

# Consanguinity among the Muslim Population of Kurnool Town

Shamshad.S<sup>1</sup>, Indira Priyadarsini. A<sup>2</sup>, Shameela. S<sup>3</sup>

<sup>1</sup>Department of Zoology, K.V.R. Government College for Women, Kurnool, Andhrapradesh, India

<sup>2</sup>Department of Botany, K.V.R. Government College for Women, Kurnool, Andhrapradesh, India

<sup>3</sup>Department of Biochemistry, S.K. University, Ananthapur, Andhrapradesh, India

**Abstract:** *In humans, consanguineous marriage is frequent in many populations In India consanguinity was more prevalent among Hindus with 33.5% of consanguineous marriages. In the Muslim community, 23.7% of marriages were consanguineous with an average consanguinity of 0.0160. First-cousin marriage was the most prevalent consanguineous union in the Muslim community. Consanguinity is associated with increased gross fertility, morbidity and mortality. Several genetic disorders, congenital malformations, and reproductive wastage are more frequent in consanguineous marriages. The study was conducted on 500 Muslim families to investigate the frequency of consanguineous marriages and its effects. The families were interviewed and collected the information about the relationship between the husband and wife. Out of 500 families 69 families were consanguineous. Out of them most frequent were first cousin marriages (55) followed by second cousin marriages (8) and distant relative marriages (6). It was also observed that, there were abnormalities like repeated abortions and IUDs in women, and low birth weight, cleft palate, congenital heart defect, and mentally retardation in children.*

**Keywords:** Consanguinity, First cousin, Second cousin, distant relative Marriage, IUD (intra uterine death).

## 1. Introduction

Consanguinity refers to the marriage of parents with a recent common ancestor. Consanguineous mating (inbreeding) is an important phenomenon genetically as it brings about an increase in homozygous genotypes and a decrease in the corresponding heterozygous form. In humans, consanguineous marriage is frequent in many populations. In fact, it has been recently estimated that consanguineous couples and their progeny suppose about 10.4 % of the 6.7 billion global population of the world [1]. First-cousin marriage and other types of consanguineous unions are frequent in a number of current populations from different parts of the world.

Consanguinity is common in several populations of the world though the consanguinity rates vary from one population to another. Furthermore, there is variability between different tribes, communities, and ethnic groups within the same country. Worldwide, wide variations in the consanguinity rates among various ethnic groups have been reported. In European populations the rates are generally less than 0.5%, while in North Africa and southern and western Asian populations 22 to 55% of all unions are consanguineous. In the majority of the US States cousin marriages are illegal under the statutes passed in the 19th and 20th centuries. The practice of consanguineous marriage, or marriage between close biological relatives, shows significant heterogeneity across the world [2],[3]. While such marriages are legal in the Middle East, Africa, the UK and Australia, they are prohibited by law in China, some parts of Europe, and the United States. Prohibitions also vary by religion. While consanguineous marriages are permitted within Islam, Buddhism and Zoroastrianism, they are forbidden by Christian Orthodox churches and require special permission for members of the Roman Catholic Church. The variations in legislative and religious rules are

also reflected in the prevalence of consanguineous marriage across regions. In the western world, consanguineous marriages currently constitute less than 1% of total marriages, but this practice remains widely prevalent in many other places. Estimates range from 30–50% in Middle Eastern countries, 20–40% in North Africa, and 10–20% in South Asia [4], [5], [6],[7],[8],[9]. There is also significant variation within countries. In India for example, the National Family Health Survey 1992- 93 [10] reveals that 16% of marriages are consanguineous, but this varies from 6% in the north to 36% in the south [11]. Some new research also suggests that the practice is growing in popularity in Western countries, particularly in migrant communities [8].

Consanguinity was more prevalent among Hindus with 33.5% of consanguineous marriages and they had the highest average consanguinity ( $\alpha = 0.0333$ ) because the high rate of uncle-niece marriages. In the Muslim community, 23.7% of marriages were consanguineous with an average consanguinity of 0.0160. Muslims avoid uncle-niece marriage because this type of consanguineous union is proscribed by the Quran. First-cousin marriage was the most prevalent consanguineous union in the Muslim community [12].

In the Arabian populations several studies have shown that consanguinity varies between and within each country with a wide range of prevalence. Reports from Saudi Arabia indicated significant differences. Chaleby and Tuma [13] encountered 18-9% consanguinity in hospital visitors compared to 31.4% in obstetrics inpatients [14]. More recently, in a study of 500 females, the consanguinity rate was shown to be 50% in Riyadh [15]. Reports from the other Arab populations also show a high rate of consanguinity, ranging from 10-6% in Bahrain [16] to 56.4% in Iraq [17],

though a more recent report from Bahrain shows a prevalence of 39-4% [18], [19].

Although consanguinity is associated with increased gross fertility, morbidity and mortality are shown to be higher, thus resulting in comparable numbers of surviving offspring in both consanguineous and non-consanguineous matings. Several genetic disorders, congenital malformations, and reproductive wastage are more frequent in consanguineous marriages. Consanguineous marriages were common among Muslim community and also Kurnool city is most populated with Muslim community people and no such study has been taken up by anybody. Hence the present study has been initiated to know the frequency of consanguinity and also to know its effects in the Muslim community.

## 2. Materials and Methods

A cross sectional analytical design was followed to carry out the study. The questionnaire included an enquiry about the family relationship of the husband and wife and the level of consanguinity, if any (that is, first cousin, second cousin, or others). 500 married women of Muslim community were personally interviewed using a structured questionnaire in Kurnool to know the frequency of consanguineous marriages. A family pedigree was drawn for each marriage to know the type of consanguineous relationship involved. Consanguineous marriages were classified by the degree of relationship between the couples as first cousins, second cousins and distant relatives. The data obtained was fed into the computer and compared and contrasted with the rate of consanguineous and non-consanguineous marriages.

## 3. Results and Discussion

From the present study, it is evident that consanguinity is still prevalent in Muslim community of Kurnool town. Of the 500 families, 69 (13.8%) families were found to be consanguineous (Table 1). And Majority of the consanguineous marriage were between first cousins (79.7%), followed by second cousins (11.59%). While 8.69% of the marriages, were among those with more distant relationship. (Table2).

The frequency of consanguinity in the present study was 13.85% which is less than that observed in other studies in South India [20], [21], [22]. This could be attributed to the increasing modernization and education, due to which the chances of such marriages are on the decline. The most frequent type of consanguineous marriage in our study was between first cousins (79.7%). This is comparable to the findings observed in other studies [21], [23], [24]. All the cousin marriages were between cross cousins. No parallel cousin marriages were observed

Our study, however, did not show a significant difference in the number of still births, neonatal deaths and congenital malformations between the consanguineous and non-consanguineous groups. Kulkarni et al [25] found that congenital malformations and still birth rates were significantly higher in offspring born to mothers in consanguineous marriages. The sample size (500) in the present study was not sufficiently large to study the effect of

consanguinity on the stillbirth rate, neonatal mortality and incidence of congenital malformations and genetic disorders. The awareness with regard to the hazards of consanguineous marriages was very low (10 %). Hence, this study suggests that steps should be taken to create awareness among people about the problems of marrying close relatives. It would also be advisable to avoid consanguineous marriages in families where already a child is having any kind of congenital defect.

**Table 1:** showing no. of consanguineous and non consanguineous marriages

S. No	Type of Marriage	Number	Percentage (%)
1	Consanguineous	69	13.8
2	Non consanguineous	431	86.2

**Table 2:** Types of Consanguinity

S. No	Types of Consanguinity	Number (%)
1	First cousin	55 (79.7%)
2	Second cousin	08 (11.59%)
3	Distant relatives	06 (8.69%)

Data in the table 3 shows different kinds of defects observed in consanguineous and non consanguineous marriages. It is clear that number of risks and defects in consanguineous marriages is more (60.8%) compared to non consanguineous marriages (16.9%).

It has been reported that several genetic disorders, congenital malformations and reproductive wastage are more frequent in consanguineous marriages [12]. The risk for birth defects in the offspring of first cousin marriage has been estimated to increase sharply compared to non-consanguineous marriages [26]. In several countries, the occurrence of malignancies, congenital abnormalities, mental retardation and physical handicap was significantly higher in offspring of consanguineous than non-consanguineous marriages [27], [28], [29], which are confirmative to the results in Qatar [30]. In the present study Different kinds of abnormalities was observed in consanguineous and non consanguineous marriages. But frequency of these abnormalities were more in consanguineous marriages (60.8%) when compared to consanguineous marriages (16.9%) which is confirmative to the results in Qatar.

**Table 3:** Types of Defects Observed

Type of relationship	Defects	No.
Consanguineous	Repeated abortions	03
	Still births	06
	Abortions	03
	Deaf mute	03
	Low birth weight	09
	IUD	03
	Cleft palate	03
	Congenital heart defect	09
	Mentally retarded	03
	<b>Total</b>	<b>42 (60.8%)</b>
Non Consanguineous	Repeated abortions	35
	Still births	10
	Abortions	10
	Deaf mute	03
	Low birth weight	06
	IUD	09

	Cleft palate	-
	Congenital heart defect	-
	Mentally retarded	-
	<b>Total</b>	<b>73 (16.9%)</b>

#### 4. Conclusion

Consanguinity plays an important role in determining some of the aspects of reproduction and health of newborns. This study shows incidence of certain diseases in consanguineous couples and that in a population with a high rate of consanguinity, there is a significant increase in the prevalence of common adult diseases such as mental disorders, heart diseases, congenital abnormalities.

#### 5. Acknowledgements

I am very much grateful to UGC for funding the project under minor research project scheme MRP-4812/14(SERO/UGC).

#### References

[1] Bittles AH, Black ML. The impact of consanguinity on neonatal and infant health. *Early Hum. Dev.* 2010; 86:737-741. doi: 10.1016/j.earlhumdev.2010.08.003.

[2] Bittles, A.H. (1994) The role and significance of consanguinity as a demographic variable. *Population and Development Review* 20, 561-584.

[3] Bittles, A. H. and Hussain, R. (2000). An analysis of consanguineous marriage in the Muslim population of India at regional and state levels. *Annals of Human Biology* 27: 163-171.

[4] Kapadia, K.M., 1958. *Marriage and Family in India*. 2<sup>nd</sup> Edition. Bombay: Oxford University Press.

[5] Naderi, S.: Congenital abnormalities in newborns of consanguineous and non consanguineous parents. *Obstet. Gynaecol.*, 53: 195 (1979).

[6] Maian A and R Mushtaq (1994), "Consanguinity in population of Quetta (Pakistan): A preliminary study", *Journal of Human Ecology* 5: 49-53.

[7] Hussain, R., and Bittles, A.H. (1998). The prevalence and demographic characteristics of consanguineous marriages in Pakistan. *Journal of Biosocial Science* 30, 261-275.

[8] Bittles AH (2001), "Consanguinity and its relevance to clinical genetics", *Clinical Genetics*, 60: 89-98.

[9] Bittles AH (2008), "A community genetics perspective on consanguineous Marriage common Genet 11: 324-330

[10] IIPS, 1995. National Family Health Survey, India 1992-1993. Bombay, International Institute for population Sciences, 402 P.

[11] Banerjee SK and TK Roy (2002), "Parental Consanguinity and Offspring Mortality: The Search for Possible Linkage in the Indian Context" *Asia-Pacific journal* 17 (1): 17-38.

[12] Bittles, A.H., Mason, W.M., Greene, J., and Appaji Rao, N. (1991) Reproductive behavior and health in consanguineous marriages. *Science* 252, 789-794.

[13] Chaleby K, Tuma TA. Cousin marriages and schizophrenia in Saudi Arabia. *BrJ Psychiatry* 1987;150:547-9.

[14] Saedi-Wong S, Al-Frayh RA, Wong NYH. Socio-economic epidemiology of consanguineous mating in the Saudi Arabian population. *J Asian Afr Studies* 1989;24:247-51.

[15] Al-Hussein M, Al-Bunyan M. Rate of consanguineous marriages in Saudi population. *Symposium on Medical Genetics in the Setting of Middle Eastern Populations, Riyadh, 1993A.*

[16] El-Shafei A, Rao PSS, Samdhu AK. Congenital malformations and consanguinity. *Aust NZJ Obstet Gynaecol* 1986; 26: 168-72.

[17] Hamamy HA, Al-Hakkak ZS. Consanguinity and reproductive health in Iraq. *Hum Hered* 1989;39:271-5.

[18] Hafez M, El-Tahan H, Awadalla M, El-Khayat H, AbdelGafar A, Ghoneim M. Consanguineous matings in the Egyptian population. *J Med Genet* 1983;20:58-60.

[19] Al-Arrayed S. Consanguinity in the State of Bahrain. *Symposium on Medical Genetics in the Setting of Middle Eastern Populations, Riyadh, 1993A*

[20] Surender S, Prabakaran B, Khan AG. Mate selection and its impact on female marriage pregnancy wastages and first child survival in Tamilnadu, India. *Social Biology*, 1998, 45(3-4): 289-301.

[21] Rami Reddy V. Papa Rao A *Acta Genetics Medicine Gemellol (ROMA)*, 1978, 27: 89-93.

[22] Dronamraju KR, Meera Khan P. The frequency and effects of consanguineous marriages in Andhra Pradesh. *J. Genetics*, 1963, 58: 387-401.

[23] Verma IC, Prema K, Puri MK. Health effects of consanguinity in Pondicherry. *Indian Pediatrics*, 29: 685-691

[24] Asha Bai PV, John TJ, Subramaniam VR. Reproductive wastage and developmental disorders in relation to consanguinity in South India. *Tropical Geographical Medicine*, 1981, 33(3): 279-90.

[25] Kulkarni ML, Kurian M. Consanguinity and its effect on growth and development: A South Indian study. *Journal of Medical Genetics*, 1980, 27(6): 348-52.

[26] Stoll C, Alembik Y, Roth MP, Dott B. Parental consanguinity as a cause for increased incidence of births defects in a study of 238,942 consecutive births. *Ann Genet.* 1999; 42(3):133-9.

[27] Bener A, Abdulrazzaq YM, al-Gazali LI, Micallef R, al-Khayat AI, Gaber T. Consanguinity and associated socio-demographic factors in the United Arab Emirates. *Hum Hered.* 1996; 46(5):256-64

[28] Bener A, Hussain R. Consanguineous unions and child health in the State of Qatar. *Paediatr Perinat Epidemiol.* 2006; 20(5):372-8.

[29] Abdulrazzaq YM, Bener A, al-Gazali LI, al-Khayat AI, Micallef R, Gaber T. A study of possible deleterious effects of consanguinity. *Clin Genet.* 1997; 51(3):167-73.

[30] Bener A, Hussain R, Teebi AS. Consanguineous marriages and their effects on common adult diseases: studies from an endogamous population. *Med Princ Pract.* 2007b; 16(4):262-7

#### Author Profile

**Dr. S. Shamshad** received the Ph.D degree (zoology) from Osmania University, Hyderabad in 2008 and M.Ed from Dr. B.R. Ambedkar University, Hyderabad in 2011. She had her post

graduation(zoology,with molecular biology specialization) from S.V.University in 1995 , M.A (English) from Dr B.R.Ambedkar open university in 2004 and B.Ed from IASE ,Kurnool in 1995. She is now working as Zoology lecturer at KVR Govt. College for Women, (Kurnool dist), AP, India.She is a member of board of and paper setter (zoology) for Osmania college (autonomous) ,Kurnool.At present she is doing a minor research project funded by UGC.SERO,Hyderabad.