Asian Pac. J. Health Sci., **2016; 3 (2):69-77** **e-ISSN: 2349-0659, p-ISSN: 2350-0964**

The study of impact of consanguinity on frequency pattern of fertility and congenital malformation

Charulata V Pandit

Assistant Professor, Department of Community Medicne , Bharatiya Vidyapith Medical college , Sangli, Maharashtra,India

ABSTRACT

Aim: To study the impact of consanguinity on frequency pattern of fertility and congenital malformation. **Materials and Methods:**. This area is field practice area of Hospital post partum programme of Indira Gandhi medical college. The locality is predominantly occupied by Muslims and a small representative part Ansarnagar having the population of about 5000 was surveyed.**Results:** The distribution of population and the couples according to exposure factor i.e. consanguinity.41% of the couples and 48.16% of population was from consanguinus or exposure group while 59%of couples or 51.84% of population was nonconsanguinous. Z=0.558 (p>0.05) which is not significant for pregnancies by current age of wives, for number of abortions by current age group, Z=2.41 (p<0.05) which is significant. Mean number of abortions in consanguineous group were 0.4 and 0.1 in nonconsanguinous group. The difference is statistically significant, Z = 2.41 (p< 0.05).Z = 6.51 P > 2.58 (P < 0.01) which is highly significant. The above table shows the distribution of mothers according to current age and pregnancies resulting in to stillbirths. It shows Z = 1.93 (P > 0.05) which is not significant.Z = 1.75 (p > 0.05) which is not significant for under five mortalities. It shows Z = 2.99 P < 0.01 which is highly significant for a number of congenital malformations per age at the time of delivery.The mean rate of malformations found to be 18.26/1000 in exposed group and 4.1/1000 live births in nonexposed group. **Conclusion:** The present study was undertaken in locality for studying the impact of consanguinity on fertility and child health.The distribution of population and the couples according to exposure factor i.e. consanguinity.41% of the couples and 48.16% of population was from consanguinus or exposure group while 59%of couples or 51.84% of population was nonconsanguinous.
Key words: Consanguinus, Nonconsanguinous, Congenital malformation.

Introduction

Hereditary asset is a gift but hereditary disease is a menace to the child. The single gamete nucleus contributed by parent to each off spring is too small to be visible to the unaided eye.Yet this extremely narrow bridge is the only physical link between parents and offspring's and across it everything must pass which is transmitted from one generation to the next.Muller has estimated that all the spermatozoa from which the present population of the world arouse would have no greater bulk than an ordinary aspirin tablet. Consanguinity occurs when a pair of individuals with one or more common ancestors in their peadigree is related. In the ancient Royal families of Egypt, it was customary for cousins or even brothers and sisters to marry each other in order to keep royal blood pure. Several studies have shown that among the off spring of consanguineous marriages, there is an increased postnatal mortality rate and an increased frequency of congenital abnormalities and mental retardation. Unless a common ancestor occurs within the last few generations the genetic linkage he brings to two descendants trivial and can be neglected. Progeny of consanguineous mating are inbred. The main consequence of inbreeding is the increased homozygosity in offspring of consanguineous mating's. This occurs for each locus regardless of the phenotypic effects of that locus. Many deleterious recessive genes occur in human populations. Consanguinity results in an increase in the fraction of both kinds of homozygotes in the population with a decrease in heterozygotes. Therefore, one is concerned with consanguinity, in man primarily from the stand

**Correspondence*
Dr.Charulata V Pandit
Assistant Professor, Department of Community Medicne , Bharatiya Vidyapith Medical college , Sangli, Maharashtra,India

point of the increased likelihood of progeny being homozygous,for undesirable recessive traits.It is in fact a well-known phenomenon that has put consanguinity in general disfavour.Inbreeding is an important tool in plant and animal improvement because it purges a stock of these undesirable recessives.Following formation of a large number of inbred Ines which have become homozygous for the desirable genes and thus breed true for them can be maintained at the expense of those homozygous for undesirable genes.Inbreeding makes a stock homozygous for good genes just as often as for deleterious ones. Environmental factors are probably more important than genetic factors. It is true to say that it is uncommon for heredity or environment to be entirely responsible for any particular trait or disease. There are many recognized causes of congenital abnormalities; some can be accounted by infections contracted during pregnancy, others to drugs ingested during pregnancy, maternal exposure to radiation or maternal disease. Many other congenital abnormalities. Though it is not possible to assess the individual liability to a particular disease, it is possible to estimate how much of the aetiology can be ascribed to genetic factors ,as opposed to Heritability. It is a proportion of the total variation of the character attributable to genetic as opposed to environmental factor. The heritability can be calculated from the known incidences of a particular condition in relatives and in the general population. Consanguineous marriages predispose to the birth of infants with hereditary disease, such infants experience unduly high mortality in first few years of life. The human spermatozoa and ovum have a set of pairs of 23 chromosomes each and one of which is the sex chromosome "x" or "Y" The parents of affected individuals are often related. The reason being that cousins are more likely to carry the same genes, because they receive them from common ancestors. Infact the chance that first cousin will carry the same gene is 1 in 8.In the unrelated it is much less than 1 in 8.To a rough approximation the precise aetiology of congenital malformation remains unclear. we can not hope to develop sound programme to preventive measures or define the limits within which preventive measures will have to operate without a better understanding of aetiology. It is clear that etiology of congenital diseases is complex and heterogeneous.A variety of congenital defects of vision and hearing or mental deficiency are readily missed at birth.There has been need for series of children followed well in to the childhood.Relatively few major developmental mechanisms or process in the embryo account for normal morphogenesis. These developmental mechanisms are subjected to biochemical regulation at the level of cellular interactions, synthesis of precursors, transcriptional translational machinery and post translational assembly.These regulatory mechanisms of developmental process are the likely sites of modification by factors inducting congenital malformation.Central nervous system malformations are most easily diagnosed and efficiently recorded at the time of birth.After the concurrence of an index case in a family the risk of having another child affected by anencephaly or spina bifida is 5% substantially higher than the risk in the general population.The rate is higher in Monozygotic twin than in Dizygotic.Since genes of each parent are equally dispersed among their children at conception,the association is taken to suggest an environmental aetiology.Hence in order to assess the impact of consanguinity on fertility pattern pregnancy wastage and mortality and morbidity (congenital defects) in offspring present study was undertaken.

Materials and methods

The present study was carried out in Indira Gandhi medical college. This area is field practice area of Hospital post partum programme of Indira Gandhi medical college. The locality is predominantly occupied by Muslims and a small representative part Ansarnagar having the population of about 5000 was surveyed. Period of study from April 2014 to April 2015.Study consisted of 2 stages. At first stage rapid house to house survey was carried out to assess the extent of consanguinity in the area and for designing the sampling frame. All couples were enumerated, and information regarding age, occupation, address and history of consanguinity in the couple and their parents gathered during this survey. This survey provided the sampling frame and idea regarding the consanguinity in this area. The pattern of consanguinity also could be studied from the information collected. The prevalence of consanguinity as worked out in stage 1 was 41%. At second stage sample size is estimated. Relative risk for infant mortality is 2.66 is 5% and relative precision 35% while 'z' is standard normal variate. The finite population correction factor was applied. The estimated sample size worked out to be 281.These consanguineous couples form the exposed group of the present study. For meeting an allowance for no response all the couples 328, consanguineous numerated in stage-1 survey were include in the study. The couples without consanguinity form the non exposed group.They were selected from the same population from the same sampling frame. However instead of selecting them randomly a purposeful selection was made for avoiding confounders. E.g. Age

of the mother which has a direct relationship with congenital malformations. Thus for each consanguineous couple a non-consanguinous couple was selected in which the age of the wife was in the same five year of age group range of age in wife of consanguineous couple. Thus the total exposed and unexposed group consisted of 328 number of couples. At next stage the pretested proforma was used for collecting data on this study population the information was collected regarding demographic factors, details of consanguinity, fertility performance of wife which their out come.A detail clinical examination of the couple and the living children was carried out. If there was a childhood death, the enquiry was made in to the possible cause of death. Details about the obstetric history was asked. It comprises of age at first conception, total number of pregnancies number of abortions and still birth. Then information on birth control and family planning was collected. A detailed clinical examination of all family members was carried out and any congenital mal formation if present was recorded. Patients requiring further investigation or treatment were referred to the concerned for investigation and follow up. The data thus collected is analyzed.

Results:

Table 1: Total population surveyed, pattern of consanguinity, distribution of couples according to current age of wives

Group	No. of couples	Total population	Percentage
Consanguinous	328	1830	48.167%
Nonconsanguinous	472	1970	51.842%
Total	800	3800	
Pattern of Consanguinity			
Pattern	Number of Couples		Percentage
Cousins	315		96.06%
Uncle with niece	9		2.74%
Step Brother with step sister	4		1.219%
Total	328		
Distribution of couples acc. to current age of wives			
Age (in years)	No. of couples in consanguineous group		No. of couples in non-consanguineous group	
15-19	5	1.52%	5	1.52%
20-24	75	22.86%	75	22.86%
25-29	90	27.43%	90	27.43%
30-34	88	26.82%	88	26.82%
35-39	40	12.9%	40	12.9%
40-44	20	6.09%	20	6.09%
≥45	10	3.04%	10	3.04%
Total	328		328	

The above table shows the distribution of couples in various age groups. Above more than 2/3 of couples (77.11%) were in the age group of 20-34 yrs.

Table 2: Pregnancies by current age of wives, Number of abortions by current age group

Pregnancies by current age of wives				
Age (in years)	No. of couples in consanguineous group	Rate/women	No. of couples in non-consanguineous group	Rate/women
15-19	4	0.8	5	1
20-24	166	2.21	160	2.13
25-29	336	3.7	297	3.3
30-34	425	4.8	365	4.1
35-39	248	6.2	223	5.5
40-44	137	6.8	130	6.5
≥45	82	8.2	60	6

Total	1398	4.26	1240	3.78
Number of abortions by current age group				
15-19	---	---	1	0.2
20-24	17	0.2	3	0.04
25-29	45	0.5	16	0.1
30-34	56	0.63	11	0.37
35-39	22	0.55	15	0.2
40-44	9	0.45	4	0.3
≥45	13	1.3	3	---
Total	162	0.4	53	0.1

Table 2 shows Z=0.558 (p>0.05) which is not significant for pregnancies by current age of wives, for number of abortions by current age group, Z=2.41 (p<0.05) which is significant.Mean number of abortions in consanguineous group were 0.4 and 0.1 in nonconsanguinous group. The difference is statistically significant, Z = 2.41 (p< 0.05).The above table shows the distribution of mothers according to current age and pregnancies terminated in to abortion.\

Table 3: Number of still births by current age group and number of live births by current age group

Number of still births by current age				
Age (in years)	No. of couples in consanguineous group	Rate/women	No. of couples in non-consanguineous group	Rate/women
15-19	---	---	---	---
20-24	3	0.03	3	0.03
25-29	17	0.18	6	0.06
30-34	26	0.29	1	0.01
35-39	14	0.35	6	0.15
40-44	1	0.05	3	0.15
≥45	1	0.1	0	---
Total	62	0.189	19	0.057
Number of live births by current age group				
15-19	2	0.4	3	0.6
20-24	148	109	155	2.06
25-29	274	3.04	275	3.05
30-34	343	3.8	211	2.3
35-39	212	5.3	202	50.5
40-44	127	6.3	123	6.1
≥45	68	6.8	57	5.7
Total	1174	3.5	1026	3.1

Table 3 shows Z = 6.51 P > 2.58 (P < 0.01) which is highly significant. The above table shows the distribution of mothers according to current age and pregnancies resulting in to stillbirths. It shows Z = 1.93 (P > 0.05) which is not significant. The above table shows number of livebirths in both exposed and unexposed groups and rate per woman.

Table 4: Under five mortalities and number of congenital malfunctions as per age at the time of delivery

Under five mortalities				
Age	consanguineous group	Rate/1000	Non-consanguineous group	Rate/1000
Early neonates (7 Days)	7	5.962	1	0.9
Late neonates (7-28 days)	25	21.294	12	11.695
Infant	45	38.330	33	32.163
1-4 years	2	1.70	5	4.8
Total	79	67.29	51	49.70

Number of congenital malformations per age at the time of delivery				
15-19	---		---	
20-24	1		1	
25-29	11		---	
30-34	6		---	
35-39	1		1	
40-44	1		2	
≥45	---		---	
Total	20	6.09%	4	1.21%

Table 4 shows Z = 1.75 (p > 0.05) which is not significant for under five mortalities. It shows Z = 2.99 P < 0.01 which is highly significant for a number of congenital malformations per age at the time of delivery.

Table 5: Risk of stillbirth, Abortion, Under five Mortality and congenital Malformations in study groups

Under five mortalities					
	consanguineous group	Non-consanguineous group	Relative risk	Attributable risk	Population attributable risk
Abortion	115.879	42.74	2.71*	63	0.26
Still Birth	44.34	15.32	2.89**	65	0.27
Under five mortalities	67.291	49.707	1.29	22	0.09
Congenital Malfunctions	17.035	3.898	4.37**	77	0.32
Pattern of congenital malformation in exposed and non exposed groups					
Cleft lip	5	4.566	0	---	
Umbilical Hernia	4	3.65	1	0.975	
Down's syndrome	2	1.826	1	0.975	
Polydactyly	2	1.826	0	---	
Mentally retarded	1	0.913	0	---	
Pelvic Deformity	1	0.913	0	---	
Microcephaly	1	0.913	0	---	
Spina bifidaocculta	1	0.913	0	---	
Left ear small than right	1	0.913	0	---	
Right nasal not developed	1	0.913	0	---	
Dwarfism	1	0.913	0	---	
Extra growth over lower lip	0	---	1	0.975	
Defective level of frontal bone	0	---	1	0.975	
Total	20	18.20/1000	4	4.1/1000	

*significant P < 0.05** Highly significant P < 0.01.Table 5 shows the incidence of stillbirth, Abortion and under five child mortality and congenital malformations in consanguineous and nonconsanguinous group.

Discussion

The present study was undertaken in locality for studying the impact of consanguinity on fertility and child health. The distribution of population and the couples according to exposure factor i.e. consanguinity.41% of the couples and 48.16% of population was from consanguinus or exposure group while 59%of couples or 51.84% of population was nonconsanguinous. The prevalence of consanguinity in present was 41% while other workers found, the study carried out by Willard B.Centerwall et al in 1966 found

45.3% couples have consanguineous relations in South India [1].Uma Natraja et al in 1972 the consanguinity rate found among Hindu was 44.6%, Muslims 33.9% and christain 20.2% [2].Seta Sinclair in 1972.The study shows 40.6% consanguineous union found in North Western India (Pakistan) (72). P.Kesavan et al in 1972 carried out the study of consanguinity. Hindu consanguinity was 42.3% while in Muslims it is 33.9% [2].A.R.Gatrad *et al* in 1984 carried out a survey of Asian Muslim parents. They shows consanguinity rate of 87.5% [3]. By I.C. verma *et al* in 1992 prevalence of consanguinity was found in 30.8%[4].According to different studies a rough estimate of consanguinity percentage shown is around 40%. However in the present study consanguinity percentage is found to be 41%. The distribution of the pattern of consanguinity in 328 couples. In 315 couples (96.036%) marriages took place between cousins from same generation. This cousin marriage has religious sanction in this community and hence this is commonest type of consanguinity pattern. Uncle-niece marriages were in very small proportion, about 2.74% the south Indian Hindus this type of consanguinity is very common. Marriages between stepbrother and stepsister were 1.219%. All the couples in the both groups were interrogated regarding consanguinity in their parents. It was found that 47 out of 328 couples were born to consanguineous couples. None form the non consanguineous group give such history. All the 47 couples, the type of marriage was between cousins.Number of pregnancies by current age and rate per woman. Mean age at first conception in consanguineous group was 18.46 years while in nonconsanguinous group it is 19.4 years. It may be said that in nonconsanguinous marriages, the first pregnancy occurs one year later than in consanguineous group. In all the age groups except between 15-19 yrs. Pregnancy rate is slightly higher in consanguineous group than in nonconsanguinous group. The average pregnancies per woman in consanguineous group is 4.6. While it is 3.78 in nonconsanguinus. However the different is not significant statistically our results are in agreement with other authors as follows. In the study by wahab observed that number of pregnancies are more in consanguineous than in nonconsanguinous[5]. I.C. verma et al in 1992 studied the effect of consanguineous on fertility. The mean total fertility rate per couple was 2.8 in both consanguinous and nonconsanguinous group showing that consanguinity did not affect fertility[4]. The age group wise distribution of pregnancy loss also indicates that in all age groups the rate of abortion is more in consanguineous than in non consanguineous group, except between the age group 15-19 years. This can be because of small sample size, again the findings are in agreement with other workers. Wahab et al (1978) found that foetal loss is equal in both groups[6]. Goswami et al (1979) found abortion rate 3.3% teenage mothers 14.8 % in 20-30 yr and 3.6 % in 31 yr . and above in general [7]. M.S. Ramkrishna (1972) by their study of consanguinity found that foetal wastage by consanguineous contribute to 70% while it is 6.3 % in unreqalted [2].I.C. verma et al (1992)| studied consanguineous and fetal loss and was found 5.7 % in consanguimnous and 4.4 % (per 100 pregnancies) in non consanguineous groups[4].It is well known that the congenital malformations incompatible with life is common cause of fetal loss . The consanguineous and its association with congenital defects can be the explanation for this high abortion rate. Mean number of still births in consanguineous group were 0.189 and in nonconsanguinous group, it was 0.057. The difference is highly significant . $Z = 6.51$ ($P< 0.01$). The rate of stillbirths are more in 20 to 40 yrs. age groups in consanguinous than in non consanguineous. Our results are in agreement with other authors. WHO perinatal mortality and still births are in related first cousin or closer was 66/1000 while it is 37.3/1000 in unrelated [8]. P.Kesavan et al 1972 in his study of still birth in consanguineous group, rate was 5.06 % while it was 4.5% in nonconsanguinous group[2]. Mitra K.N. et al bulletin WHO (1966) reported stillbirth rate and infant deaths mortality was 62.1/1000 total births in consanguineous[9].I.C. verma et al in (1992) reported that still births were higher in consanguineous group i.e. 4.2/100 pregnancies while they are 2.8/100 pregnancies in non consanguineous group ($p < 0.01$)[4].The reason for still births in consanguineous is mainly due to congenital malformations. It is observed from the above table that the maximum rate of live births per woman ranging from 5 to 6.8 in the age group of 35 to 45 and above in consanguineous while it is 5 to 6.1 in nonconsanguinous from the same age group. The mean livebirths in consanguineous were 3.5 in exposed group and 3.1 in nonexposed group which is statistically not significant. In total live births are more in consanguineous than in non-consanguinous. The mortality experience of under five born to consanguineous and non consanguineous couples, in their physiological age groups mortality rate in consanguineous is 67.29 and nonconsanguinous group 49.70/1000 live births. In other words in consanguineous group, the mortality rate in under five is 35.4% in excess than in nonconsanguinous group. The physiological age groupwise distribution of the deaths is analysed. It will be seen that in first week of life the mortality is 6.5 times more in children born of

consanguineous union. So also in 7-28 days it is 83% more in consanguineous than in nonconsanguinous. In the later period of life the rate is almost equal up to one year and actually exceeds in nonconsanguinous group in the age group of 1-4 years. It is well known that the congenital malformation is of the important cause of death in Early neonatal and Neonatal period. Hence though actual cause of death in these children could not be verified it will be logically ascribed to congenital malformation are incompatible to life in this group. Congenital malformations are more in consanguineous relationship. Our findings are similar to other authors. WHO 1967 infant mortality in First cousin marriages was 66 per thousand and in unrelated it was 37.3 per thousand. Percentage wise early neonatal, late neonatal and infant death were 2.1% , 7.6% and 13.7% versus 0.3% , 3.6% and 10.6% in exposed and unexposed group respectively[8]. By Shridharrao B. et at 1975 death rate of offspring of first cousin marriages is 160 per thousand, while it is 55 per thousand ibunre-lated[10]. By Wahab et al neonatal, late neonatal and infant mortality are higher in consanguineous than nonconsanguinous i.e. 2.8% , 4.66% and 7.46% versus 2.39% , 0.90% and 3.28%[6]. Chandra P. et al in 1978 in his study of congenital malformation is the leading cause of perinatal mortality. Perinatal mortality due to malformation was 12.64%.here history of consanguinity was present[11].Zakia Sultana et al 1975 India study of perinatal mortality out of 165 cases 15.7% perinatal deaths were because of congenital malformations which is confirmed by autopsy[12]. I.C. Verma et al 1992 studied the effect of consanguinity on mortality, Neonatal and infant mortality were higher in consanguineous matings as compared with nonconsanguinousmatings (97.8versus 59.7 $p < 0.05$) only neonatal death in same group was observed as 63.8per thousand inconsanguinous mating while 48.5 per thousand in nonconsanguinous[4]. The various malformations in consanguineous &nonconsanguinous couples distributed according to age of mother at the time of birth of child. There were 1095 children under five available for clinical examination. Out of them twenty had congenital malformations in the exposure group. In non exposure group four out of 975 children had congenital malformations giving percentage prevalence of malformation as 1.88% and 0.4% respectively. It indicates that the prevalence of congenital malformations is very high in children born out of consanguineous union. The age of the mother at the time of birth of the malformed child. It will be seen that 75% i.e 3 out of 4 congenital malformation children in nonconsanguinous group were among the children born after the age of 35 years. While only 10% malformations in consanguineous group the age of mother was more than 10% malformations in consanguineous group the age of mother was more than 35.Age of mother is an important factor in malformation which can be very well seen in nonconsanguinous group. But the picture is different in consanguineous group. It indicates that the chances of getting malformed child in consanguineous mothers are more in all age group irrespective of mother age $Z = 2.99$ $P < 0.01$ The value is highly significant. our findings are similar to other authors finding which are Willard R. Centerwall *et al* in 1966 studied the consanguinity and congenital anomalies in south India. Infants with anomalies in nonconsanguinous were 30.4% while in consanguineous union that were 69.6%[1]. Uma Natraja et al 1972-74 studied the percentage of malformed in consanguineous and non consanguineous groups the percentage was 6.42% and 1.64% respectively ,means consanguineous marriages produced more malformed children[2].Wahabwt al 1978 studied congenital malformation and the frequency was 5.91% in congenital malformation and the frequency was 5.91% in consanguineous than non consanguineous it is 1.64% [6].Mitra K.N. et al WHO 1966 studied the congenital malformation. They stated that Neural tube defect in First cousin was 14.2/1000 and in unrelated 5.7/1000.Hare lip and cleft lip in related 5.5%.This frequency is 5-10 times higher than in general[9]. M.S.Ramkrishna et al in 1972 studied the overall incidence of consanguinity and congenital malformations is 18.9/1000 births. In nonconsanguinous 1.64% and in consanguineous it is 6.32%[2]. Seeta Sinclair 1972 commented that morton in 1966 found mental retardation in 5.5% in the offspring of first cousin while it is 1.3% in unrelated.In 1966 Centerwall et al found mental retardation in 4.6% of consanguineous and 2.6% of nonconsanguinous[13]. Willard centerwall et al in 1966 found that the risk of consanguionus parents having a child with with a major anomaly is 4% as compared with nonconsanguinousit is 1.1%[1]. It is seen that the incidence rate of all four attributes is more in consanguineous group than in nonconsanguinous group. The incidence rate for abortion, stillbirth and under five mortality is computed based on the history given during the interview of the mother at the time of survey and no way of verification record was available for this. The recall bias can enter under these situations especially for abortion the factor of memory might result in to mis-information and under estimationof the problem. However the problem is same in both consanguineous and nonconsanguinous group and whatever estimate is there should be same for both these groups. Thus the further estimate of this relative risk, attributable risk and population attributable risk

may not be affected by recall bias as under estimate is expected to be of same extent in both the groups .For congenital malformation the fact was verified by detail clinical examination by the interviewer and the investigations and experts opinion was sought where ever necessary. Thus the incidence rate quoted above can be said to be reliable without any recall bias. The relative risk of abortions, stillbirth under five and congenital malformation in consanguinouis group. The relative risk of abortion and still birth is 2.71 and 2.89 respectively. This is statistically significant (p<.05).The relative risk for congenital malformations is 4.37 and this is statistically highly significant (p<.01) however the relative risk for under five mortality though more than 1.That is 1.2 is not significant statistically. Relative risk is the estimate of the increased risk of developing undesired outcome. It will be seen that the pregnancies resulting from consanguineous union run a significantly high risk for terminating into abortion and stillbirth. Indirectly it indicates that the pregnancy wastage is higher in consanguineous marriage group. One of the important etiological factor of stillbirth and abortion is congenital malformation which are severe mature i.e incompatible with life consanguineous marriages are often land up in abortions stillbirth and congenital malformation because it propagates abnormal genes.The relative risk for congenital malformations is four times more in consanguineous marriages than in nonconsanguinous. Congenital malformation are due to chromosomal abnormalities.In consanguinity such multifactorial congenital condition is incompatible with survival. The risk of under fivemortality in the progeny born out of consanguineous mating is 1.29 which indicates that there is not a significantly high risk of under five mortality. Consanguinity is not the only deciding factor for under five mortality. Attributable risk 63% and 65% are the risks of abortion and stillbirth in the consanguineous group.The risk can be attributable to consanguinity. While 77% of the risk for the congenital malformation can be attributable to consanguinity. Population attributable risk in concern with the community or population it provides an estimatethat if consanguinity is removed then the PAR 0.26,0.27 & 0.32 for abortion stillbirth and congenital malformation can be reduced. The types of congenital malformation and their rate/1000 in both groups cleft lip and umbilical hernia are found to be more and their rate was 4.566/1000 and 3.65/1000 respectively. Other types of malformations are also found irrespective of age in exposed group. Down's syndrome in nonexposed group is more with age its numerical abnormality of chromosome than structural. Recessive traits are only manifest when the gene is present in double dose i.e. in persons homozygous for that particular mutant gene as in consanguineous matting. The mean rate of malformations found to be 18.26/1000 in exposed group and 4.1/1000 live births in nonexposed group.

Conclusion

The present study was undertaken in locality for studying the impact of consanguinity on fertility and child health.The distribution of population and the couples according to exposure factor i.e. consanguinity.41% of the couples and 48.16% of population was from consanguinus or exposure group while 59%of couples or 51.84% of population was nonconsanguinous.

Reference

1. Centerwall Willard and Centerwall S.A..”Consanguinity and congenital anomalies in south India”. A pilot study. IJMR.1966. Dec 12 :54. P.1160-67.
2. Kesavan P, Natraja Uma, Murulesank and Ramakrishna M.S. “Congenital malformations and consanguinity”. Book of medical genetics in India.1972.:65.
3. Gatrad AA, Read A, Watson G..H.1984.”Consanguinity and complex cardiac anomalies with situs ambiguis.: Arch Dis of childhood 1984:59:242.
4. Verma I.C., A. Prema, Puri R.K. 1992.” Health effects of consanguinity in Pondicherry. Ind. Paedeatrics 1992. 29,6, 685.
5. Witkot 1970. “Amish Albinism – A distinctive autosomal recessive phenotype”. Am. J. Human Genetics.1970.22:579.
6. Wahab.S.N. The study of effect of consanguinity on pregnancy wastage and congenital malformation in Tajbag area 1978.
7. Goswami T.K.1983.” Obstetrical behaviour and perinatal mortality in teenaged mothers in urban population. J. of obst and gynae of India. 1983.13:1;42-45.
8. Carter C.O.1967.” Congenital Malformations” WHO chronicle 1967 July: 21:7.
9. Mitra K.N., Stevenson A.C., John Stone H.A., Stewart MIP and Golding D.R. 1966.” Congenital Malformation a report of a study of series of consecutive births in 24 centers.”Bulletine WHO 1966 :34.
10. Shridhar Rao B. “Consanguinity and infant mortality”. Text book of social medicine 1975.143.

11. Chandra P, Harilal K.T."Congenital malformations in Madras. A study of 24192 consecutive births. Medical Genetics in India Vol 1 by IC Verma and R Puri July 1978.

12. ZakiaSultana ,TalibV.H., Patil S.D., Nagar D.N. 1975 . " Congenital Malformations". J. of Obst. & Gyn. Of India 1975:. 25:.392.

13. Sinclair Seetha 1972." Familial mental retardation and parental consanguinity". IJMR. 1972:1718.

Source of Support: Nil
Conflict of Interest: None