman, it is more, i.e., 85%. As a result, Toda women (38%) prefer to adopt family planning measures after two or three children. These bio-demographic changes have also led to changes in socio-economic milieu, such as, polyandry to monogamy type of marriages, joint-extended to nuclear family establishment, avoidance of female infanticide thereby considerable improvements in the female population and thus equal or near equal sex-ratios in the population and finally traditional pastoralism to mixed economy.

INTRODUCTION

In recent years change of vast magnitude are affecting the distribution, population density and way of life of human populations all over the world. It is important today to study the demographic changes and population biology of human communities because here the consequences of bio-social and environmental interactions are remarkably perceptible.

Bio-demographic studies in India are very few in general and on tribal communities in particular. There are a number of demographic studies aiming at only fertility trends in different populations. Other studies have covered various demographic variables affecting fertility, like, age at menarche, age at marriage, type of marriage, family types and so on. Still other studies have focused on socio-economy, education, occupation and biological variables like, blood groups, morphological characters and others who seem to have influence on fertility. (Srivastava, 1976; Haldar and Bhattacharya, 1976; Gupta, 1976; Govinda Reddy, 1985, 1987; Meerambika Mahapatro et al., 1999). Thus, many studies covering these aspects are inconclusive and as such the scope of their studies are limited (Moni Nag, 1976). Factors that determine the fertility and mortality are complex and elusive. The role of environment and culture on the biology of a population is important as they bring changes in the demography of that population in time and space. Since only from 1970's anthropologists world over have considered and taken up the demographic surveys an essential part of field work and made the results a central part of their analysis (Kundstadter, 1971; Chagnon, 1974). This has followed the emergence of a coherent literature on 'population anthropology' (Nag, 1973). The subject matter of population anthropology has received much attention as anthropologists continue to focus the demographic conditions of various populations world over requiring urgent attention. In this process, the discipline of anthropology has become responsive to demographic methods as because environmental, biological and cultural variables are clearly related to population dynamics. The demographic parameters of differential fertility and mortality are known to be fundamental in studying the genetic selection (Cavalli-Sforza and, 1971; Bajema, 1971) as it ultimately influences

the size of the population and its relation to the bio-ecological conditions. Systematic anthropological demographic studies are reported on fewer tribal populations like, Pahira (Basu, 1969), Kota (Gosh, 1976), Dule Bagdi (Talukdar, 1979) and Irulas (Reddy, 1985). There are reports of some other populations on certain aspects of demography (Dronam Raju, 1964 and Rakshit, 1972).

The exotic tribe of the Nilgiris, Todas are best known for negative and slow growing population through decades. Their high altitude habitation traditional pastoralism, female infanticide and fraternal polyandry, may have contributed to their slow growth and some times zero to negative growth. Today, the population is put to lot of cultural change, taken to new means of livelihood and these socio-cultural changes seem to have affected the bio-demographic situation among them. Considering the above all, an attempt has been made in this paper to study the changing bio-demography of Todas in relation to their biology, culture and environment which may throw light to evolve population planning strategy.

MATERIALS AND METHODS

The materials for the present study are 'Todas' a tribal population concentrated mainly in the Nilgiris of Tamil Nadu. The name Ootacamund which represents the Nilgiri hills, is derived through the name of their settlements, as they call the settlements as '*mund*'. Todas are considered as an exotic, primitive and aboriginal tribe of the Nilgiris. They are numerically small tribe consisting 1242 individuals (1991 census), though the special surveys put them at 1200 to 1600 (Walker, 1986 and District Collectorate enumeration, 1986). They are distributed in about 60 'munds' i.e., settlements. Each settlement may consist of 4 to 8 households generally and few even more. There is another group called, 'Christian Todas' who maintain a separate entity from the traditional Toda society due to their embracing to Christianity and marrying to out side Toda community. There are, however, two moieties in this small population of Toda, namely, '*teivali*' and '*tarthar*'. Traditionally no marriages could occur between the sub-groups, but one can and bound to have sexual relations in another group.

Traditional Todas, until recently were pure pastoral people depending mainly on buffalo economy. They were known to the world mainly because of their traditional customs, such as, polyandry, female infanticide, buffalo sacrifice and others. The common identification mark of the community is their typical embroidery type of work on their traditional shawl namely 'putkuli' and ringlet form of hairstyles of the females. But today, Todas are very much modernised and their life-styles have been changed drastically with the contact of alien cultures consequent to the advent of British and open the hills by road and rail. Large scale migrations have taken place from the plain and established these hills as of commercial and tourist center. Todas are seen now-a-days, in all walks of life, like, education, agriculture, employment besides their own pastoral way of life. Monogamy is now the common form of marriage in place of their traditional fraternal type of polyandry. Polyandry among Todas has become history of the past. In this background present study has been carried out with a view to account any secular trends occurring in the bio-demographic aspects.

For the purpose of the present study the demographic data were collected by using the questionnaire schedule from 150 couples of two generations, namely, first generation, 50+ years (50 couples) and second generation, 20+ to 40+ years (100 couples). Simple random sampling was done for selecting the samples of second generation couples and where as, purposive sampling was applied for selecting the samples of first generation couples as they were not available at random. Only eligible couples from the traditional Toda society were included for the study. The demographic information was cross-checked to remove inconsistencies, if any, and the data have been further subjected to various statistical considerations.

RESULTS AND DISCUSSION

The generation wise data analyses indicate that the Toda population as a whole has transformed greatly in many of the life aspects in

terms of demography, culture and biology. These changes have taken the life styles of Toda population to a greater extent in the positive way and the trends are very healthy for the sustenance of the population both in terms of size and growth in relation to their changing culture and biology. The following are some of the bio-demographic changes that have occurred among Todas since last few decades, which have direct bearing on the biology of the population.

1. Changing Growth Rates of Population through Decades: The changing demographic situation of the Toda population is clearly reflected in its annual exponential growth rates registered through their decadal size and growth (Table 1). The Toda population has registered a continuous decline in its size of the population since 1911 to 1931. The cause of negative growth may be due to several of their cultural and biological reasons. The best could be attributed to mainly the practice of female infanticide and fraternal type of polyandry. The overall decadal growth rates between 1941 and 1971 is again not appreciable where small leaps accounted. A significant change has set in only after 1971 census where the population has shown a significant change in its growth rate as 2.80 in 1981 and 4.25 in 1991. This is mainly due to the initiation of welfare measures by the Central and State Governments in eradicating sexually transmitted diseases among them. Further, there is also significant shift in the population from the polyandrous to monogamous type of marriages and this has resulted in considerable improvements in sex ratios of the population in the last two decades in particular. In this connection, the sex ratio distribution over decades especially since 1901 to 1971 assumes equal importance. During these times the availability of the females to males is always lesser. It is only after 1971, the availability of females to every 1000 males in either more, 1019 (1981 census) or near equal, 993 (1991 census). This is mainly due to the eradication of the social practice, female infanticide. This has brought gradual improvements in the female population and ultimately moved towards monogamous type of marriages. This could be ascribed to as one of the significant demographic change taken place among the Toda population. Further, the Toda population may also serve to describe a classic example 'zero growth' to perhaps 'negative growth' and then to a 'slow positive growth' in time and space.

2. Changes in Sex, Marriage and Family Establishments: There seem to have been liberal sex promiscuity among Todas baring certain taboos. As per cultural norms the woman's formal sexual relations start with traditional defloration ceremony and thereupon she shares her sex through out her reproductive age depending upon the life circumstances. The woman belonging to a moiety could have a sexual partner from the opposite moiety (sub-caste). Toda society was known for its polyandrous type of marriages and also the practice of female infanticide. Even at the beginning of the century, Rivers (1906) observed that Toda had, "a completely organised and definite system of polyandry", i.e., when a man or boy married, it was understood that his spouse was the wife also of his brothers; even those yet unborn; indicating the prevalence of child marriages. However, fraternal type of polyandry was the chief form of marriage among the Todas. The actual origins of polyandry in this community cannot be ascertained but clearly the system was related to the practice of female infanticide and the consequent shortage of women. This has been clearly reflected in the uneven distribution of sex ratios during several decadal census enumerations (Table 1).

In Todas marriage could be terminated at any stage of life and again reunion could be formed with due permission from the '*jati*' council. It is also interesting to note that the fraternal polyandrous unions among the Todas in the past had

Table 1: Size and growth of Toda population over decades since start of census

Year	*Population*			*Sex Ratio*	*Annual exponential*
	Male	*Female*	*Total*	*(F/M)*	*Growth rate (%)*
1901	451	354	805	785	
1911	426	322	748	756	(-) 0.71
1921	360	280	640	778	(-) 1.44
1931	340	257	597	756	(-) 0.67
1941	342	288	630	842	0.55
1951	373	316	689	847	0.94
1961	370	336	706	908	0.25
1971	361	314	675	870	(-) 0.44
1981	428	436	864	1019	2.80
1991	618	614	1242	993	4.25

led them to maintain only joint - extended families. To suit this mode of life, probably Toda society had chosen to go for patri-clan settlements. Today, many of these institutions either have disappeared or dying out rapidly with the increasing contact with Hindu cultures, couples with their increasing participation in education, agriculture and employment. Today, the age old traditions like polyandry and female infanticide are matters of the past customs and traditions and the present generation of Todas feel embarrassed to comment on such practices. However, the older member of Toda community admit that these institutions served them a way of life and they had no other option than to accept them.

The present generation do not show any sign of practicing polyandry type of marriages. The first generation (50+ years) have shown a clear transformation from joint-extended families to the multiple marriages. On the whole, currently the trend is towards monogamous type of marriages and nuclear type of families which means more accountability towards sex, marriage and family establishment. Thus, with the improved life expectancy of the female, the disproportion ratio of the sexes gradually getting diminished and a decreasing trend for polyandry with polygyny is taken place. Thereafter, the combinations of polyandry and polygyny have given way to monogamy which is most common form of marriage now-a-days.

3. Changes in Economic Conditions: Another significant life change that has occurred among the Todas is the economy. Traditionally, Todas were pure pastoralists and depended mainly on buffalo rearing economy. Their life revolved around buffaloes in their socio-cultural milieu. But today, Todas are seen taking up mixed economy by participating themselves in agriculture and other employment. Further, because of their participation in all round development activities of the mainstream population, never before in the past, their age-old customs, traditions and norms are subjected to greater changes which means the Toda of tomorrow would be a contrast to the Toda of yesterday.

4. Demographic Changes in Family Type and Household Size: The other demographic change that has taken place among Todas, is the nuclear family establishment in place of polyandrous joint-extended type. The Toda household of today usually comprises a nuclear family, consisting husband, wife and unmarried children. In the past, however, it means a polyandrous joint-extended family consisting parents, brothers with their offspring and as such all had collective responsibility in maintaining the family. A contrast change occurring among them today is that now the nuclear families take the responsibility of running the household. Monogamy is now both ideal and the norm, although a very few of them maintain polygynous households. Joint families could be very few and they also would break away due to economic reasons.

The data from 150 couples of two generations (Table 2) indicating that in the present generation (20+ to 40+ years), 87% are predominantly nuclear, while 13% of the families are represented by just couples without any children. Whereas in the older generation (50+ years) though the nuclear families are more (42%), yet more families show mixed trends namely, polygynous and joint families (48%). The details of the households of both generations put together shown in table 3. The average size of the household among Todas is 3.93. The distribution of the households reveals that couples with two children are more (35%) and this indicates that families are preferentially and predominantly nuclear and opting to maintain smaller households. A generally unstated but reasonable assumption about such structural trends is that they occur in response to changes in the social and economic landscape of the population. This has distinctly occurred in the Todas. As a result of continued process of demographic transformation the Toda society tends to go for limited

Table 2: Distribution of households according to type of family among Todas

Type of family	*No. of Households*	%
50+ years (1st generation)		
Couples	5	10.00
Nuclear	21	42.00
Joint	24	48.00
Total	50	100.00
20+ years (2nd generation)		
Couples	3	13.00
Nuclear	87	87.00
Total	100	100.00

Table 3: Size of the household among Todas

Household Size	*Number*	*%*
Couple	20	13.33
Couple + 1	19	12.67
Couple + 2	52	34.67
Couple + 3	21	14.00
Couple + 4	20	13.33
Couple + More than 4	18	12.00

Average size of the households = 3.39

number of children with increasing mixed economy, thus effecting changes in marriage, family and economy.

5. Changing Demographic Scenario in Children Ever-born and Surviving by Age: The levels of fertility and mortality through the information on children ever-born and surviving and their associated proportions in terms of two generations are shown in table 4 and 5. Table 4 shows that in the first generation (50+ years ever-married women, however, have 189 children ever-born with an average of 3.78 indicating their large maintenance of ever-born children. While the age-specific fertilities of the second generation women (20+ to 40+ years) show an average of 2.08 children. One interesting feature noticed from the table is that the mean number of children increases with the age, say, 1.50 in the age-cohort of 20-40 years to 3.06 in the cohort group of 35-39 years and thereafter declines. But in the case of 50+ years ever-married women who have completed their reproductive age exhibit a mean number of 3.78 ever-born children. This means that there exists significant differences over the distribution of children ever-born between the ever-married women of two generations.

Table 4: Distribution of children ever-born by age among Toda women

Age group of mothers (Years)	*No. of women*	*No. of children ever-born*	*Mean number of children*
20-24	26	39	1.50
25-29	27	51	1.89
30-34	20	43	2.15
35-39	15	46	3.06
40-44	5	14	2.80
45 +	50	189	3.78
Total	143	382	2.55
Comparing two generations			
20-44	93	193	2.08
45 +	50	189	3.78

Table 5 shows the results of ever-born children and their surviving and consequent proportions. It is clear from the table that the proportion of surviving values of ever-born children decreases with the increase of age of mothers. The surviving proportion (0.9411) is more in 25-29 years age-group followed by 0.9230 in 20-24 years, 0.8604 in 30-34 years, 0.7608 in 35-39 years, 0.7142 in 40-44 years and 0.5185 in 50+ years. This means that less number of deaths have occurred in mothers of young age than the middle and old age mothers. This could be possible as the medical facilities are within the reach of the present generation than the old. This is evident in case of first generation ever-married women where, out of 189 ever-born children only 98 are surviving with surviving proportion of 0.5185, indicating high mortality rate (48%). While in the second generation of ever-married women, out of 193 ever-born children 166 are surviving with surviving proportion of 0.8399 and the mortality rate is only 14%. The survival capacity of a child born to woman of first generation was only 50% while in the second generation woman it is 85%. Further, the first generation women have experienced more births and more deaths of their children, while the second generation women are experiencing limited number of children with less number of deaths. The surviving capacity of the children has increased only in recent times indicating that the Todas are availing all health care facilities that are available besides being advanced in their all round socio-economic development.

6. Birth Control Measures and Consequent Bio-demographic Change: A small population like Toda with merely 1200 individuals need not

Table 5: Distribution of children ever-born and surviving by age of mother among Toda

Age group of mothers (Years)	*Children ever-born*	*Children surviving*	*Surviving proportion*
20-24	39	36	0.9230
25-29	51	48	0.9411
30-34	43	37	0.8604
35-39	46	35	0.7608
40-44	14	10	0.7142
45 +	189	98	0.5185
Comparing two generations			
20-24	193	166	0.8601
45 +	189	98	0.5185

have to adopt any birth control measures preventing the population from growing. Surprisingly it has been found in the present study that as many as 36 women of the age-group between 20-39 years have undergone tubectomy operations to limit their family sizes (Table 6). These 36 women are again from the total sample of 95 in different age-groups which means 38% have restricted their biological fertility through a permanent control method. Among them 20% of the women have undergone family planning measure after two live-births, 15% of them after three live-births and the rest of 3% after four live-births. It is evident from the table that most of the acceptors are from the second generation females, and none from the first generation women. Another interesting observation is that males are not found to use any family planning measures. The reason to adopt the family planning measures in spite of the smallness of their population, the opinion of them is that in general they are more careful to limit their family size with two or three children and take care of them well. However, the first generation women who have already completed their reproductive life are of the opinion that their times were completely different from today. However, they do not object to the ways of life of the present generation due to modernization. However, it needs to be looked into carefully and evolve a suitable strategy whether the use of birth control methods by the Toda people would affect the population negatively, as the size of the population is small and exhibited several times negative decadal growth or registered as slow growth population (Table 1). It may hold good to suggest that the Toda people need not rush for any family planning measures until three children. This would be ideal for a small population like them against all other demographic changes that may exist or set in, in course of time.

Thus, the bio-demographic changes among the Toda, as shown above, have led to significant changes in their bio-social and economic milieu. The practice of polyandry gave way to monogamy type of marriages resulting in nuclear families to earlier joint-extended establishment. The Toda people have now changed over to mixed economy from their traditional pastoralism. Another notable change is the avoidance of the practice of female infanticide which resulted in improvement of the female population and thus made equal or near equal sex-ratios in this population. A significant change is observed in both fertility and mortality rates and in the children ever-born and their survivorship between the two generations mainly due to the availability of advanced health facilities coupled with their all round socio-economic development. With these changes in bio-demography, the Toda tribe may stand as a classic example to highlight the secular trends of population.

Table 6: Tubectomy acceptors among Toda women

Age group	*Sample*	*Number of*	*Mean number*	*Time for tubectomy*	
of mothers	*size*	*acceptors*	*of children*	*No. of live births*	*No. of acceptors*
20-24	30	9	2.00	1	-
25-29	30	18	2.55	2	19
30-34	20	7	3.10	3	14
35-39	15	2	3.86	4	3
40-44	5	-	-	-	-
45 +	50	-	-	-	-

REFERENCES

Bajema, C.J.: *Natural Selection in Human Populations: The Measurement of On-going Genetic Evolution in Contemporary Societies.* John Willy and Sons, New York (1971).

Basu, Amitabha: The Pahira: A population genetical study. *Am. J. Phy. Anthrop.*, **31**: 399-416 (1969).

Cavalli-Sforza, L.L. and Bodmer, W.F.: *The Genetics of Human Populations.* Freeman and Co., San Francisco (1971).

Chagnon, Napoleon: *Studying the Yanamamo.* Hold, Rinehrt and Winston, New York (1974).

Dronamraju, K.R.: Mating systems of the Andhra Pradesh people. *Coldspring Harbour Symp. Quart. Biol.*, **20**: 81 (1964).

Ghosh, A.K.: The Kota of Nilgiri hills: A demographic study. *J. Biosoc. Sci.*, **8**: 17-26 (1976).

Govinda Reddy, P.: Effects of inbreeding on mortality: A

study among three South Indian communities. *Hum. Biol.*, **57**: 47-59 (1985).

Govinda Reddy, P.: Effects of consanguineous marriages on fertility among three endogamous groups of Andhra Pradesh. *Social Biology*, **34**: 68-77 (1987).

Gupta, Satadal Das: Demographic aspects of marriage among the Dule Bagdis of Jainagar. In: *Bio-social Social Studies in India*. Kanti Pakrasi et al. (Eds.), Calcutta, 153-167 (1976).

Haldar, A.K. and Bhattacharya, N.: Fertility and sex sequence of children of Indian Couples. In: *Bio-social Social Studies in India*. Kanti Pakrasi et al. (Eds.), Calcutta, 348-362 (1976).

Kundstadter, Peter: Natality, mortality and migration in upland and lowland populations in Northwestern Thailand. In: *Culture and Population*. Steven Polgar (Ed.), Cambridge, 46-60 (1971).

Merambika Mahapatra, Sachdeva, M.P. and Kalla, A.K.: Demographic profile of Bhattara. Tribal population of Nowrangpur district Orissa. *Anthropologist*, **1**: 133-37 (1999).

Nag, Moni: *Explorations in Anthropology*. Morton Fried (Ed.), Tjomas Y. Crowell Company, New York, 254-273 (1973).

Nag, Moni: Family type and fertility. In: *Bio-social Studies in India*. Kanti Pakrasi et al. (Eds.), Calcutta, 153-167 (1976).

Rakshit, H. K.: The Dorla and Dhurwa of Bastar: A demographic profile. *J. Ind. Anthropo. Soc.*, **7**: 115-128 (1972).

Reddy, K.N.: *Irulas of the Nilgiris: A Study on Anthropological Demography*. Research report of Tribal research centre, Ooty, Tamil Nadu (1985).

Srivastava, M.L.: Some aspects of fertility in a social group of India. In: *Biosocial Social Studies in India*. Kanti Pakrasi et al. (Eds.), Calcutta, 226-236 (1976).

Talukdar, S.: Genetical demography of two Dule Bagdi demes. *Man in India*, **59** (1979).