REPRODUCTIVE HEALTH EFFECTS OF CONSANGUINEOUS MARRIAGES IN KHYBER PAKHTUNKHWA

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ABSTRACT

Objectives: To explore the health effects of consanguinity in particular the pregnancy outcome, infant mortality and congenital malformations in Khyber Pakhtunkhwa.

Material and Methods: Present study was carried in Gynae "B" Labour Room / Gynae "B" ward Khyber Teaching Hospital from November 2013 to April 2014. Two hundred cases including 100 consanguineous and 100 non consanguineous patients as control, representative of all geographic locations in KPK were randomly selected to find out the relationship of reproductive health problem with consanguinity. This study indicates a predominant public health problems associated with cousin marriage and a need for specific genetic counseling.

Results: A total of 200 cases were studied, 100 in the consanguineous and 100 in the non-consanguineous marriage group. Main outcome measures were health effects of consanguinity in terms of pregnancy outcome including live births, abortion and still births, infant mortality and congenital mal formations. In the first group abortions were 11% as compared 3% in the 2nd group intrauterine deaths were 7% in the consanguineous group and 2% in the non-consanguineous group. Congenital malformations were 12% in the consanguineous and only 1% in the non-consanguineous marriage group. The infantile death rate was also high in consanguineous group being 7% as compared to 2% in the non-consanguineous group.

Conclusion: Consanguinity marriages has a detrimental effect on many aspects of reproductive health in Khyber Pakhtunkhwa.

Key Words: Consanguinity, reproductive wastage, infant mortality congenital malformation.

INTRODUCTION

Consanguinity is a term that is derived from two latin words "Con" meaning common or of the same, and "sanguineous" meaning blood. Hence referring it to a relationship between two people who share a common ancestor or blood[1,2,3]. In other words consanguineous marriages refer to unions contracted between biologically related individuals. In clinical genetics consanguineous marriage means union between couples who are related as second cousin or closer[4,5]. Uncle neice marriage is prohibited in Islam and so is absent in my study population. The biological effects of consanguineous marriages have been studied extensively throughout the world and there has been a constant discussion in literature regarding the relationship of reproductive health problem and consanguinity[6,7,8].

Consanguineous marriages have been practiced since the early existence of modern humans[9]. At present 20% of world population live in communities with a preference for consanguineous marriage[10]. In Morocco, a study indicated an increasing consanguinity rate from the previous (21.5%) to the present (25.4%) generation[11] while another study showed a declining rate[12].

It is generally accepted that the social advantages of consanguinity outweigh the disadvantages and consanguinity is regarded as a deeply rooted cultural trend. It is believed that consanguinity has significant social and economic advantages[13].

The effects of consanguinity on such parameters as fertility, infant and child development are well known and have been studied in American[14], Japanese[15] and Indian[16] populations. Congenital malformation related mortality has recently been studied in Europeans and Pakistani settled abroad. The main impact of consanguinity however is an increase in the rate of homozygotes for autosomal recessive disorders[2]. This study reports the effects of consanguineous marriage on the prevalence of congenital malformations, fetal wastage and infant mortality in KPK.

MATERIAL AND METHODS

This comparative study was carried out from November 2013 to April 2014 at Gynae "B" unit, Khyber Teaching Hospital, Peshawar, Pakistan. A sample of 200 cases including 100 consanguineous and 100 non-con-

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sanguineous cases as control group representative of all population groups and all geographic locations of KPK were randomly selected. A proforma designed specially used was to explore each of the objectives set for the study. All 200 cases were interviewed and detailed history was taken regarding the age, parity, consanguinity, degree of consanguinity outcome of the present and past pregnancies and family history of any bad outcome of pregnancy. Pregnancy outcome included either a full term or premature live birth or reproductive wastage i.e. still birth or abortion. Infant mortality was defined as death of infant before one year of age. The study of congenital malformation was not intended to establish causality but the relationship of consanguinity and congenital malformations as reported by the mother. A pediatrician experienced in congenital malformations reviewed and checked the list of reported malformations. ASD, Neural tube defects, hydrocephalus, esophageal atresia were accepted for analysis. Completed proforma were reviewed before data entry. Data analysis was carried out using SP SSX statistical package. Significance tests were performed wherever appropriate.

RESULTS

There were 100 pregnant women in the consanguineous marriage group and 100 in the non-consanguineous marriage group. Mean age was 26.2 years in the consanguineous and 24.5 years in the non-consanguineous marriage group.

In the consanguineous group, 67 women were primigravidae. There were 85 women with first cousin marriage and the remaining 15 with second cousin marriage. Six women presented with incomplete first trimester miscarriage while 5 had missed miscarriage as shown in Table 1. Seven women presented with intrauterine fetal death out of which 3 were preterm and four term fetuses. There were 12 cases of congenitally anomalous babies. Two women had polyhydramnios and 3 oligohydramnios. There were 5 early neonatal deaths. Four women had past history of intrauterine

Table 1: Demographic Characteristics of Consanguineous and Non Consanguineous groups

	Consanguineous group	Non-Consanguineous group
Age (years)	Mean= 26.2	Mean = 24.5
Parity	Primigravidae: 67 Multigravidae: 33	Primigravidae: 59 Multigravidae: 41
Duration of marriage (years)	Mean = 2.2	Mean= 2.9
Period of Gestation (weeks)	36.2	37.1

Table 2: Types of Congenital Anomalies in Consanguineos Marriage Group: (Total Cases=12)

Congenital anomaly	Number of cases
Hydrocephalus with spina bifida	7
Cleft palate	2
Polycystic kineys	1
Skeletal dysplasia	1
Fetal Hydrops	1

Table 3: Comparison of pregnancy outcome in Consanguineous Marriage Vs Non-Consangiuineous Marriage Group

Outcome	Consanguineous marriage (No. of women)	Non-Consanguineous marriage (No. of women)
First Trimester miscarriage	11	3
Second Trimester miscarriage	4	1
Intrauterine fetal death	7	2
Congenital anomalies	12	1
Ealy neonatal death	5	2

fetal death, 6 had first trimester miscarriage, 4 had second trimester miscarriage, 2 had infantile death and 7 had neonatal death. Six women had past history of congenitally anomalous baby with hydrocephalus in 3 cases, cleft palate in 1, cardiac problem in 1 and mentally retarded baby in 2 cases as shown in Table 2.

In the non-consanguineous group there was only one case of congenital talipesequinovarus. There were 2 intrauterine fetal deaths, one still birth and two early neonatal deaths. There were 3 cases of first trimester miscarriage. Past history in this group revealed intrauterine fetal death in only one woman, first trimester miscarriage in 2 and congenital heart disease in one case as shown in Table 3.

DISCUSSION

In the present study we investigated the effect of consanguineous marriage on reproductive performance in terms of fetal loss, infant mortality and congenital malformations. We showed increased mortality during infancy, increased rate of fetal loss and increased rate of congenital malformations.

Japanese researchers were the first to draw attention to the health effects of consanguinity[17]. In our study there was significant difference in abortion

rate between consanguineous (11%) and non-consanguineous (3%) groups. Comparison of several studies seems to indicate that the effect of consanguinity on abortion may differ with locality. Some studies support our findings[18-20], while others found that abortions were not significantly affected by consanguinity[21].

With regard to intrauterine fetal deaths our study showed that intrauterine deaths were more common in the consanguineous group (7%) as compared to non-consanguineous group (2%). Sami A Khoury and Diana F. Massad showed in their study a statistically significant difference in still births between consanguineous andnon-consanguineous relationships[22]. Similarly Neonatal deaths, infantile deaths are also higher in the consanguineous group, 5% and 2% respectively as compared to non-consanguineous marriage group (2% and non-respectively). This finding was supported by bivariate analysis using data collected in the 1992-1993 Indian national family health survey (IN FMS) and the 1990-1991 Pakistan demographic and Health survey. In both countries bivariate analysis indicated that mortality was significantly increased in the off springs of 1st cousin unions during the neonatal, post neonatal total infant and under 5 years periods. The findings were confirmed by multivariate analysis which incorporated control for a range of biological and demographic factors[23].

Women in the consanguineous marriage group in their past obstetrical history had also higher rates of intrauterine deaths (4 versus none in the non-consanguineous group), Miscarriage (6 versus 2 in the non-consanguineous group). Data for comparison in the past obstetrical history was was not available.

Congenital malformations seen in our study were Hydrocephalus, cleft palate, Poly cystic kidney disease, skeletal dysplasia and fetal hydrops while in non-consanguineous group only one congenital telepesaquinovarous was found. The overall prevalence of congenital malformations in children of related parents was 12% and in non-related parents was 1% only. Similar results were shown by M.A. Hashmi in a hospital based study which showed a prevalence of congenital malformations in children of related parents to be 40% and in non-related parents 26%[24]. The higher percentage is due to larger sample size. Similar results about congenital malformation were shown by many studies[1,4,22].

CONCLUSION

Consanguinity has a detrimental effect on many aspects of reproductive health.

RECOMMENDATIONS

Research on consanguinity is considered a priority in societies with high consanguinity rates like Khyber Pakhtunkhwa (Pakistan) to help understand and prevent the deleterious impact of consanguinity on health and to provide standardized and evidence base guidelines for health care providers to assist them in counseling for consanguinity.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Bokhari N: Conceived, planned, manuscript writting.

Gillani S: Helped in topic selection and literature review.

Khalil GHK: Literature review.

Akhtar S: Analysis of data.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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