

Effects of Inbreeding on Health among Dhankut – An Endogamous Group of Bahraich, Uttar Pradesh

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ABSTRACT India is characterised by a number of endogamous castes, tribes and religious communities with different types of marriages. Consanguineous marriages are very much prevalent in South India. But it is considered a taboo in North India. In Bahraich district of Uttar Pradesh, a group called Dhankut is practicing consanguineous marriages as their culture for long, which has led to inbreeding. Present paper analyses nature and causes of consanguineous marriages and effects of inbreeding on the health of Dhankut.

INTRODUCTION

Maximum tribal India is engaged in consanguineous marriages. Dhankut also come under this category. It is an endogamous group, living in district Bahraich of Uttar Pradesh (U.P.), which is border district of Nepal. Dhankut is a small population group of 2687 (Census 2001) people, mainly illiterates. This group is known for its queer characteristics of cross cousin and parallel cousin marriages. Gotra system is absent amongst them. They practice matrilineal cross cousin marriages. No written record is available about Dhankut in official gazetteer. They have traditional panchayat system for the dispensation of justice, they worship traditional God "Gullabeer." They have specific physical structure and language and specific sign of marriage - Lac bangle is the sign of marriage where as silver bangle denotes widow hood. They do not come under the category of SC/ST/OBC. They consider themselves to be general group though they are not accepted in four folded caste system. It is neither a service class group, nor an occupational group. They mainly survive on the retail works like grain selling, thela (wood cart) pulling, palledari etc. Dhankut women are mainly engaged in the making of cow dung cakes. Their economic condition is very poor. This group Dhankut is living in transition, which are in search of their identity (Chantia, 2001).

Object of Study

The object of present study is to see the effect of inbreeding on fertility, mortality and morbidity which will help in providing guidelines in determining the nature and extent of health and family welfare programmes for the inbred groups. Besides it will also help in understanding the burden of recessive deleterious genes in human populations.

METHODOLOGY

Present research work was carried out from May 15, 2005 to July 15, 2005 in Dhankutty pura of Bahraich, where Dhankut are living. The Methodology of participant observation and Interview technique were adopted for the purpose. Three hundred adult males and females were interviewed for the data collection randomly.

RESULT AND DISCUSSION

In order to analyse the effect of inbreeding on health, a number of questions were asked regarding extent and causes of consanguineous marriages. Questions were also asked regarding effect of inbreeding on mortality, morbidity and fertility. Analysis of data revealed following facts.

Extent of Consanguineous Marriage

In Indian context, a large number of endogamous castes, tribes and religious communities with different types of marriage practices are living. The pattern of marriages in India is largely

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governed by three important regulations namely-
(a) endogamous (marrying within the group of birth),

(b) exogamy (marrying out) and

(c) consanguineous or Sapinda marriages

Population in southern states of India, that is, Andhra Pradesh, Tamil Nadu, Karnataka, Maharashtra and Karala (Sanghvi, 1966; Dronamraju and Meera Khan, 1963; Ali, 1968; Chakravarty, 1968; Rao, 1978; Bhasin and Nag, 1994) are unique in the occurrence of fairly high frequency of consanguineous marriages. High frequency of consanguinity has also been reported among the Muslims of Delhi, Lucknow West Bengal, (Basu, 1978; Huq, 1976; Bhasin and Nag, 1994) and Dawoodi Bohras of Udaipur (Basu, 1978), Scheduled castes and tribes of Madhya Pradesh, Manipur and Uttar Pradesh (Goswami, 1970; Bhasin and Nag, 1994; Chantia, 2001).

The regulation of consanguineous marriages does not permit marriage between two individuals related through a common male ancestor upto 7th generation of the father's side and 5th generation on the mother's side. The consanguineous regulation has been enforced with great rigidity in the North. But in the South, it is some what relaxed to conform to the prevailing custom of great preference for consanguineous marriage. When Dhankut were asked about the consanguineous marriage they gave following responses-

Table 1: Do you practice consanguineous marriage?

Sex Ratio	Yes		No		Total	
	Nos.	%	Nos.	%	Nos.	%
Male	143	100.0	-	-	143	47.7
Female	157	100.0	-	-	157	52.3
Total	300	100.0	-	-	300	100.0

Table 1 shows the acceptance of consanguineous marriage by Dhankut. Dhankut are living in the middle of the city where such marriage is a social taboo. It is also regarded as sin in North India but still Dhankut are practising such marriages. Why they are practising such marriage is given in Table 2.

Causes of Consanguineous Marriage

Dhankut is an exceptional group because they are living in North India and still practicing consanguineous marriages, which is a taboo in North India. Such marriages are very common in South India leading to high degree of inbreeding, a parallel of which is not found anywhere in the world. Custom, tradition, culture, geographical locations, unavailability of mates, various socio economic factors like dowry, land property, interpersonal relationship between a new bride and her mother-in-law and religious sanctions are the major factors responsible for the practice of consanguinity.

Table 2 shows the reason behind consanguineous marriages among Dhankut. Maximum respondent (141) practice such marriage in order to maintain their community identity. 135 respondent practice such marriage as they have no other alternatives, 11 are in favour of such marriages due to their culture and 35 for saving their own identity. Dhankut are mainly concentrated only in Dhankutty para. Lack of social mobility and poverty makes them aloof from the rest of the society. Since they are not recognised among four folded caste system, nor they are recognised as SC/ST OBC, they find marriage alliances very difficult outside their community, hence they developed the culture of cross cousin and parallel cousin marriages. In order to maintain their personal and community identity, due to culture, lack of other alternative and poverty, Dhankut are practicing such marriages.

Effects of Consanguineous Marriages

Studies of marriages 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 likelihood of spouses having the same genes is considerably increased in close inbreeding.

Inbreeding tends to bring into the open

Table 2: Why do you practice consanguineous marriage ?

Sex Ratio	Due to culture		Absence of alternative		For identity		For community identity		Total	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
Male	4	2.8	62	43.3	7	4.9	70	49.0	143	47.7
Female	7	4.5	73	46.5	6	3.8	71	45.2	157	52.3
Total	11	3.7	135	45.0	13	4.3	141	47.0	300	100.0

recessive alleles present in heterozygous carriers. Many harmful traits are, recessive and are therefore, most likely to appear in the children of parents who are closely related. Many rare diseases controlled by recessive alleles have been or can be discovered through the study of consanguineous marriages. Simultaneously increased risk of homozygosity for deleterious recessive mutants that occur among the offspring of consanguineous marriages may result in an increased probability of abortions, miscarriages, still births, neonatal deaths etc. Increased risk of illness, susceptibility to diseases, Physical and mental defects are usually directly correlated with the various degrees of consanguinity. It is, therefore, of utmost importance to evaluate the effects of inbreeding precisely as a result of consanguineous marriages.

Studies on inbreeding have been largely limited to the investigation of the attributes of the offspring of consanguineous marriages which may be termed as "parental consanguinity" effects. Few data are available (Schull et. al, 1970) on the characteristics of the children born to parents who are themselves the product of a consanguineous marriage – this may be termed as inbreeding effect. The magnitude of consanguinity effect is best measured by the frequency of cousin marriages in a population. Incidence of consanguineous marriages has been discussed by Chakravarti (1968), Basu (1971), Roy Choudhary (1976) and Bhasin and Nag (1994). Table 3 shows the responses of Dhankut towards the effect of inbreeding-

Table 3 shows that majority of the respondents (164) don't know the effect of cross cousin marriage or parallel cousin marriage, where as 106 respondents are not sure about the effect of such marriages. Only 30 respondents are familiar with the effect of inbreeding, these respondents are educated from 10th standard to post graduate level. Maximum Dhankut are illiterate, hence they are unable to correlate marriage with genetic disorders. Dhankut practice such marriages

Table 3: Do you know the effect of Inbreeding?

Sex Ratio	Yes		No		May be		Total	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%
Male	17	11.9	78	54.5	48	33.6	143	47.7
Female	13	8.3	86	54.8	58	36.9	157	52.3
Total	30	10.0	164	54.7	106	35.3	300	100.0

(Table 1) and by participant observation it was noticed that 120 families out of 715 families are issueless. Marriage span in issue less families is from 4 years to 20 years. Other families are having one or two children after that they fail to produce a child.

The offspring of consanguineous marriage may either have undesirable characteristic of normal or even better average constitutions. Such different results are partly due to initial genetic differences in the original mates who may be carriers of unfavourable or favourable recessive genes.

Many studies have been conducted on the effect of consanguineous marriages (Morton 1961 Crown 1958, Sutter and Tabah, 1952; Schull, 1958, 59, 68; Neel and Schull, 1970). These studies show that the rates of morbidity and mortality are increased in the offspring of consanguineous marriages as compared to those of unrelated parents.

Dhankut are illiterate so they are unable to correlate morbidity and mortality with inbreeding but participant observation revealed rate of mortality (Table 4) and rate of morbidity (Table 5) among Dhankut.

Table 4: Rate of mortality in the off spring of consanguineous marriages

Age of group children	Year							
	2003		2004		2005		Total	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%
0-1 yrs	1	16.7	3	50.0	2	33.3	6	100.0
1-2 yrs	-	-	1	25.0	3	75.0	4	100.0
2-3 yrs	1	50.0	1	50.0	-	-	2	100.0
3-4 yrs	1	50.0	-	-	1	50.0	2	100.0

Table 5 shows that mortality rate is high among the offspring of Dhankut which is a small group of 2687 people in total, due to consanguineous marriage. In 2003, 03 children died, in 2004, 05 and in 2005, 06 children died. Present table also reveals that in the age group of 0-1 yrs 6 children died, in 1 to 2 yrs 4, in 2-3 yrs 2 and in 3-4 yrs of age group 2 children died. Thus we notice that during the last three years between 2003-05, 14 children have died in Dhankuttpura of Baharaich.

Table 5 shows that albinism is most frequent among marriage type of MBD among Dhankut other health problems inflicting them is epilepsy

and feeble mindedness. In the present research group 21 are having albinism, 2 are inflicted with epilepsy and 3 with feeble mindedness. Table also shows that rate of morbidity is higher in MBD type of marriages as compared to FSD type of marriages.

Table 5: Rate of morbidity in the offspring of consanguineous marriages

Nature of morbidity type	Marriage	Male		Female		Total	
		Nos.	%	Nos.	%	Nos.	%
Albinism	MBD	8	38.1	13	61.9	21	100.0
Epilepsy	MBD	2	100.0	-	-	2	100.0
Feeble Mindedness	FSD	2	66.7	01	33.3	3	100.0
Total		12	46.2	14	53.8	26	100.0

MBD- Mother's Brother Daughter

FSD- Father's Sister Daughter

Fertility rate is also an important factor for a community but what is the effect of consanguineous marriage on fertility is ambiguous because our knowledge in India of the effects of inbreeding on fertility is woefully inadequate. Findings reported by different authors are not uniform. Studies by Kumar et al. (1967), Murty and Jamil (1972), Basu (1971, 1978), Chakraborty and Chakravarty (1975), Rao and Reddy (1977) and Reddy (1978) among others show that the rates of mortality are increased in the off spring of consanguineous marriages. However, no effect of inbreeding on mortality has been reported by others (Rao and Inbaraj, 1977; Rao, 1977). Higher incidence of congenital malformation are also observed (Murty and Jamil, 1972; Chakraborty and Chakravarti, 1975; Basu, 1978) among the offspring of consanguineous mating. While no significant effect of parental consanguinity on congenital malformation was noted by other authors (Sanghvi et al., 1974; Rao, 1976; Rao and Inbaraj, 1977; Singh, 2000). So far as Dhankut are concerned table given below shows the effect of consanguineous marriage on the rate of fertility. In this table marriages solemnized between 1990-2000, have been taken to see the effect of consanguineous marriage on inbreeding. During the participant observation it was found that there are 120 issueless couple out of 715 families of Dhankut which is the direct effect of consanguinity.

Table 6 shows that during the (1990-2000) fertility rate is not much higher out of 49 couples, 29 (59.2%) couples have no issue, while 11

Table 6: Children born during 1990-2000

No. of children born	No. of couples of Consanguineous marriages	
	No.	%
No children	29	59.2
1 children	11	22.4
2 children	9	10.2
More than 2 children	4	8.2
Total	53	100.0

(22.4%) have only 1 issue, 5 (10.2%) couples have 2 children and only 4 (8.2%) couples have more than 2 children. Researches show that effect on fertility by consanguineous marriages is a controversial point. All the researchers are not unanimous on the point. Mukherjee and Bhaskar (1974), Rao and Reddy (1977), Basu (1978), Reddy (1978) show the effect of consanguineous marriage on fertility in their studies. Whereas Saheb et al. (1978), Rao and Imbaraj (1979), show no effect of consanguinity on fertility.

CONCLUSION

History of inbreeding in a population group ultimately decides the rate of elimination of the deleterious genes (Sanghvi, 1978). In the absence of history of Dhankut it is very difficult to sketch the extent and practice of consanguineous marriages amongst them. But table 2 shows that they started it as their culture, due to absence of alternatives for mating outside their community and to save their personal and community identity. It all generated a recessive gene of albinism, epilepsy and feeble mindedness. Today, Dhankut are living with the burden of recessive deleterious genes with low rate of fertility and high mortality rate of their children.

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