



S. H. M. RIZVI, P. M. BUZARBARUA

INBREEDING AMONG INDIAN MUSLIMS: A CASE STUDY OF GARIA OF ASSAM, INDIA

ABSTRACT: Data on consanguinity were collected with the help of extended genealogies traced up to three generations from 1930 matings among Garia, one of the Muslim groups, living in the Baniyakuchi area of Sarthabari police station, Barpeta district, Assam, India. The data revealed that out of 1930 matings there are 123 consanguineous marriages, representing a frequency of 6.37 percent of consanguinity within this group. The inbreeding coefficient based on consanguineous matings is 0.0064 ± 0.001 . The data related to reproductive performance of 1930 mothers who have completed their reproductive span, exhibit a decline in number of pregnancies among consanguineous matings (4.80 per mother when compared with non-consanguineous matings where it is 5.40 per mother). Similarly live births per mother are lesser in number among consanguineous matings as compared to the control group derived from the same population living in the same area. Pre-reproductive deaths among live births were found to be high (0.46 percent) among consanguineous Garia Muslims. The present findings indicate increased risk of death to live-borns from unions of consanguineous spouses.

KEYWORDS: Assam — Maria — consanguineous — genealogies frequency — mortality — inbreeding coefficient.

INTRODUCTION

The Assam state lies in the north east of India and is characterized by the presence of tribes, castes and religious minorities. Maria is one of the Muslim groups living in this state since time immemorial. Assamese Muslims — a collective term used for Muslims, which is not a single homogeneous entity but rather a conglomeration of several identifiable, distinctive historical communities which are divided into several historical economic, political and social communities, evolved at different stages of historical development of the state. The word Maria is derived from the Assamese word "mara" (beating). The main occupation of this community had been the making of brass metal utensils by constant beating to bring the

vessel or utensil to shape. Thus the word "mara" was transformed into Maria to refer to this occupational group. According to knowledgeable sources this group is derived from invading soldiers who had come to Assam in 1532 A.D. under the leadership of Turbuk. The latter was defeated by then the Ahom rulers and the accompanying soldiers were made prisoners. Later these soldiers were allowed to pursue their profession within the state and the Maria adopted the profession of making brass metal utensils. At present they are the single largest manufacturers of brass utensils in Assam.

One of the most pronounced cultural traits of Muslims of India, is marriage between cousins. Similarly, the majority of tribes of north-eastern India practice consanguineous marriages. Studies of mar-

riages between close relatives or consanguineous marriages offer the most interesting material for research in human genetics. A consanguineous mating is between two individuals who have one or more common ancestors. The probability of spouses having the same genes is considerably increased in close inbreeding. It has been established that inbreeding tends to bring into the open recessive alleles present in heterozygous carriers. Many harmful traits are recessive and are, therefore, most likely to appear in the offspring of parents who are closely related. Similarly increased risk of homozygosity for such deleterious recessive mutants that occur among the offsprings of consanguineous marriages may result in an increased probability of abortion miscarriages, still births and neonatal deaths. Increased risk of illness, susceptibility to diseases, physical and mental defects are usually directly correlated to various degrees of consanguinity.

In general, Muslim groups in India are characterized by the preference of consanguineous matings as a prescribed and practised form. High frequency of inbreeding has been reported among Asna Ashariya, Shiekh Sunni, Dawoodi Bohra (Rizvi and Roy 1985, Roy 1986), Muslims of Delhi (Basu 1982) and Muslims of West Bengal (Huq 1976). No serious attempt has been made to study consanguinity among groups living in north-eastern India except for a study of the Hmar tribe of Manipur (Rizvi 1988). Therefore a research design has been prepared to study consanguinity among Muslims of Assam, Meghalaya and Manipur where a substantial percentage of this inbred population reside. This preliminary report is based on data collected among Garia Muslims of Assam.

MATERIAL AND METHOD

Data on consanguinity were collected with the help of extended genealogies traced up to three generations from 1930 matings among Garia living in the Baniyakuchi area of Barpeta district, Assam, India. Only those consanguineous matings were considered for analysis which were checked and validated by holding intensive discussion with the members having knowledge of intricate kinship, relationship and places of spouses in the genealogies. Reproductive life cycles of 1930 mothers who have completed their reproductive span, were also recorded. This was done with the aim to find the effects of consanguinity on fertility and mortality including foetal wastage and perinatal deaths. The lacuna in available studies on the effects of inbreeding exists in India since such studies have been generally carried out on the hospital sample, which is not the standardised procedure. Therefore, such studies have thrown up often contradictory results for various reasons. It has been suggested that for evaluation of such effects of inbreeding, a suitable control, preferably from the same gene pool and similar socio-economic stratum, should be delineated.

RESULTS AND DISCUSSION

The results of the analysis of genealogies are illustrated in Table 1. It is evident from the table that out of 1930 marriages there are 123 consanguineous matings thus bringing out the frequency of consanguinity at the level of 6.37 percent.

TABLE 1. Frequency of consanguineous marriages among Garia Muslims.

Type of marriage	Absolute No.	Percentage
First cousin	21	1.09
Second cousin	64	3.32
One and half cousin	38	1.97
Total No. of consanguineous marriages	123	6.37
Total No. of non consanguineous marriages	1807	93.63

Inbreeding Coefficient (FA): 0.0064

The data were further stratified to delineate the degree of consanguinity and comparison with findings on other Muslim groups. It was assessed that out of 123 consanguineous marriages the majority were of second cousin type (3.32 percent) followed by one and half cousin (1.97 percent) and first cousin (1.09 percent). Thus the Garia Muslim differ from other Muslim groups as far as preferential and practised consanguinity is concerned.

The mean inbreeding coefficient for the autosomal trait (FA) has been defined as $\frac{\sum ni(fa)}{N}$ where N is the total number of marriages, ni is the frequency of each type of consanguineous marriages and fa is the inbreeding coefficient for the autosomal trait, that is the probability that two autosomal alleles in the offspring are identified by descent from one common ancestor. The inbreeding coefficient based on consanguineous matings worked out to be 0.0064 ± 0.001 among Garia Muslims.

On reviewing consanguinity data in India we have found that there exist lacunae of information on consanguinity in north-eastern India. The coefficient of inbreeding is found to be the highest in Andhra Pradesh ranging from 0.013 to 0.033, depending upon the social or religious communities studied so far. The coefficient of inbreeding among Hindu in Tamilnadu is as high as that found in Andhra Pradesh. The rates of consanguinity were observed to be low among Desasath and Saraswath Brahmins of Maharashtra, with the coefficient of inbreeding ranging from 0.001 to 0.003 (Sanghvi 1966). However, among Muslims consanguinity rates were found to be high in Memons (27.1 percent), Bohras (26 percent) and Khoja (13 percent).

In Rajasthan Bhalla and Bhatia (1974 c.f. Rizvi and Roy 1984) have found the coefficient of inbreeding among Bhatia of Garhi Dhanauta to be 0.025. In Madhya Pradesh Goswami (1970) has found that the

rate of consanguineous marriages was high among Muslims (59.3 percent), low among Hindu (8.7 percent) and intermediate among Scheduled castes, Harijans and Christians (25 percent to 28.6 percent). The inbreeding coefficient varied from 0.003 to 0.026. The highest incidence (59 percent) of first cousin marriages was reported by Yadav (cf. Basu 1982) among the Gond tribe of Chhindwara district of Madhya Pradesh.

The data related to reproductive performance of 1930 mothers who have completed their reproductive life cycle have been illustrated in Table 2.

TABLE 2. Consanguinity and reproductive life cycle.

Variables	Consanguineous matings		Non-consanguineous matings	
	Absolute No.	Average	Absolute No.	Average
Pregnancies	591	4.80	9758	5.40
Miscarriage & still-births	119	0.97	241	0.13
Live-births	472	3.83	9517	5.27
Infant deaths	57	0.46	193	0.11

From the above data we have found a decline in number of pregnancies among consanguineous matings (4.80 percent) when compared with non-consanguineous matings (5.40 percent). Similarly live births per mother are less (3.83 percent) among consanguineous matings as compared to the control group (5.27 percent) derived from the same population. Pre-reproductive deaths among live-born infants were found to be high (0.46 percent) in consanguineous matings.

The above findings indicate an increased risk of death to live-born children from consanguineous unions. Our knowledge of the effects of inbreeding on fertility, mortality and morbidity is woefully inadequate. Moreover, some of the studies conducted on hospital patients in different parts of the country have shown often contradictory results since neither a suitable control is maintained nor the history of inbreeding is systematically studied while evaluating its effect on fertility, mortality and morbidity. Further, emphasis has not been given to socio-economic concomi-

tants which may also have a bearing upon this phenomenon.

Such contradictory findings have drawn attention towards the need of a carefully designed survey of inbred groups to study the effects of inbreeding not only to collect data with the help of standardised techniques but also to affirm the genetic load that such populations carry from generation to generation. Such information may provide guidelines in determining the nature and extent of health programme for these inbred groups.

REFERENCES

- ALI S. G. M., 1968: Inbreeding and endogamy in Kerala. *Acta Genet. Basel* 18: 369 – 379.
- BASU S. K., 1982: Inbreeding in India – its genetic consequences and implications in health care. In: Samnath Roy et al. (Ed.): *Population Genetics and Health care issues and future strategies*, New Delhi, N. I. H. F. W. pp. 71 – 77.
- GOSWAMI, H. K., 1970: Frequency of consanguineous marriages in Madhya Pradesh. *Acta Genetic. Med. Gemell.* 19: 486 – 90.
- HUQ F., 1976: Consanguinity and inbreeding among the Muslims of Murshidabad and Birbhum districts of West Bengal. *J. Ind. Anthropol. Soc.* 11: 21 – 25.
- RIZVI S. H. M., 1985: Anthropogenetics of Bohra. In: *The Dawoodi Bohra of Rajasthan*. Shibani Roy, New Delhi, B.R. Publishers.
- RIZVI S. H. M., 1986: Consanguineous marriages – a case study of Asna Ashariya of Lucknow. In: B. B. Goswami et al. (Ed.): *Marriage in India*. Calcutta. pp. 84 – 89.
- RIZVI S. H. M., 1988: Study of consanguinity among Hmars of Manipur. In: K. L. Bhowmik (Ed.): *Man*. New Delhi Inter India Publication pp. 251 – 258.
- RIZVI S. H. M., SHIBANI R., 1984: *Muslims Bio-cultural perspective*. New Delhi, B. R. Publishers.
- SANGHVI L. D., 1966: Inbreeding in India. *Eug. Quart.* 13, (4): 291 – 293.

Dr. S. H. M. Rizvi
Anthropological Survey of India
192/1, Kaulagarh Road
Dehra DUN – 248195, India

Dr. P. M. Buzarbarua
Audience Research Officer
All India Radio
Guwahat – 781 001, India