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Fertility and Mortality Differentials Among the Gujjars of Sub-Himalayan and Himalayan Regions

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ABSTRACT A study pertaining to fertility, mortality, morbidity and the reproductive potentials among the Hindu and Muslim Gujjars of Sub-Himalayan and Himalayan regions, respectively has been carried out in the Northwestern India. Among the Muslim Gujjars of Himalayan regions a higher fertility, crude death rate and morbidity have been observed as compared to the Sub-Himalayan Hindu Gujjars. However, the reproductive wastage is higher among the Hindu Gujjars of Sub-Himalayan regions. The population expansion potentials show that both the populations of Gujjars are not probably at population explosion risk. These findings have been evaluated with reference to population trends in India.

INTRODUCTION

The biological destiny and genetic diversity of a population is dependent upon the influences of socio-cultural and demographic variables such as the type of mating, fertility, mortality, morbidity and the inbreeding effects. The genetical concept of natural selection has emphasized the role of differential fertility and mortality in shaping the composition and structure of human populations. The socio-cultural changes are related to demographic profile in a particular ecological niche and are likely to affect the biological make-up and the functions of a population. The biological variations are also related to the ethnic and geographic background of a population. The subsistence economy of a population has obvious effects on fertility, mortality and prevalent diseases and such other parameters of population structure which directly affect the hereditary characters, their propagation in the successive generations and the selection of particular characters.

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Both the Hindu and Muslim Gujjars inhabit the North-western part of India and originally had a common origin (Balgir, 1983; Balgir and Sharma, 1986, 1988). The exact date of bifurcation and conversion of the Hindu Gujjars to Islam is uncertain, but it is apparent from our previous study (Balgir, 1983) that their different settlements must have been converted to Islam at different times, from 6 or 7th century to 17th century AD. However, a massive forcible conversion took place during the reign of Aurangzeb (1658-1707). The Hindu Gujjars at present are in the Sub-Himalayan (foothills of Shivaliks) regions and the adjoining plains, and practise sedentary agriculture and pastoralism. The Muslim Gujjars are found exclusively in the hills (Himalayan regions) and lead a pastoral, seminomadic and semiagricultural life with seasonal migrations between the low and high altitudes, ranging from 1500 to 2500 metres above sea level, in search of climate conducive to the health of their milch cattle.

Both the Hindu and Muslim Gujjars live in biosocial and geographic isolation and have their distinct gene pools. The Muslim Gujjars practise polygyny, monogamy and consanguinity, the Hindu Gujjars, although observe clan exogamy, the practices of fraternal polyandry in addition

to monogamy, exchange and triangular marriages are also prevalent among them. It is therefore worth-while to compare the feritility and mortality differentials and the population expansion potentials among the two breeding isolates of Gujjars in Northwestern India.

MATERIAL AND METHODS

The study has been carried out among the Hindu and Muslim Gujjars of Ropar district in Punjab and Chamba district of Himachal Pradesh, respectively during the period from February to April, 1979. In the Pir Punjal Range of Himalayas the information for Muslim Gujjars was collected from five villages, namely, Paddar, Proatha, Sra, Qureel and Rajindu. The Hindu Gujjars were the inhabitants of Majrian village and its four hamlets, namely, Jainti Majri, Guhra, Kasauli and Karaundewala in the Sub-Himalayan belt of Shivalik hills, During the demographic survey of these populations, the information regarding the reproductive history of the women was also recorded on the predesigned proforma. The women included in the study were 159 and 197, respectively for Hindu and Muslim Gujjars. The information was collected from women about the marital status, number of times conceived, livebirths, surviving children, abortions, stillbirths, dead children, probable causes of death, etc. Regarding the probable causes of death, the information was recorded as such in the local dialect and the diagnosis was confirmed in consultation with the local Medical Officer of the Sub-health Centre at Sahoo (Chamba) and at Majrian (Ropar), respectively for the Muslim and Hindu Gujjars. The analysis of the data was carried out primarily following the standard procedures (Thompson and Lewis, 1965; Cox, 1976).

RESULTS AND DISCUSSION

Human genetic demography has gradually attained the central position in the biomedical research particularly related to the health, reproduction and disease. The biosocial factors by conditioning the demographic structure and the reproductive behaviour of a deme bring about tremendous changes in the genetic structure which in turn markedly affects the biological evolution. The present study has been focussed on the demographic determinants of the population structure among the Sub-Himalayan and Himalayan Gujjars in the Northwestern part of India.

Fertility

Table 1 shows the fertility pattern of all married women among the Gujjars. It is apparent that the number of livebirths per women as well as per mother is higher among the Muslim Gujjars in comparison to the Hindu Gujjars in both the age groups *i.e.* below 45 years and 45 years above indicating the higher fertility among the Muslim Gujjars.

Table 1: Fertility pattern of all married women among the Gujjars

	Age > 45 years		*Age < 45 years*	
	Hindu Gujjars	*Muslim Gujjars*	*Hindu Gujjars*	*Mulsim Gujjars*
No. of married women	65	44	94	153
No. of issueless women	5	4	22	43
No. of mothers	60	40	72	110
No. of livebirths	247	206	235	402
No. of livebirths per women	3.80	4.68	2.50	2.63
No. of livebirths per mother	4.12	5.15	3.26	3.65

Crude Birth Rate

The crude brith rate (CBR) is a rough estimate of fertility of a population of the Hindu Gujjars, there were 20 children who were less than one year of age and the CBR comes out to be

39.4. Among the Muslim Gujjars, there were 35 children less than one year of age out of 830 population, thereby giving the CBR value of 42.2. The CBR among the Hindu Gujjars was lower than the Muslim Gujjars. The CBR was 34.9 in Himachal Pradesh, 32.0 in Punjab and 34.5 for whole of India in 1974 (Agarwala, 1977). The CBR among the Hindu Gujjars (30.4) was similar to that for the whole Punjab (32.0), whereas, among the Muslim Gujjars (42.2), the rate was on higher side than for Himachal Pradesh (349) as well as for whole of India (34.5). However, Prabha et al. (1981) reported a very high (45.6) CBR among the Hindu Gujjars of Delhi-Uttar Pradesh border villages.

General Fertility Rate

The general fertility rate (GFR) denotes the number of births per thousand women of child bearing age. The GFR was higher among the Muslim Gujjars (187.2) as compared to the Hindu Gujjars (158.7). However, Prabha et al. (1981) reported it as 194 for the Hindu Gujjars of Delhi-Uttar Pradesh border. Among the Hindu Gujjars in the present study, this rate was lower than the Muslim Gujjars (187.2) as well as of Indian average of 174 (Agarwala, 1977).

Both the crude birth rate and the general fertility rate are higher among the Muslim Gujjars as compared to the Hindu Gujjars, This leads to population expansion of Muslim Gujjars at a faster rate than the Hindu Gujjars. The high fertility among the Muslim Gujjars may be attributed to early marriage (Balgir, 1991) and their Islamic orthodox traditions which according to them, do not allow them to use family planning devices to limit their family size. Low fertility among the Hindu Gujjars may partly be attributed to fraternal polyandry. Fraternal polyandry has been shown to relegate a substantial proportion of females to a life outside marital union and markedly reduce over-all fertility (Goldstein, 1976). However, contrary to the present findings on the Mulsim Gujjars, Goldstein et al. (1983) has demonstrated that all high altitude Himalayan populations exhibit moderately high fertility and fecundity and do not differ significantly in their fertility levels from moderate and low altitude populations.

Mortality

Mortality affects fertility including the birth rate. It is a factor which affects the health of the mothers and puts a strain off the National Medical and sanitation resources. Among both the Hindu and Muslim Gujjars, the incidence of death of male children was higher as compared to that of females. However, the over-all proportion of postnatal deaths was similar in both the populations of Gujjars (Table 2).

Table 2: Comparison of reproductive performance of mothers in some Northwest India populations

Population	*Total No. of Mothers*	*Total No. of Conceptions*	*Average Per Mother*	*Surviving Children*		*Abortions/ Miscarriages*		*Still-Births*		*Post-Natal Deaths*		*Source*
				No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	
Sikligars	335	170	4.9	141	82.9	8	4.7	4	2.4	17	10.0	Balgir, 1987
Hindu Gujjars	132	506	3.8	433	85.6	8	1.6	16	3.2	49	9.7	Present Study
Bhoksas	111	513	4.6	383	74.7	7	1.4	2	0.4	121	23.6	Garg et al., 1981
Kashmiri Pandits	127	494	3.9	420	85.0	14	2.8	8	1.6	52	10.5	Ram, 1978
Muslim Gujjars	72	251	3.5	226	90.0	3	1.2	1	0.4	21	8.4	Negi, 1978
Muslim Gujjars	150	617	4.1	551	89.3	4	0.7	5	0.8	57	9.2	Present Study

Crude Death Rate

The crude death rate (CDR) is defined as the number of deaths per 1000 population in a year. The CDR among the Muslim Gujjars (13.3) was slightly higher than that among the Hindu Gujjars (9.1). The CDR is influenced by the level and type of nutrition, incidence and type of diseases and disorders, sanitation, personal hygiene and therapeutic practices (Mukherjee, 1974). The CDR is also dependent upon the breeding practices (WHO Report, 1964). Among the Muslim Gujjars, the coefficient of inbreeding has been recorded to be 0.0387 (Balgir and Sharma, 1988). Thus, among the Mulsim Gujjars, this slightly higher CDR may be attributed to consanguineous marriages, transhumance and various health hazards faced at high altitude as compared to the sedentary Hindu Gujjars of sub-Himalayan regions.

The CDR was lower among the Hindu Gujjars (9.1) as compared to the average of Punjab (10.6), average of India (14.5) in 1974 (Agarwala, 1977) and the Hindu Gujjars of Delhi-Uttar Pradesh border (12.2) (Prabha et al., 1981). Among the Muslim Gujjars (13.3), the CDR was slightly higher than the average for Himachal Pradesh (12.3), but slightly lower as compared to the average of India.

Reproductive Wastage

The reproductive wastage, *i.e.* abortions/miscarriages and stillbirths was more than three times higher among the Hindu Gujjars as compared to that among the Muslim Gujjars (Table 2). The genetic contribiution to reproductive wastage has been well documented especially the incompatibility of blood groups (WHO Report, 1964). The frequency of Rh-negative is quite high among the Hindu Gujjars (12.0%) as compared to among the Muslim Gujjars (8.5%) (Balgir and Sharma, 1988). The Gujjars of the places under study in general lack personal hygiene, sanitation and elementary health education. Moreover, the practice of polyandry among the Hindu Gujjars (Balgir, 1991) make the women more vulnerable or prone to urino-genital infectious diseases which may lead to spontaneous abortions/miscarriages. For example, Leucorrhoea is of common occurrence among the Gujjars. Thus, all these factors contribute significantly to the reproductive wastage among the Gujjars.

Causes of Death (Morbidity)

The idyllic environment of Gujjars does not seem to mellow their sufferings. The biting sarcasm, insanitation, rampant communicable diseases and the scourges like tuberculosis are progressively worsening the Gujjar life in the sacrosanct areas of Sub-Himalayan and Himalayan regions. The lack of elementary health education, neglect of vital segments of women and children, high fertility and mortality languish the lovely children for want of medical facilities in the hills. The following probable causes of death (Table 3) had been recorded among both the groups of Gujjars.

Table 3: Causes of deaths among the Gujjars

Probable causes of death	*Hindu Gujjars*		*Muslim Gujjars*	
	No.	*%*	*No.*	*%*
Measles	4	8.16	2	3.51
Cold and Fever	3	6.12	4	7.02
Diarrhoea & Dysentery	4	8.16	6	10.53
Under-nourishment	1	2.04	2	3.51
Anaemia	3	6.12	5	8.77
Gastro-intestinal pains	7	14.29	5	8.77
Malaria	4	8.16	0	0.00
Typhoid fever	2	4.08	1	1.75
Tuberculosis (TB)	8	16.33	9	15.79
Death during delivery	2	4.08	4	7.02
Leucorrhoea	1	2.04	8	14.03
Bronchial Asthma	9	18.37	7	12.28
Traumatic or accidental	0	0.00	3	5.26
Old age	1	2.04	1	1.75
Total	49	99.99	57	99.99

Among the Hindu Gujjars of the Sub-Himalayan region, the most common causes of death in decreasing order have been listed as below: Bronchial Asthma, Tuberculosis, Gastro-intestinal pains, Diarrhoea and Dysentery, Measles, Malaria, Fever, Anaemia, etc. They live in the same room where the domestic animals are kept. The most common diseases are caused by unhygienic and insanitary way of living which is a ground for breeding and proliferation of the infectious diseases.

The Muslim Gujjars of the Himalayan regions who are mostly devoid of medical facilities due to inaccessible hazardous terrains and dwellings of the steep mountainous region, are prone to the following diseases which take a high toll of life: Tuberculosis, Leucorrhoea, Bronchial Asthma, Diarrhoea and Dysentery (due to parasitic infestations), Gastrointestinal pains, Anaemia, during delivery, accidents, etc. They live in the illventilated *kucha* houses along with the domestic animals.

Population Expansion Potentials

In order to have an idea regarding the future population expansion of these two populations, the following two parameters have been studied here:

Child-Woman Ratio

There were 67 and 146 children recorded between the age group of 0-4 years and the 94 and 148 women (15-44 years), respectively for the Hindu and Muslim Gujjars and the child-woman ratio being 713 and 986, respectively. The child-woman ratio was low in both the populations of Gujjars, but it was comparatively higher among the Muslim Gujjars (986) than the Hindu Gujjars (713).

Net Reproductive Index

There were 159 living women of all ages among the Hindu Gujjars and 197 among the Muslim Gujjars and the surviving daughters being 110 and 213, respectively. The calculation of net reproductive index (NRT) has shown to be 0.69 and 1.08, respectively for the Hindu and Muslim Gujjars. This indicates that the Muslim Gujjars are probably at a growing stage in contrast to the Hindu Gujjars. In other words, the Hindu Gujjars perhaps present a low perspective of population expansion than the Muslim Gujjars.

Both the Hindu and Muslim Gujjars had lower NRI values as compared to the values for India (1.81) in 1971 (Hans Raj, 1978) showing that the Gujjar populations are probably at a less population explosion risk.

The NRI (Table 4) is higher for the Muslim Gujjars in the present study when compared with the findings of Negi (1978). The Muslim Gujjars of Western Uttar Pradesh on which Negi (1978) has worked are probably a localized small group of peoples who had different routes of their migrations and are quite distinct from those of the hill districts under the present study.

Table 4: Net reproductive indices (NRI) among some Northwest Indian Population groups

Population Group	*Locality*	*NRI*	*Source*
Sikligars	Chandigarh	1.67	Balgir, 1987
Hindu Gujjars	Ropar, Punjab	0.69	Present Study
Muslim Gujjars	Saharanpur, Uttar Pradesh	0.63	Negi, 1978
Muslim Gujjars	Chamba, Himachal Pradesh	1.08	Present Study

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REFERENCES

Agarwala, S.N.: *India's Population Problems*. Tata McGraw-Hill Publishing Co. Ltd., New Delhi, 2nd Edition (1977).

Balgir, R.S.: *Demogenetic Investigations Among the Hindu*

and Muslim Gujjars—The Two Breeding Isolates of Sub-Himalayan and Himalayan Region. Ph. D. Thesis, Panjab University, Chandigarh (1983).

Balgir, R.S.: A biodemographic study of the Sikligars of Chandigarh. *J. Assam Sci. Soc., 29:* 32-40 (1987).

Balgir, R.S.: Biodemographic studies among the Hindu and Muslim Gujjars of Northwestern India. *J. Hum. Ecol., 2:* 173-179 (1991).

Balgir, R.S. and Sharma, J.C.: Dermatoglyphic studies among the two breeding isolates of Gujjars of Northwestern India. *Am. J. Phys. Anthrop., 71*: 467-476 (1986).

Balgir, R.S. and Sharma, J.C.: Genetic markers in the Hindu and Muslim Gujjars of Northwestern India. *Am. J. Phys. Anthrop., 75*: 391-403 (1988).

Cox, P.R.: *Demography*. Cambridge University Press, Cambridge, 5th Edition (1976).

Garg, S.K., Tyagi, D. and Sankhyan, A.R.: Reproductive life of Bhoksa women. *Ann. Hum. Biol., 8*: 361-370 (1981).

Goldstein, M.C.: Fraternal polyandry and fertility in a high Himalayan valley in Northwest Nepal. *Hum. Ecol., 4:* 223-233 (1976).

Goldstein, M.C., Tsarong, P. and Beall, C.M.: High altitude hypoxia, culture and human fecundity/fertility: A comparative study. *Am. Anthrop, 85:* 28-49 (1983).

Mukherjee, D.P.: Health, sanitation and therapeutic practices among the tribes. In: *Tribal Heritage of India*. ICSSR Publication, Calcutta (1974).

Negi, R.S.: Population structure of a pastoral nomadic community of Himalaya. Paper presented in the *National Seminar on India Nomads, held during 14-17 February, 1978*. Anthropological Survey of India, Calcutta (1978).

Prabha, S., Chatterjee, M., Dutta, P.K. and Kalla, A.K.: A biodemographic study of the Gujjars of Delhi-U.P. border villages. *Ind. Anthropologist, 11:* 135-142 (1981).

Hans Raj: *The Fundamentals of Demography*. Surjeet Publications, Delhi (1978).

Ram, K.: Reproductive wastage among the Kashmiri Pandits. Paper presented in the Seminar on *Genetical Demography in India, held during 16-18 January, 1978*, Anthropological Survey of India, Calcutta, (1978).

Thompson W.S. and Lewis, D.T.: *Population Problems*. McGraw-Hill Book Company, New York, 5th Edition (1965).

WHO Report: Human Genetics and Public Health. *WHO Tech. Rep. Ser. No. 282, p.* 15-20 (1964).