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**PEOPLE PERCEPTION ABOUT COUSIN MARRIAGE AND
GENETIC DISEASE: A CASE STUDY OF RURAL BHALL,
DISTRICT RAWALPINDI**



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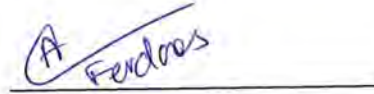
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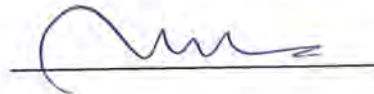
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Abstract

Consanguineous marriages are highly practicing in Muslim countries. Cultures, strong social ties, Baradri, social and economic were motivating factors of consanguinity. Consanguineous marriages increase genetic defects among people. Cousin spouse, due to closer affiliation of common ancestor, inherits dominant genes and increase diseases. Genetic diseases are reproductive wastages, mental retardation, sickle cell anemia, heart disease, hearing deficit, hypertension, physical handicap and diabetes. Consanguineous parents have weak offspring. Cousin marriage enhances cooperation level and saves from land distribution. The identification of diseases research conducted rural Bhall, District Rawalpindi. The sample size of study was 134 respondents. Quantitative method was used for research. Convenient sampling was used as sampling technique. Respondents provided questionnaire to explain their opinion on cousin marriage, genetic defects and attitude towards treatment. Majority of respondents argued that cousin marriage was practicing generation to generation in spite of aware its impact and to avoid it consider unethical in their family. Strong social ties among baradri enhance cousin marriage. Majority of people effected from disability, mental retardation, blindness, deafness and heart disease. It identified that cousin marriages encourage risk of genetic disease among children.

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Chapter No. 1
INTRODUCTION

1.1 Background of consanguinity

Cousin marriage is an extremely rooted social trend among one-fifth of the world population mostly residing in the Middle East, West Asia and North Africa, as well as among emigrants from these communities residing in North America, Europe and Australia at present time (Hamamy 2012). The high incidence of close kin marriage including first cousin marriage a well known feature of a Muslim society but also practiced by Hindus (especially in South Indian and in the central state of Maharashtra), Christians and people of other religious affiliation (Afzal et al. 1994).

Until now consanguinity widely practiced in several global communities with variable rates depending on religion, culture and geography (Tadmouri et al. 2009). Further among the major population's studies; the higher rates of consanguineous marriages associated with low socioeconomic levels, illiteracy and rural residence (Bener et al. 2006).

1.2 Definition of Cousin Marriage

Consanguinity comes from two Latin words "Con" which means shared and "Sanguinis" that means blood. However it means two individuals who related to each other because they shared a common ancestor (Hussain and Bittles 1998: 261-75). The common form of consanguineous relationship between people is first cousins. The other name of consanguinity is cousin marriage. Consanguineous marriages refer to marriage between people who are related as a second cousins or closer (Bittles 1944). On the other hand Abdallah and Zaher (2013:1) explained cousin marriages as "Marriage between two such individuals who have at least one traceable

common ancestor is said to be “consanguineous” and offspring of such mating “inbred”.

1.3 Worldwide Prevalence of Cousin Marriage

It is estimated that one billion of the current global population lives in communities with a preference for consanguineous marriage (Hamamy 2012 :). In some societies, consanguineous are strictly avoided where as in some preferred greatly. It was also globally estimated that at least 20% of all human population preferred consanguineous marriages and at least 8.5% children had consanguineous parents (Modell et al.2002). In the mean time consanguineous marriages are also practiced by consanguineous countries such as Pakistan, Lebanon, Turkey, North America and Europe (Schulpen et al. 2006).The trend of consanguinity among the ethnic minorities in Europe is a traditional. For instance, people of North African origin in France, Belgium, and people of Turkish origin in Germany and Scandinavian countries still followed consanguinity (Abdallah and Zaher2013).The rate of consanguinity was relatively higher in Qatar, with a rate of 51.0%, and predominantly first cousin marriages comprising 26.7% of all marriages. The common pattern of first cousin unions was type 1 (paternal parallel first cousin), which constituted 17.6% of all marriages, and similar rates exists in other Arab countries (Baner et al.2006:).All resent studies demonstrated that 68% of all marriages in Alexandria in Egypt consanguineous. It is becoming more popular among developing countries on different purposes or benefits that give them some

relaxation arranging marriage of their offspring's especially from this kind of marriage they consider that daughter's future becomes more secured.

1.4 Prevalence of Cousin Marriage in Asia

Cousin marriage is also being practiced in India, Pakistan, Bangladesh and Srilanka. Different researchers conducted their researches on cousin marriages rate, effects and factors in Asian countries. A research conducted in Pakistan find out the result that the higher rate of cousin marriage is being practiced, especially marriage between first and second cousins. Traditional values encouraged close kin consideration in selection of mates through arrangements by parents and places that creates stronger social ties and relations (Afzal et al. 1994). Demographic and health surveys were chosen in countries of Egypt, Morocco, Tunisia, Pakistan and India. There was a prominent scarcity with reference of demographic factors of fertility such as age at marriage and contraceptive use in consanguineous mates. Observed data proposed that women in consanguineous mates usually had minor education, short age at marriage, lesser prevention use and high fertility (Bittles 2001).

1.5 Cousin Marriages in Pakistan

In Pakistan consanguineous marriages are preferred among close kin or first cousins reflecting role traditional values. Being a predominantly Muslims society, people done their choice of marriage partners by keeping in view the domain of Hadith (Afzal et al. 1994). Demographic and Health survey (1991) stated that first cousin marriages in Pakistan had increased the higher rate of mortality of offspring. Consanguineous married couples

1.18 times faced death of children at their fifth day of birth (Shah et al 1998). For this reason Hussain and Bittles (1999) conducted a study in Karachi, showed that women in first cousin unions experienced a higher mean number of pregnancies and also reported higher number of children born but also higher mortality rate. If we glimpse to the Sheikhpura situated in the upper Punjab has the 48.9% consanguinity rate (Shami and Iqbal 1983). District Jhelum also indulged in the consanguinity has 44.3 percent consanguinity rate (Shami and Minhas 1984). In Rawalpindi, 48.1% people were involved in the consanguinity (Shami and Siddique 1984). Gujranwala was also affected with cousin marriage the percentage was 58.9% (Bittles et al. 1993). In Faisalabad, Sahiwal, and Sialkot the percentages of consanguinity were respectively 52.1%, 56.1% and 51.8% (Bittles et al 1993). The first cousin marriage was common as 67% while second cousin marriage prevalence 19% in Pakistan. The prevalence of consanguineous marriage depends upon socio-economic status of social group. 50% of the consanguineous marriages were related in slum, 49% in villages, 44% in the urban slum and 31% in the upper middle class (Yaqoob et al. 1993).

1.6 Reasons of Preference Cousin Marriage

Cousin marriages have positive and negative impacts on people in society. Different societies according to their own customs and tradition enhance it on the basis of multiple benefits of this kind of marriage. Some societies were against of this kind of marriage and some encouraged it for a strong social setup. According to sociological studies, in communities where

consanguinity exists in higher rate has better understanding among the married couple. They had more ability to judge problems of each other and solve in better way as compare to non-consanguineous couples. Consanguineous marriages are favorable for women's status especially in her in-laws. It was a general belief that consanguinity strengths family relations and increases family solidarity. Cousin marriages had different social and economic benefits. Furthermore, due to some traditions and norms within family transmission process of culture became easy and comfortable. Health and financial uncertainties could be overcome.

1.7 Consanguinity and Genetic Diseases

Consanguinity has also negative impact on health. It is estimated that approximately human being have 35,000 pairs of genes in every cell of the body. Offspring receive one copy of the gene from both parents. These genes pairs are responsible for general health and nourishment of body. Everyone carried several single genes that had been changed. One of the type genes called recessive that concerned when parents are related by kin. Chances of problems increased when an individual carry double dose of changed genes. Other concern with the multi factorial condition causes of both genetic and environmental factors such as some congenital diseases increase due to cousin marriage relations. From different studies it had been confirmed that offspring of consanguine couples carried recessive genes from both or one that could be show in first stage of life and increased abortion, morbidity, weak progeny and death rate. Such disease transferred from parents to children remain continue generation to

generation because of family marriages. In first cousin marriages was a common form of consanguineous marriages in which spouses inherited $1/8$ of their genes from common ancestor. Then both (husband and wife) carry $1/16$ genes so chances of happening recessive disorders increase rapidly. It was a great probability that closer the biological relationship between parents, greater the chances that their offspring suffer from dangerous diseases in infant or adulthood age (Abdallah and Zaher 2013). Pregnancy losses and infant mortality (death of an infant before one year of age) occurred because of cousin marriage. The rate of malignancies (lung cancer), congenital abnormalities (condition existing at birth and often before birth to damage developing fetus), mental retardation and physical handicaps were higher in offspring of couples of cousin marriage than non consanguine. In the populations where consanguinity is common, Leukemia (malignant progressive disease in which bone marrow and other blood forming organs produce increased number of abnormal leukocytes), lymphoma (group of blood cell tumors that develop from lymphocytes) and other tumors were frequent (Banner et al. 2006). Cousin marriage had bad impact on infertility, infant mortality, congenital malformation, and reproductive wastage. Twin pregnancies in cousin marriage (47%) occurred among mothers in age group 24-29 years. Higher female infant death ratio was in first cousin marriage. Further congenital malformation reported in first cousin marriage was 50% until 27% in non-consanguinity. Congenital malformation increased because of cousin marriage especially of first cousin marriage and uncle – niece marriage in India. Organ specific

malformation that was closely associated with cousin marriage in Saudi Arabia and France (Khouray and Massad 2000). Consanguineous marriages and their effects on the most common diseases in Qatari population were hypertension 31.8%, breast cancer 29.2%, asthma 34.8% (lung disease that narrows airways), hearing loss 60.5%, diabetes 47.6%, vision loss 39.7%, cancer 29.5%, vitamin D deficiency 44.1%, breast feeding 32.9%-38.5%, cardiovascular disease 57.1% (heart muscle disease that leads towards heart failure), coronary artery disease 49.5% (heart disease in which arteries become hardened and narrowed to supply blood to heart) (Baner, Husain and Teebi 2006).

1.8 Statement of the Problem

In Pakistan, different cities have different ratio of the cousin marriage. In the same way consanguinity rate is much higher in village *Bhall*, district Rawalpindi. Before this research, there was no other research was conducted on "People perception about Cousin Marriages and genetics disease". Cousin marriages and genetic diseases ratio is higher in this village. Cousin marriage is not a big issue but genetic anomalies are a massive issue resulted from cousin marriage. In *Bhall* village people prefer cousin marriage especially among first cousin i.e. parallel cousin (father's brother's son-daughter) and cross cousin (mother's sister's son-daughter). There is great probability of occurrence of genetic issues due to first cousin marriage. Genetics diseases have four different dimensions in which sex linked recessive, sex linked dominant, autosomal recessive and autosomal dominant are involved. In these four domains of genetic

diseases prevail severely. In Bhall village people faced genetic diseases like epilepsy, deafness, eye blindness, mental disorders, diabetes, cleft lips (cleft palate) and handicapped. Are people aware of dangerous impact of consanguinity? If yes of which level they have awareness about the consanguinity and its relation with the genetic problems. Such issues increase importance of current research generates curiosity about the perception of people towards such harmful issue.

1.9 Objectives

1. To find out diseases that occurs due to consanguinity.
2. Perception of people that either cousin marriage is the main cause of genetic defects or not?
3. Indigenous and cosmopolitan practices of genetic disease and their treatment.

1.10 Significance of the Study

There were multiple researches conducted in different cities of Pakistan to check the impact of consanguinity. Even Rawalpindi was also included in the research study related to consanguinity. However village Bhall was not included in such research even it has higher rate of genetic anomalies because of consanguinity. The present research provides authentic information related to serious issue because majority of youth have suffered in the genetic anomalies. Thronged of progeny have suffered in the various genetic diseases. Their future is looking dark if they indulge in disabilities. It was over-arching for researcher to understand the phenomena of why in this village people prefer cousin marriage.

Furthermore this research provides the mystery of treatment and diagnosis process of diseased people by the Indigenous healers. In the end, the study makes cautious the people to secure their future from the massive curse.

Chapter No. 2

REVIEW OF THE RELEVANT LITERATURE

Bittles (2001:789) stated that in clinical genetics, a consanguineous marriage defined as a union between two individuals who are associated as cousins or closer.

Sandridge et al. (2010) observed that existence of consanguinity between spouses attributed to many causes; some of them were religious or social, and others which were primarily economic advantages. Consanguinity was being practiced to strengthened family ties, retaining of property within the family, an opportunity to create a better understanding among mates, reduce divorce ratio, promotion of cultural continuity, and transmission of cultural values and improvement of the position of women by family pressure.

Al-Awaadi et al. (1985) revealed that there were a historically higher prevalence of consanguineous marriages in countries of the Middle East, Northern Africa and South Asia. The differentiation based on religion, race, ethnicity and socio cultural factors, including norms of endogamy in tribes.

Bennett et al. (2002); Rao and Inbaraj (1977) argued that the offspring of consanguineous unions increased risk for recessive disorders because of the expression of autosomal recessive gene mutations inherited from a common ancestor, the nearer the biological affiliation between parents the greater the genetic anomaly in their pending generation. Consanguineous couple increases the chance of their offspring would inherit indistinguishable copy of one or more damaging recessive genes.

Bromiker (2004) observed that offspring of consanguineous parents had higher rates of congenital malformation for example reproductive wastages, birth defects in off springs, mental retardation, physical handicap, cancer, heart diseases, gastrointestinal disorder, hearing deficit, hypertension and diabetes.

Guo (1993) said that mostly consanguinity is being practiced in the developing countries caused mortality.

Shami, Grant and Bittles (1994) argued that fifty percent of marriages in urban areas of Pakistan are between blood relatives, in which 80 percent beings are first cousins.

Shah, Michael and Brain (1998) stated that consanguineous families were more likely to experience the death of a child than that of non-consanguineous. The relationship between consanguinity and morality was examined at childhood stage. The result came out from mothers who were married to first cousin experienced the death of a child 17.1% until mothers of non-consanguine families faced 14.7% child morality. It was also indicated that offspring of consanguineous couples survive in their childhood: faced health problems in adult age more than those of non-consanguine.

Mokhtari and Amrita (2003) argued that Parental consanguinity enhanced higher number of homozygosits (state of possessing of two identical forms of a particular gene one identified from each parents) that have been resulting to increase of genetic anomalies. Frequencies of genetic disorders were twice in children born to parallel cousin parents as compared with

those bared from cross cousin marriages. Psychomotor retardation 14.3% (slowing – down of thought and reduction of physical moments in an individual), primary amenorrhea 11.2% (absence of women’s monthly period) and mental retardation (6.6%) were higher emerge from parallel consanguinity. Consanguineous parents supporting one genetically abnormal child were 13 times more as compared to non consanguineous marriages.

Bittles and Black (2010) revealed that transposition of coarctation of the aorta (section of the aorta is narrowed to an abnormal width), pulmonary Artesia (malformation of the pulmonary valve in which the valve from lung to heart fails to develop) and neural tube defects (birth defects) also had shown positive associations with consanguinity. In assessing the impacts of consanguinity on health, it was now admitted that variables such as socioeconomic status, maternal age, maternal education, birth order and birth intervals need to be adequately controlled. Further, they argued that prevalence of consanguineous marriages would decline in future due to low family size. And its decline would be loss of extended family support network but on the other hands it would save the generation from harmful biological issues that they were faced in infant and adult age. The favorite types of consanguineous marriage vary according to tradition, so that in Arab societies paternal marriage(Father’s brother’s daughter) was common, whereas in the Dravidian Hindu populations of southern India the strong preference was for a maternal marriage (between a man

and his mother's brother's daughter, or more often marriage between an uncle and niece).

Hamamy (2012) stated that preconception and premarital counseling on consanguinity needed to be an important part of training of health care providers especially in consanguineous societies. Knowledge about public and primary health to clarify health and social effects of consanguinity was necessary. Screening programs to eliminate many genetic diseases like epilepsy and thalassaemia. Further, it noted there was need to remove all social, economic and demographic confounders that enhance consanguineous marriages.

Gazali (1998) argued that significant positive association had consistently demonstrated between consanguinity and morbidity, and congenital defects with a complex etiology appear to be both more prevalent in consanguineous families and had a greater likelihood of recurrence. Childhood deafness had been commonly associated with consanguinity. In the United Arab Emirates 92% and 57% respectively of cases of non-syndrome and syndrome deafness attributed to autosomal recessive inheritance.

Zaman (2010) concluded that consanguineous marriages had increased in Kabirwala, South Punjab (Pakistan) due to lack of scientific knowledge and research, stronger holds of parents on their off spring, little awareness of genetics, scarcity of genetic counseling and health infrastructure. Marriages between cousins resulted in post neo-natal mortality, childhood morbidity; haemoglobinno-pathe is (abnormal structure of one of

the globins chains of the hemoglobin molecule that increase risk of low intelligence, sickle cell anemia, cystic fibrosis and mental instability. Further, Zaman (2010) observed two perspectives. Firstly, people are indulging 4 to 10% in genetic disorders because to consanguineous marriages. Its percentage could be high in coming generation. Secondly, genetics problems were common in offspring of non-relative spouse. Culture center techniques like *Moulvi* (Scholar, Saint) media, school syllabus and legislation can help full to control it.

Darr (2010) concluded that regular consanguineous marriage was associated with inherited recessive disorder like estimated that 2,300 children born annually with a severe recessive disorder in the United Kingdom at least 690 (30%) were from parents of Pakistani origin. They contributed 3.4% of births had 30% of United Kingdom children with recessive problems. Consequently Pakistani originated families remained unconscious of the potential importance of existing genetics services (genetic counseling, carrier testing) or of available options for reducing their genetic risk (choice of partner, restriction of family size, prenatal diagnosis). As a result, multiple births of affected children occur. Parents are unable to treat them. For instance treatment costs for thalassaemia (an inherited blood disorder) are of the order of £20,000 per patient per year bitterly. Clinical genetic services, hospital specialties, primary care, health and social care agencies, laboratory services and communities, training of professionals and better communication is required to handle with this issue.

Afzal et al.(1994) observed that except of prohibited relations, marriage between close kin was preferable not only in Muslims but also in Christians, Hindus especially in south Indian states and in central states of Maharashtra .Different other studies also confirmed that in arrange marriages the first preference gave to close kin like Pakistan. Four province of Pakistan, Baluchistan and Punjab showed high percentage of cousin marriage (53%) in comparison to Sindh (67.9%) and Khyber Pakhtunkhwa (38.8%). In terms of reproductive higher rate had been observe among those married to cousins than those married to others. Level of child mortality and morbidity was higher for rural women than urban women in Pakistan. It was observed that with the increase of awareness and experienced which came as age of women increased, child mortality could be reducing. Owing to better medical facilities child mortality and morbidity was low in urban areas than rural areas. Socio-economic and environment factors influence fertility, mortality, morbidity and consanguineous marriages in Pakistan.

Reddy, Reddy and Reddy (2007) described that ascertained data from 1,500 women was belonging to three endogamous communities (Akuthota Reddy,Odde and Madiga) of Chottoor District, Andhra Pradesh, India. Madiga population showed a higher percentage of consanguineous than other two community. The first cousin marriages, matrilateral cross cousin marriages (to marry his mother's brother's daughter) were greater than patrilateral cross cousin marriages (to marry his father's brother's daughter) in all these three communities. Postnatal mortality rate included neonatal

deaths (from birth to the first 4 weeks of life) was higher in consanguineous marriages than prenatal mortality (includes all fetal losses, including abortions (reproductive wastage from the fifth week of pregnancy up to the end of the sixth month) and stillbirths (fetal deaths from the start of the seventh month up to birth).

Padmadas and Nair (2001) claimed that the miscarriage ratio was higher among the women who had marriage with blood relatives, especially uncle-niece marriages. This was 15.3 for uncle-niece marriages, 14.7 for second cousin marriages and 13.3 for first cousin marriages as compared to 12.2 for non consanguineous marriages. In Goa, abortion rate was high in first cousin marriages. It was found that deaths were small in numbers for those who married to second cousins and uncles than to first cousins.

2.1 Assumptions

1. Consanguinity increases the risk of genetic disease.
2. Consanguinity enhances child mortality and high chance of abortion.
- 3 Recessive disorders are much in first cousin marriages as compare to second cousin marriages.
4. Consanguineous unions become on the behalf of social, economic and religious interests.

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CHAPTER NO.3
THEORETICAL FRAMEWORK

3.1 Childhood Familiarity Theory

Childhood familiarity theory was presented by Westermarck in 1920. Main arguments of his theory was that persons who had been closely associate to each other and reared in a same way early childhood familiarity does not sexually attract to each other. Westermarck's observed, "How can a man love a woman with whom he had grown up from childhood". In fact, this theory was presented in favor of incest taboo. Incest taboo was prohibition of sexual relation between primary kin.

3.2 Human Inbreeding Theory

The Human inbreeding theory was presented by Strauss in (1955) that guided leave incest taboo. It focused on the potentially damaging consequences of inbreeding. Inbreeding refers to "Marry within the same family". People marry within the same family are likely to carry same harmful recessive genes with abnormalities and genetic mutation occurs frequently. Inbreeding then enhances the chances of dying of offspring with genetic disorders of related spouse than off springs of non- related spouse. This theory was also presented in abolish of incest.

3.3 Social Exchange Theory

Social exchange theory was one of major theoretical perspective in sociology. Major exchange theorists are George C.Homans, Peter Blau and Richard M.Emerson.

Homans (1961) Defined social exchange as the exchange of activity, tangible or intangible and more and less rewards or expensive between two persons. He argued that social behavior created as a result of mutual

understanding of two parties in a dyadic exchange .Power, justice, balance, position, authority, harmony and leadership is based on direct exchange.

Blau (1986) Defined exchange behavior as behavior explicitly to the ends that can be achieved through interaction. He argued that forms of association, benefits and social structure created by mutual social interaction.

The key assumptions of exchange theory are following explained by Molm; Cook and Linda.D (1995). They argued that (1) Behavior is motivated by the desire to increase gain and to avoid loss. (2) Exchange relations based on mutual dependence.(3) Actors engage in mutual contingent exchanges with specific over time. Exchange relations are connected that exchange in one relation affects and effected by the nature of the exchange in another relation.

Emerson (1962) explained positive and negative connection of exchange. A negative connection means that exchange in one relation reduces amount and frequency of exchange in another relation within same group. A positive connection means exchange amount and frequency remains high in both parties.

Friedkin (1992) concluded that some relation frequency with other is so much high based on alternative relation in exchange networks.

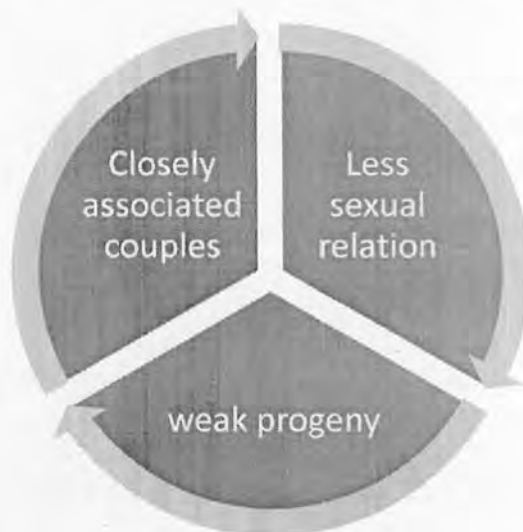
Yamagishi et al. (1998) argued that exchange relation always promote trust under the condition of high uncertainty and removed exploitation.

3.4 Alliance Theory

The alliance theory was proposed by Claude Levi -Strauss in 1949. It elaborates that cooperation and alliance enhance in individuals, groups and family through exogamous marriages. He argued that in order to break down hostility, quarrel and conflicts between families and groups it plays a vital role. Marriage of members within other families increases high frequency of cooperation.

3.5 Application of Theory

All above mentioned theories are related and suitable to the topic perception of people about cousin marriages and genetic disorders. According to childhood familiarity theory closely associated couples have scarce sexual urges towards each other. So, the situation not only enhances the infertility but also makes disable and weak offspring.



Inbreeding theory firstly articulates the prohibition the incest taboo. It also demonstrates the large number of spouse related to each other by a common ancestor and family face problems. Offspring carry recessive

genes from both side (Mother and Father) that are shown among them in their offspring in infant and adulthood age. Sometimes these disorders are passes in coming progeny with passage of time.



According to social exchange theory people prefer marriage within same family or close relative to save property (land). As spouse within the same family are a great advantage to stop the transformation and distribution of land. Most marriages are parental especially within uncle and niece so it helps to save land and remain property within the family.



Alliance theory is given by Claude Levi Strauss in 1955. It explains that people prefer to endogamous marriages for their own interests. These interests can be economic, social, personal, further that tied all family members together in a social system, remove their problems and increase cooperation, emotional attachment level among them. In alliance formation five elements play an important role.

1. Economic Interests:
2. Physical satisfaction.
3. Liking and disliking
4. Socialization
5. Social status

These entire if exist in any family in positive form like better social status, good socialization of spouse, sexual urges are fulfilled, economic sources available in high quantity, family members like to each other's than cooperation level will be high in family or descent.



3.6 Propositions

1. Consanguinity not only confines the property within one family but also strengthens the kinship system.
2. Majority of the consanguineous couple live in the extended families. So their offspring are closely associated and have scarce sexual urges for each one.
3. When scarce sexual urges possessed offspring are married, their generation or offspring become disable and weak.
4. Consanguinity has direct relationship with genes: families members are married with one another, diseased genes mutate from one member to another; result genetically diseased offspring.

3.7 Hypothesis

H_0 =There is no relationship between cousin marriage and genetic disease.

H_1 = There is relationship between cousin marriage and genetic disease.

Chapter No. 4
CONCEPTUALIZATION AND
OPERATIONALIZATION

4.1 CONCEPTUALIZATION

4.1.1 Consanguinity

According to Collins dictionary (2009:364) “Consanguinity refers to close affinity or connection and similarity of origin as shown by common minerals and chemical composition and often texture.” According to Chamber dictionary (2006:323) “It is a relationship by blood as opposed to affinity or relation by marriage.” According to standard encyclopedic dictionary (1966-1968:135) “Relationship resulting from common ancestor; blood relations.” According to American law register (1852-1891) “consanguinity or kindred is the connection or relation of persons descending from the same stock or common ancestor.” According to Abdallah and Zaher (2013:1) defined “Marriage between two such individuals who have at least one traceable common ancestor is said to be consanguinity.”

4.1.2 Disease

According to Collins dictionary (2009:479) “Any impairment of normal physiological function affecting all or part of an organism, esp. a specific pathological change caused by infection, stress. Producing characteristic symptoms; illness or sickness in general corresponding condition in plants any situation or condition linked to this: the disease of materialism.”

According to Chamber dictionary (2006:429) An unhealthy state of body, mind, a disorder, illness with distinctive symptoms caused by infections, unhealthiness and a specific ailment. According to standard encyclopedic

dictionary (1966-1968:183) “Condition of ill health or malfunctioning in a living organism especially one having a particular symptoms.” According to Cambridge dictionary (2008:402) “disease is the illness of people, animals and plant caused by failure of health rather than accident.” According to Anderson (1999:245-249) disease refers to “illness, malfunction and suffering of body.”

4.1.3 Genetics

According to Collins dictionary (2009:685) “The branch of biology concerned with the study of heredity and variation of organism.” While according to Chamber dictionary (2006:620) “Genetics is the branch of biology dealing with heredity and variation inherited characteristics of an organism; origin; and development.” According to standard encyclopedic dictionary (1966-1968:266) “Genetics is the science dealing with the interaction of the genes in producing similarities and differences between individuals related by descent.” According to Cambridge dictionary (2008:598) “The study of how, in all living things, the characteristics and qualities of parents are given to their children by their gene.” According to the Columbia Encyclopedia (1993:1058) “The scientific study of the mechanism of hereditary.”

4.2 Operationalization

4.2.1 Consanguinity

Consanguinity is a genetic concept that influences the probabilities of specific combination of characteristics. Cousin marriage has different types. First is paternal marriage (sons and daughter of uncle) and second is

maternal marriage (sons and daughter of mother's sister). Marriage between paternal and maternal side is called consanguinity.

4.2.2 Disease

A disorder of structures and functions of a human body which produces specific symptom and effects to a specific location: Disease can be caused by bacteria or infection. Sometimes it passed from one person to another. Further, it may be caused by external source such as infectious disease or internal dysfunction like autoimmune disease. Disease includes disorders, disabilities, infections, injuries and syndromes. Philological, hereditary, pathological and deficiency are types of disease.

4.2.3 Genetics

A unit of heredity which is transferred from parents to their offspring and determines some characteristics between them: it is a segment of Deoxyribonucleic acid (DNA) located in a specific place on chromosomes. Our bodies are made up of millions of cells. Each cell contained a complete set of genes. Humans have 35000 genes in body for its proper functionality. Each of us inherits two copies of genes, one copy from our mother and one copy from our father. Genes acts like a set of instructions, controlling our body's growth and functionality. Genetic disease is disease that is transferred from forefathers to in coming to generation. Epilepsy, cleft lips, heart disease, cancer, hypertension, eye blindness, mental defects and gastrointestinal are genetic disease from which children of consanguine couples are effected badly.

Chapter No.5
RESEARCH METHODOLOGY

5.1 Research Design

For the purpose of the collection of the data, the researcher selected quantitative research design. During the inquiry, the researcher used the structure of questionnaire to collect the data and make accurate the research. People had no knowledge about defects produce by cousin marriage.

5.2 Universe of the Study

The research study was conducted in village Bhall, district Rawalpindi. According to census 1998 the total population of rural *Bhall* was 3575.

5.3 Unit of Analysis

The target population of the researcher was the respondents of above 18 age of married with cousin and un married to explain view about cousin marriage of rural Bhall area. The data collected from 134 respondents in village *Bhall*, district Rawalpindi.

5.4 Sample Design

In ordered to distinctly characterize and sort an appropriate sample which can be suitable representative of the entire population. The researcher used convenient sampling. The researcher gave an equal opportunity to everyone. Also, it was less costly as compared to other techniques. Further, it provided better and multiple information about topic "People perception about cousin marriages and genetic diseases."

5.5 Sample Size

A sample is the subset of the whole population because the reflection of the entire community is difficult for a single researcher. So the researcher

chooses the 134 number of respondents for the village *Bhall* district Rawalpindi to explore the variety of opinion, excess of respondents cause repetition of opinion therefore the researcher did not feel the need to take 134 plus respondents. From this scenario, they available to find out the ground reality behind the topic and they make the research more accurate. A researcher saves their time and the useful information during the inquiry.

5.6 Tools for Data Collection

In order to examine the problem within the locale, the researcher used the questioner method. The respondents were comprised of literate and illiterate folk. Therefore necessity arose to apply questioner and interview schedule method.

5.7 Technique for Data Collection

For the data collection of the research: face to face interview technique was applied. The researcher developed a structure (close and open handed) questionnaire to gather the data .The researcher try her best to cover every aspects related to topic.

5.8 Pre-testing

Pre-testing is a tool in which researcher tested his or her research tool before data collection to ensure the validity and accuracy of questionnaire: perceived necessary to see the work ability of questionnaire. The research took 10 respondents for the purpose of pretesting. 10 respondents were enough to show validity of questionnaire.

5.9 Tool for Data Analysis

After conducting research was analyzed through excel and strata. The hypothesis was tested through chi-square testing. This is also commonly used in sociological research. Then the conclusion was drawn.

5.10 Opportunities and Limitations of the Study

Opportunities of the study include gaining a better understanding of genetic diseases and people's perception about consanguineous marriage. The researcher belonged to the same village which was the universe of the study. So it was an easy opportunity for him to conduct interviews to fill questionnaire and know their opinions but on the other hand problem is that the people were consider researcher as a threat to miss guide people.

5.11 Ethical Concern

It is the moral duty of the researcher to get permission before starting any research activity e.g., take permission asking questions from respondents. The researcher gave the respondents a respect, built trust, avoided counter and personal questions and abusive wording, which hurts their emotions and feelings. Further, not leak respondent's personal information and views regarding the topic. Information was kept confidential.

Chapter No 6

RESULTS

Table 6.1 Age of Respondent

Categories	Frequency	Percent
18-24	59	44.03
25-34	37	27.61
35-44	22	16.42
45+	16	11.94
Total	134	100.0

The Table 6.1 explains that there were different categories with reference of the age. Seven was class Interval of first category however other classes have 10 class intervals because majority of respondents have the age of 18 to 24 years. At the age of 18-24 years old respondents were 59 and the 44.03% of the total respondents. In the distinct way of the age category, thirty seven respondents having the age 25 to 34 years had percentage 27.61. However 35-44 years old respondents were 22 had 16.42 % of total respondents. While 45 years old, 16 were the respondent's possessed 11.94% of the total respondents. The majority of the respondents, youth, given the opportunity to demonstrate their opinion about the consanguinity were available easily.

Table 6.2 Gender of Respondent

Categories	Frequency	Percent
Female	66	49.25
Male	68	50.75
Total	134	100.0

Table 6.2 presents the distribution of the overall proportion of respondents. What were 66 female samples after 49.25 % of the total sample, while male respondents and 68% with 50.75 of the total sample. Therefore, the sample was selected from a large number of men because of accessibility. They do not feel shame and was confident in the answers given to women issues.

Table 6.3 Caste (Major/Minor) of Respondents

Categories	Frequency	Percent
Rajpout Minhas	104	77.61
Awan	9	6.74
Kalyal	8	5.97
Malik	4	2.99
Other castes	9	6.74
Total	134	100.0

The Table 6.3 explains different categories of caste major or minor that existed in universe of study. In caste category of Rajpout Minhas were 104 respondents having 77.61% of total respondents. In another category of

caste Awan respondents were 9 possessing 6.74% of total respondents. In caste Kalyal, 8 were respondents having 5.97%. In Malik caste, numbers of respondents were 4 having 2.99%. Respondents belonged from other castes were 9 and 6.74% of total respondents. So respondents from Rajpout Minhas caste were chosen to interview because majority respondents belonged to this caste in universe of study.

Table 6.4 Marital Status

Categories	Frequency	Percent
Married	64	47.76
Single	70	52.24
Total	134	100.0

The Table 6.4 demonstrates distribution of marital status. Married respondents were 64 and single were 70. Married were 47.76 % of total respondents however single were 52.24 % of total respondents. So unmarried respondents were interviewed in abundance majority in number because researcher access to unmarried was easy and want to view their perception about their own marriage practice. They showed great interest to give pure information as compared to married couples

Table 6.5 Marriage Types

Categories	Frequency	Percent
First cousin	39	60.94
Non-related	12	18.75
Distantly related <i>baradri</i>	7	10.94
Exchange marriage	3	4.69
Second cousin	3	4.69
Total	64	100.0

Table 6.5 shows the different categories of wedding type. 39 met with the son of the first cousin marriage was 60,94 % of the total sample said they respondents. 12 do not marry related relatives was 18.75 . Furthermore, the sample includes seven members of a wedding inside distant relatives, which was 10.94% of the total sample baradri. 3 respondents were counter wedding, which was 4.69 % of the total sample. It was after the second son of the uncle by marriage three respondents, which was 4.69 % of the total sample. Finally, the majority of respondents fall into the first category because cousin first cousin marriage priority was given by the people.

Table 6.6 Educational Status

Categories	Frequency	Percent
Illiterate	19	14.18
Literate	115	85.82
Total	134	100.0

The table 6.6 explains educational status of respondents. Illiterate were 19 respondents having 14.18% of total respondents while 115 were literate respondents, 85.82% of total. Finally, researcher took literate respondents more to overview their response on respected topic because literate people ratio was high in this area.

Table 6.7 Occupational Status

Categories	Frequency	Percent
Unemployed	88	65.67
Employed	46	34.33
Total	134	100.0

Table 6.7 demonstrates the different types of occupation had the respondents. 88 respondents, unemployed and their percentage were 65.67. The count of respondents who has employed in 46 and the percentage was 34.33%. So the Table (6.7) elaborates that most of respondents were unemployed and have no proper job to earn livelihood.

Table 6.8 Family Size

Categories	Frequency	Percent
2-5	49	36.57
6-10	76	56.72
11+	9	6.72
Total	134	100.0

Table 6.8 illustrates that 49 respondents had 2 to 5 persons in their family, representing 36.57% of the total respondents. From 6 to 10 family size category, 76 respondents belong, which is 56.72% of the total respondents. 9 respondents were 11 plus members in their family. So the Table (6.8) conveyed the message that respondents that belonged to 6 to 10 family members were largely interviewed by the researcher.

Table 6.9 Family Type

Categories	Frequency	Percent
Joint	80	59.70
Nuclear	43	32.09
Extended	11	8.21
Total	134	100.0

Table 6.9 of the various family groups describes; here are three categories will be in the sample Supreme Table. 80 respondents have a common type of family, which owns 59.70% of the total respondents. 43 respondents from nuclear family were 32.09% of the total sample. Similarly it took 11 surveyed by the extended family, which was 8.21% of the total sample structure. So most of the respondents involved in joint family structure.

Table 6.10 Household Authority

Categories	Frequency	Percent
Patrilineal	82	61.19
Mixed	42	31.43
Matrilineal	10	7.46
Total	134	100.0

Table 6.10 elaborates three categories of household authority. In category of patrilineal household authority 82 respondents sided had 61.19% of total respondents. 42 respondents belonged to category mixed authority of parents had 31.43%. 10 respondents had matrilineal authority in their family and 7.46% of total respondents. Most of respondents had patrilineal authority in their family decisions. Because father decisions in every matter were consider better. Patrilineal authority was reasonable in abundance of families.

Table 6.11 Size of the House

Categories	Frequency	Percent
<i>2-5 marla</i>	44	32.84
<i>7-8 marla</i>	18	13.43
<i>10 marla</i>	23	17.16
<i>1 -2 kanal</i>	49	36.57
Total	134	100.0

The Table 6.11 explains five different categories of house size. 44 respondents have 2 to 5 *marla* house size and their percentage was 32.84. In the same way 18 respondents have 7 to 8 *marla* house size and that were 13.43% of total respondents. In 10 *marla* house size 23 respondents sided and their percentage were 17.16. Respondents live in 1 to 2 kanal house were 49 having 36.57% of total respondents. Finally, majority of respondent choose have 1 to2 kanal house size.

Table 6.12 Construction type

Categories	Frequency	Percent
<i>Pakka</i>	61	45.52
Mixed	52	38.81
<i>Kacha</i>	21	15.67
Total	134	100.0

The Table 6.12 elaborates house construction of respondents. In *Pakka* house category 61 respondents sided and their percentage were 45.52. 52 respondents belonged to mixed construction house and that were 38.81% of total respondents. 21 respondents have *Kacha* house with 15.67%. Finally, respondent's belonged to *Pakka* house construction was larger interviewed by researcher because construction of house was change in *Pakka* house construction.

Table 6.13 Parental Consanguinity Marriage Type

Categories	Frequency	Percent
Distantly related(<i>Baradri</i>)	49	36.57
First cousin	36	26.87
Non related	32	23.88
mother was father 'cousin's daughter	6	4.48
Reciprocal marriage	6	4.48
Second cousin	5	3.73
Total	134	100.0

The Table 6.13 illustrates different categories of parental consanguinity. In distantly related category 49 respondents 'parents sided and their percentage was 36.57. In the same way 36 respondents parents comprise first cousin marriage and that were 26.87% of total respondents. Parents of 32 respondents arrange marriage with non related families having 23.88%. In another category of parental consanguinity of mother was father 'cousin's daughter. 6 respondent's parents sided and their percentage was 4.48. On the other hand 6 respondents' parents comprise marriage reciprocal and that were 4.48% of total respondents. While 5 respondents said that their parents were second cousin and their percentage was 3.73. Finally Table (6.13) conveys message that majority of respondents parental marriage was non related *baradri* because respondents argued that

their parents luck connect them with other families. And there was no any match (*Rista*) in their parent's family.

Table 6.14 Plan Marriage with Cousin

Categories	Frequency	Percent
Yes	33	47.83
No	36	52.17
Total	69	100.0

Table 6.14 elaborates that 33 unmarried respondents having 47.83 percentage said yes about this question until 36 respondents having 52.17 percentages said no in the favor of this question. So the majority of respondents were not agreeing to marry within the family because they considered that marriage within family increase disputes, incorporation and genetic issues.

Table 6.15 With which Cousin

Categories	Frequency	Percent
Relatives	14	40.00
Paternal side	11	31.43
Maternal side	10	28.57
Total	35	100.0

The above Table of 6.15 demonstrates that that in which side of family favors marriage, 14 respondents wanted to marry within relative's side having 40.00%. 11 respondents preferred to marry parental side having

31.43% and 10 respondents favored maternal side relatives for marriage with 28.57%. Finally, majority of respondents wanted to marry relative's side than other because in their maternal and paternal sides no any match (*rishta*) existed.

Table 6.16 Favor of Cousin Marriage

Categories	Frequency	Percent
Yes	84	62.69
No	50	37.31
Total	134	100.0

The Table 6.16 elaborates that 84 respondents said yes having 62.69% and 50 said no having 37.31% about favor of cousin marriage. Finally Table tells us that majority of respondents were favor of cousin marriage because of their strong social and religious beliefs. Further, family marriage remained much better for corporation as compare to exogamy marriage.

Table 6.17 Reason of Cousin Marriage

Categories	Frequency	Percent
strong social ties	68	50.75
blood purity	30	22.39
Familiarity	8	5.97
inheritance land	7	5.23
mutual understanding	5	3.73
Do not know	5	3.73
<i>Baradri</i> system	5	3.74
Other factors	6	4.49
Totals	134	100.0

The Table 6.17 explains different categories of cousin marriage preference. 68 respondents having 50.75% said that strong social ties within family encourage us to enhance cousin marriage. Thirty respondents said blood purity was main reason of cousin marriage preference in their family having 22.39%. While eight respondents give familiarity favor for cousin marriage having 5.97%. Seven respondents having 5.23% said inheritance land encourage people to arrange cousin marriage. In the same way further 5 respondents explained mutual understanding among family members favored cousin marriage and their percentage was 3.73. Another 5 respondents showed complete unaware of question having 3.73%. Another six respondents said there were other factors that encourage cousin marriage beside above explained reasons in

the Table (6.17). Finally, majority of respondents admitted that cousin marriage was prefer due to strong social ties because they were followers of same customs, traditions, and beliefs. They knew each other weakness and strengths. So marriage within same family provided them a chance to remain together generation to generation.

Table 6.18 Prevalence of Cousin Marriage

Categories	Frequency	Percent
Yes	96	71.64
No	38	28.36
Total	134	100.0

Table 6.18 elaborates that 96 respondents having 71.64% said yes about this question until thirty eight respondents having 28.36% said no in the favor of this question. This table express that majority of the respondents accepted that cousin marriage was prevail in their family generation after generation because their forefathers make it essential for family members. They could not marry their daughters and boys out of *Baradri*. It was a myth of them that exogamy did not give their social, economic and emotional security.

Table 6.18.1 Prevalence of Cousin Marriage and Age Category

Age categories	No	Yes	Total
15-24	24	35	59
25-34	7	30	37
35-44	7	15	22
45+	0	16	16
Total	38	96	134

The response of subjects was also evaluated with respect to different age categories (Table 6.18.1). Differences among the age groups in their responses were statistically significant ($\chi^2=12.49$; d.f=3; $p=0.006$).

Table 6.18.2 Cousin Marriage Prevalence and Marital Status

Category

Single/Married	No	Yes	Total
Married	12	52	64
Single	26	44	70
Total	38	96	134

The response of the question cousin marriage was prevailing in your family generation after generation was also evaluated with respect to marital status in (Table 6.18.2). Difference among responses of the married and single respondents were statistically significant ($\chi^2=5.57$; d.f=1; $p=0.018$)

Table 6.18.3 Cousin Marriage Prevalence and House Hold Authority

Category.

Household authority	No	Yes	Total
Matrilineal	3	7	10
Mixed	18	24	42
Patrilineal	17	65	82
Total	38	96	134

The response of subjects was also evaluated with respect to different house hold authority (Table 6.18.3). Differences due to authority in their responses were statistically significant ($\chi^2= 6.71$; d.f=2; $p=0.035$).

Table 6.19 Avoid Cousin Marriages Considered Unethical

Categories	Frequency	Percent
Yes	82	61.19
No	52	38.81
Total	134	100.0

Table 6.19 elaborates that 82 respondents having 61.19% said yes about this question until fifty two respondents having 38.81% said no in the favor of this question. So the table (6.19) conveys the message that majority of respondents argued that to avoid cousin marriage was consider unethical in their families because all those who would break their custom

of marring within same family they would punish them economically and socially.

Table 6.20 Religiously Preferred Cousin Marriages

Categories	Frequency	Percent
strongly agree	20	14.93
Agree	21	15.67
Do not know	11	8.21
Disagree	49	36.57
Strongly Disagree	33	24.63
Total	134	100.0

Table 6.20 demonstrates that 20 respondents were strongly agreed having 14.93%. On the other hand twenty people having 15.67% were agreed with question. While 11 respondents having 8.21% said that they did not know about the question. Thirty three respondents showed disagree having 36.57%. On the other hand 33 strongly disagreed with question and their percentage was 24.63 its means that the majority of the respondents showed disagree with question that cousin marriage was religiously preferred and encouraged. They argued that Islam did not make it essential that people marry only with cousin in family because our religion allows keeping relation with other families through exogamous marriage.

Table 6.21 Aware of Severe Impacts of Cousin Marriages

Categories	Frequency	Percent
Yes	83	61.94
No	51	38.06
Total	134	100.0

Table 6.21 shows that 83 respondents favored the question and said yes their percentage was 61.94. On the other hand fifty one respondents did not favor the question and said no in the favor of this question. Their percentage was 38.06. The table concluded that majority of respondents were aware of severe impacts of cousin marriage because genetic defects people due to cousin marriage are best example for them who live around them.

Table 6.21.1 Aware of Severe Impacts of Cousin Marriages and Gender Categories

Gender	No	Yes	Total
Female	19	47	66
Male	32	36	68
Total	51	83	134

The response of subjects was also checked with respect to different genders categories (Table 6.21.1). Differences among the gender group in their responses were statistically significant ($\chi^2= 4.74$; d.f=1; p=0.029).

Table 6.22 Birth Anomaly in Family

Categories	Frequency	Percent
Yes	65	48.87
No	68	51.13
Total	133	100.0

Table 6.22 illustrates that 65 respondents favored the question and said yes their percentage was 48.87. On the other hand sixty eight respondents did not favor the question and said no in the favor of this question. Their percentage was 51.13. In the end of Table (6.22) conveys a message that majority of the respondents said no that there was no any genetic disease existed in their family members.

Table 6.23 Progeny Suffering from Genetic Disease

Categories	Frequency	Percentage
One to two	61	92.42
Three-four	4	6.06
Five to six	1	1.52
Total	66	100.0

Table 6.23 explains that 61 respondents said one to two family members were suffering from genetic disease and their percentage was 92.42. On the other hand in category of three to four, four respondents' family members lie and that was 6.06 % of total respondents. While five to six family members of 1 respondent were indulge in genetic disease and that was 1.52% of total respondents. The Table showed that majority of

respondents family members suffered from genetic disease sided in category of one to two.

Table 6.24 Cousin Marriage and Various Genetic Disorders

Categories	Frequency	Percent
Disabled	18	27.69
Mental retardation	12	18.46
Blindness	10	15.38
Deafness	8	12.31
Others	17	26.18
Total	65	100.0

The Table 6.24 elaborates different categories of genetic disease from which family members were suffered. 18 respondents said that their family members suffered from disability and their percentage was 27.69. On the other hand 12 respondents having 18.46% said that their family members suffering from mental retardation. Ten respondents having 15.38% said that blindness also existed in their family members. Until eight respondents owning 12.31 % said their children affected from deafness. While 17 respondents argued that there were other diseases from which family members were affected badly. Their percentage was 26.18 of total respondents. So the disability prevailed in abundance in the progeny or children.

Table 6.25 Forefathers as a Career of Genetic Defects

Categories	Frequency	Percent
Grand mother	8	12.13
Grand father	10	15.15
Father	1	1.52
Mother	3	4.55
None of all	44	66.67
Total	66	100.0

The Table 6.25 explains that 8 respondents said that disease coming from grandmother having 12.13%. While 10 respondents argued that grandfather disease transferred to next generation having 15.15%. One respondent said father was responsible for disease in children and that was 1.52% of total respondents. On the other hand 3 respondents consider mother carrier of genetic disease transferred in coming generation with 4.55% of total respondents. In the same way forty four respondents not admitted all above given categories but they said that none of all became cause of transfer disease in next generation and that was 66.67% of the total respondents. So Table (6.25) concluded that none of all were carrier of genetic disease.

Table 6.26 Reason of Suffering from Genetic Disorders

Categories	Frequency	Percent
Cousin marriage	22	16.42
Heavenly bodies	8	5.97
Bad luck	8	5.97
Same blood group	5	3.73
<i>Azmaish of Allah</i>	5	3.73
Natural disease	5	3.73
Do not know	51	38.06
Other factors	30	22.44
Total	134	100.0

The Table 6.22 illustrates categories of people opinion about reason of genetic disease. 22 respondents with 16.42% said that cousin marriage was main root cause of genetic disease. 8 respondents having 5.97% said heavenly bodies while another eight respondents with 5.9% consider bad luck as a responsible of genetic disease. Further, same blood group was considering cause of disease said by 5 respondents having 3.73%. Five respondents said it was *Azmaish of Allah* that was 3.73% of total respondents. 5 respondents understand it as a natural disease having 3.73%. While fifty one respondents completely showed unawareness from question and their percentage were 38.06. On the other hand 30 argued that other factors were responsible of genetic disease in children. So Table

conveyed a message that most of respondents showed complete unawareness about reason of genetic disease among children.

Table 6.27 Defects appear due to specific Act (e.g sin)

Categories	Frequency	Percent
Strongly agree	26	19.4
Agree	21	15.67
Do not know	29	21.64
Disagree	21	15.67
Strongly disagree	37	27.61
Total	134	100.0

Table 6.27 showed that 26 respondents said they are strongly agreed that such genetic disease occurs due to family member's sin or wrong activities and their percentage was 19.4 of the total respondents. Twenty one respondents were agreeing having 15.67%. On the other hand 29 said that they did not know about it and that was 21.64% of total respondents. Twenty one respondents were disagreeing from question and their percentage was 15.67. Strongly disagree with question were thirty seven respondents having 27.61%. Table (6.27) showed that according to respondents majority were strongly disagreeing that sins were reason of genetic disease. They had strong belief that people wrong actions bring defects in their children.

Table 6.27.1 Defects Appear Due to Specific Act and Gender Category

Gender	Strongly agree	Agree	Do not know	Disagree	Strongly disagree	Total
Female	24	8	3	5	26	66
Male	2	13	26	16	11	68
Total	26	21	29	21	37	134

The response of the question about such defects appear due to specific act (e.g sin) of the family were calculated by gender in (Table 6.27.1). Differences due to gender in their responses were statistically significant ($\chi^2= 49.87$; d.f=4; $p=0.000$).

Table 6.27.2 Defects Appear Due to Specific act and Occupational Status Category

Occupational status	Strongly agree	Agree	Do not know	Disagree	Strongly disagree	Total
Employed	1	10	14	10	11	46
Unemployed	25	11	15	11	26	88
Total	26	21	29	21	37	134

The response of subjects was also evaluated with respect to different occupation categories (Table 6.27.2). Differences among the occupational group in their responses were statistically significant ($\chi^2= 16.87$; d.f=4; $p=0.005$).

Table 6.28 Causes of Genetic Defects in Children

Categories	Frequency	Percent
Heavenly bodies	34	25.37
<i>Bhoot pareet</i>	8	5.97
Cousin marriage	6	4.48
Bad luck, <i>Azmaish of Allah</i>	8	5.98
Others factors	78	58.23
Total	134	100.0

The Table 6.28 elaborates that 34 respondents having 25.37% of total respondents consider heavenly bodies an important reason of genetic issues. 8 respondents understand *bhoot pareet* main reason of it and that was 5.97% of total respondents. Six respondents having 4.48% think that cousin marriage was increasing genetic defects. Eight respondents considered that bad luck and *Azmaish of Allah* were responsible and that was 5.98% of total respondents. On the other hand seventy eight respondents stated that others factors were responsible to boost genetic problems among children having 58.23% because eclipse affected badly to infant duration of pregnancy.

Table 6.28.1 Causes of Genetic Defects in Children and Age Category

Age category	18-24	25-34	35-44	45+	Total
<i>Azmaish of Allah</i>	0	1	0	3	4
Bad luck	0	1	2	1	4
<i>Bhootpreet</i>	1	2	2	3	8
Cousin marriage	3	2	0	1	6
Genetic mutation	1	2	0	0	3
Heavenly bodies	17	8	7	2	34
Others factor	37	21	11	6	75
Total	59	37	22	16	134

The response of question following can cause of genetic disease was also evaluated with respect to different age categories (Table 6.28.1). Differences among the age group in their responses were statistically significant (χ^2 34.69; d.f=18; p=0.010).

Table 6.28.2 Causes of Genetic Defects in Children and Gender

Category

Gender	Female	Male	Total
<i>Azmaish of Allah</i>	3	1	4
Bad Luck	4	0	4
<i>Bhoot pareet</i>	1	7	8
Cousin marriage	4	2	6
Genetic mutation	1	2	3
Heavenly bodies	24	10	34
Other factors	29	46	75
Total	66	68	134

The response of subjects was also evaluated with respect to different gender categories (Table 6.28.2). Differences among the gender group in their responses were statistically significant ($\chi^2= 20.09$; d.f=6; $p=0.003$).

Table 6.28.3 Causes of genetic defects in Children and Marital Status**Category**

Marital Status	Married	Single	Total
<i>Azmaish of Allah</i>	4	0	4
Bad Luck	4	0	4
<i>Bhoot preet</i>	6	2	8
Cousin marriage	4	2	6
Genetic mutation	1	2	3
Heavenly bodies	15	19	34
Other factors	30	45	75
Total	64	70	134

The response of subjects was also calculated with respect to different marital status categories (Table 6.28.3). Differences among the marital status in their responses were statistically significant ($\chi^2= 14.23$; d.f=6; $p=0.027$).

Table 6.29 Cousin Marriages Risk of Genetic Diseases

Categories	Frequency	Percent
Strongly agree	58	43.28
Agree	30	22.39
Do not know	21	15.67
Disagree	18	13.43
Strongly disagree	7	5.22
Total	134	100.0

Table 6.29 shows that 58 respondents said that they are strongly agreeing cousin marriage increase risk of genetic disease in children and that was 43.28% of the total respondents. Thirty respondents were agreeing having 22.39% .On the other hand twenty one said that they do not know about it and that were 15.67% of total respondents. Eighteen respondents were disagreeing from question and their percentage was 13.43. Strongly disagree with question were seven respondents having 5.22%. Table (6.29) illustrated according to respondents that majority were strongly agreeing with the question that cousin marriage increase risk of genetic problems in children.

Table 6.29.1 Cousin Marriages Risk of Genetic Diseases and Age

Category

Age category	18-24	25-34	35-44	45+	Total
Strongly agree	26	19	7	6	58
Agree	14	11	4	1	30
Do not know	5	3	9	4	21
Disagree	10	3	2	3	18
Strongly disagree	4	1	0	2	7
Total	59	37	22	16	134

The response of the question about cousin marriage increases the risk of genetic diseases in children evaluated by age group (Table 6.29.1). Differences among the age groups in their responses were statistically significant. ($\chi^2= 22.92$; d.f=12; p=0.028).

Table 6.29.2 Cousin Marriages Risk of Genetic Diseases and Gender

Category

Gender	Female	Male	Total
Strongly agree	41	17	58
Agree	8	22	30
Do not know	6	15	18
Disagree	5	13	21
Strongly disagree	6	1	7
Total	66	68	134

The response of subjects was also evaluated with respect to different gender categories (Table 6.29.2). Differences among the gender group in their responses were statistically significant ($\chi^2= 27.42$; d.f=4; p=0.000).

Table 6.29.3 Cousin Marriages Risk of Genetic Diseases and Marital Status Category

Marital status	Married	Single	Total
Strongly agree	28	30	58
Agree	12	18	30
Do not know	16	5	21
Disagree	5	13	18
Strongly disagree	3	4	7
Total	64	70	134

The response of subjects was also calculated with respect to different marital status categories (Table 6.28.3). Differences among the marital status group in their responses were statistically significant ($\chi^2= 10.48$; d.f=4; $p=0.033$).

**Table 6.29.4 Cousin Marriages Risk of Genetic Diseases and
Occupation Category**

Occupational status	Employed	Unemployed	Total
Strongly agree	17	41	58
Agree	10	20	30
Do not know	14	7	21
Disagree	4	14	18
Strongly disagree	1	6	7
Total	46	88	134

The response of subjects was also calculated with respect to different occupation categories (Table 6.29.4). Differences among the occupation group in their responses were statistically significant ($\chi^2= 12.81$; d.f=4; p=0.012).

Table 6.30 Cousin Marriages and Infant Mortality

Categories	Frequency	Percent
Strongly agree	22	16.42
Agree	15	11.19
Do not know	20	14.93
Disagree	37	27.61
Strongly Disagree	40	29.85
Total	134	100.0

Table 6.30 demonstrates that twenty two respondents were strongly agreed that cousin marriage was main cause of infant mortality and their percentage was 16.42. On the other hand fifteen people having 11.19% were agreeing. While 20 respondents having 4.93% said that they do not know about the question. 37 respondents showed disagree having 27.61% of the total respondents. On the other hand forty strongly disagree and their percentage was 29.85 its mean that the majority of the respondents' showed that they were strongly disagree that infant mortality occurs due to cousin marriage. They replied that it occurred due to bad luck of parents. Cousin marriage prevails generation to generation in their families but they did not think that it enhanced infant mortality.

Table 6.30.1 Infant mortality and Gender Category

Gender	Female	Male	Total
Strongly agree	15	7	22
Agree	4	11	15
Do not know	4	16	20
Disagree	5	32	37
Strongly disagree	38	2	40
Total	66	68	134

The response of the question about cousin marriage increase infant mortality was calculated by gender category (Table 6.30.1). Differences among gender group in their responses were statistically significant ($\chi^2=$; 65.89; d.f=5; p=0.000).

Table 6.30.2 Infant Mortality and Marital Status Category

Marital Status	Married	Single	Total
Strongly agree	10	12	22
Agree	7	8	15
Do not know	17	3	20
Disagree	12	25	37
Strongly disagree	18	22	40
Total	64	70	134

The response of the question of the subject was calculated by marital status category (Table 6.30.2). Differences among marital status group in their responses were statistically significant ($\chi^2=$; 15.64; d.f=5; p=0.008).

Table 6.30.3 Infant Mortality and Educational Category

Educational status	Illiterate	Literate	Total
Strongly agree	7	15	22
Agree	1	14	15
Do not know	2	18	20
Disagree	2	35	37
Strongly disagree	7	33	40
Total	19	115	134

The response of the question about cousin marriage increase infant mortality was calculated by educational status category (Table 6.30.3).

Differences among educational status group in their responses were not statistically significant ($\chi^2=$; 10.18; d.f=5; p=0.070).

Table 6.30.4 Infant Mortality and Occupational Category

Occupational status	Employed	Unemployed	Total
Strongly agree	7	15	22
Agree	7	8	15
Do not know	15	5	20
Disagree	14	23	37
Strongly disagree	3	37	40
Total	46	88	134

The response of subjects was also calculated with respect to different occupation categories (Table 6.30.4). Differences among the occupation group in their responses were statistically significant ($\chi^2=$ 29.19; d.f=5; p=0.000).

Table 6.31 Treatment of Genetics Disease

Categories	Frequency	Percent
Strongly agree	27	20.15
Agree	54	40.30
Do not know	15	11.19
Disagree	11	8.21
Strongly disagree	27	20.15
Total	134	100.0

Table 6.31 illustrates that 27 respondents said they are strongly agree that such genetic disease or defects that occur can be treated and their percentage was 20.15 of the total respondents. 54 respondents were agreeing having 40.30%. On the other hand 15 said that they do not know about it and that was 11.19% of total respondents. 21 respondents were disagreeing from question and that was 8.21% of total respondents. Strongly disagree with question were 27 respondents having 20.15%. Most of respondent showed positive attitude towards question that such abnormality if Allah want can be treated.

Table 6.32 Consults for Genetic Defects Treatment

Categories	Frequency	Percent
Doctor	90	67.16
<i>Peer sahib</i>	21	15.67
<i>Dam darood</i>	16	11.94
<i>Hakeem</i>	3	2.24
Others	4	2.99
Total	134	100.0

The table 6.32 explains different categories to which people first consult in case of such defects appear in the family. 90 respondents having 67.16% said that in case of such genetic problem occur in family people consult doctors. Twenty one respondents said that *peer sahib* was considering a good healer and that was 15.67% of total respondents. Sixteenth respondents having 11.94% were in favor that people goes for *dam*

darood. Three respondents admitted that *Hakeem* considered good to consult on such issues. Four respondents with 2.99% said that people in this situation consult to other as compare to above mention. Finally, majority of respondent's response people went towards doctor for consult of genetic disease because people access to doctors was easily available.

Table 6.32.1 Consults for Genetic Defects Treatment and Gender Category

Gender	Female	Male	Total
Doctor	39	51	90
<i>Peer sahib</i>	13	8	21
<i>Dam darood</i>	12	4	16
<i>Hakeem</i>	2	1	3
Others	0	4	4
Total	66	68	134

The response of the question about to whom people first consult in case of genetic defects appear in family was calculated by gender group (Table 6.32.1). Differences among gender group in their responses were statistically significant ($\chi^2=11.09$; d.f=4; p=0.026).

Table 6.33 People Visit Hospital for Genetic Defects Treatment

Categories	Frequency	Percent
Yes	124	92.54
No	10	7.47
Total	134	100.0

Table 6.33 shows that 124 respondents favored the question and said yes their percentage was 92.54. On the other hand ten respondents did not favor the question and said no in the favor of this question. Their percentage was 7.47. In the end, majority of the respondents said yes people /family ever consulted a doctor or visit hospital for genetic disease because doctors do proper check up, laboratory tests and use other modern medicines to diagnose and treat disease.

Table 6.34 Diseases Treated By *Molvi Sahib*

Categories	Frequency	Percent
Spiritual healing	65	48.51
Do not know	28	20.90
Unable to treat	21	15.67
Pain	4	2.99
Others	16	11.96
Total	134	100.0

The Table 6.34 explains that sixty five respondents having 48.51 percentage said for favor of spiritual healing, 28 respondents having 20.90% for do not know, 21 respondents having 15.67% for unable to treat response. Four respondents said pain could be treated by visiting religious person and that was 2.99% of total respondents. On the other hand sixteenth respondents having 11.96% argued that people visited for other purpose to religious person. Finally, people argued that for *taweez, darood*

religious persons were better while other genetic disease cannot be treated by them.

Table 6.35 Traditional Healers Treat the Genetic Disorders

Categories	Frequency	Percent
Strongly agree	12	8.96
Agree	33	24.63
Do not know	22	16.42
Disagree	25	18.66
Strongly disagree	42	31.34
Total	134	100.0

Table 6.35 illustrates that 12 respondents argued that they were strongly agree that such genetic disease or defects that occur can be treated by local healers and their percentage was 8.96 of the total of total respondents. Thirty three respondents were agreeing and the percentage was 24.63. On the other hand 22 said that they do not know about it having 16.42% of total respondents. Twenty five respondents were disagreeing from question possessing 18.66%. Strongly disagree with question were forty two respondents that was 31.34% of total respondents. Most of respondents showed negative attitude about the subject that such abnormalities cannot be treated by traditional/ local healers because of not access of modern technology.

**Table 6.35.1 Traditional Healers Treat the Genetic Disorders and
Gender Category**

Gender	Female	Male	Total
Strongly agree	10	2	12
Agree	15	18	33
Do not know	6	16	22
Disagree	6	19	25
Strongly disagree	29	13	42
Total	66	68	134

The response of the question about local healer can treat genetic disease was calculated by gender group (Table 6.35.1). Differences among gender group in their responses were statistically significant ($\chi^2=$; 22.98; d.f=4; p=0.000).

**Table 6.35.2 Traditional Healers Treat the Genetic Disorders and
Occupational Category**

Occupational status	Employed	Unemployed	Total
Strongly agree	3	9	12
Agree	6	27	33
Do not know	12	10	22
Disagree	12	13	25
Strongly disagree	13	29	42
Total	46	88	134

The response of subjects was also calculated with respect to different occupational categories (Table 6.35.2). Differences among the occupational group in their responses were statistically significant ($\chi^2=10.55$; d.f=4; $p=0.032$).

Table 6.36 Effective in the Treatment of Genetic Defects

Categories	Frequency	Percent
Doctor	113	84.33
<i>Dam darood</i>	10	7.46
<i>Peer sahib</i>	7	5.22
<i>Hakeem</i>	2	1.49
Other	2	1.49
Total	134	100.0

The above Table 6.36 shows 113 respondents argued that doctor was consider more effective cure of genetic defects and that was 84.33% of total respondents. Ten respondents having 7.46% responded that *dam darood* was considered best. On the other hand seven respondents having 5.22% understand that *peer sahib* can treat better. Two respondents considered *Hakeem* a good healer and that was 1.49% of total respondents. 2 respondents having 1.49% responded for other factors that can helpful in a better way for treatment. Finally, majority of respondents responded in favor of doctor as an effective factor for treatment of disease due to availability of modern technology.

Table 6.37 Vows Can Helpful For Treatment

Categories	Frequency	Percent
Strongly agree	25	18.66
Agree	37	27.61
Do not know	16	11.94
Disagree	19	14.18
Strongly disagree	37	27.61
Total	134	100.0

The subjects were inquired about their opinion regarding the vows can be helpful for healing purpose (Table 6.37).It was observed that 25 respondents argued that they were strongly agree that vows can be help full for healing purpose in case of genetic disease and their percentage was 18.66% of the total respondents. Thirty seven respondents were agreeing and that was 27.61% of total. On the other hand 16 said that they do not know about it having 11.94%. 19 respondents were disagreeing from question and their percentage was 14.18. Strongly disagree with question were thirty seven respondents possessing 27.61%. Respondents showed positive and negative attitude equally that such genetic problems can be treated by vows.

Table 6.37.1 Vows Can Helpful for Treatment and Gender Category

Gender	Female	Male	Total
Strongly agree	22	3	25
Agree	9	28	37
Do not know	3	13	16
Disagree	4	15	19
Strongly disagree	28	9	37
Total	66	68	134

The response of the question about vows can helpful for healing purpose in genetic disease evaluated by gender group (Table 6.37.1). Differences among gender group in their responses were statistically significant ($\chi^2=$; 46.55; d.f=4; p=0.000

Chapter No.7

DISCUSSION, CONCLUSION AND SUGGETIONS

7.1 Discussion

Genetic diseases are gigantic intimidation for entire society as well as the cosmos. It is medically approved that cousin marriage is a main root cause of genetic anomaly. Consanguinity prevalence rate is low in non-Muslim countries until higher in the Muslim regimes. The practice brings huge disaster in health of human beings and their off spring. Genetic defects increase day by day due to cousin marriage especially among first cousins unions. Loss of pregnancies, infant mortality, sickle cell anemia, color blindness, disability, mental retardation, cleft palate, bent feet ,deafness, crippled , epilepsy, cancer, hair falling, infertility and heart diseases occurred due to cousin marriage are the types of genetic abnormalities. Its severe impacts were seen in countries like Jordan, Saudi Arab, India, Pakistan and North America. In spite of its harmful impacts on people's life natives of the *Bhall* are still practicing cousin marriage on the behalf of their old traditions. Baradri system is also considered a great hurdle in introducing exogamy in consanguineous societies like Pakistan.

Sandridge et al. (2010) argued that cousin marriage was regularly being practiced generation to generation with pride and sense of superiority. The Table (6.19, 6.18) showed that to evade cousin marriage was considered unethical in their family and practiced generation after generation. The Table (6.22) elaborated that the people of the village *Bhall* district Rawalpindi were suffer from genetics disease but still they prefer the consanguinity to strong their social ties. Another Table of results (6.17) explained the preference reason of the people about cousin marriage was

strong social ties that have 68 frequency and 50.75%. They argued that marriage in other families disturb comfortable environment and cooperation of family members living in same *baradri*. *Baradri* relations badly affected the exogamy marriage. Further, people answered that cousin marriage gave economic, social and emotional security to girl especially non consanguineous marriages had no such benefits for children to increase level of satisfaction of family from their future. However insecurity was root cause of prevalence of consanguinity in universe of study. Different studies find out infant mortality occurred due to cousin marriage but result occurred from this research that infant mortality did not occurs due cousin marriage, 40 respondents were strongly disagree with question. They considered that others factors are responsible for genetic defects. And for the sake of treatment they consulted with doctor. During research it was a problem to take people point of view on that topic because they consider that if they will say yes it will harmful, other people will understand that they are against of family traditions and also transgress norms. Due to family pressure they showed interest in favor of cousin marriage.

7.2 Conclusion

The analyses of the data lead us to conclude that alternative hypothesis is acceptable, i.e., higher level of consanguinity increases the risk of genetic diseases. The quantities data obtained on the opinion of subjects about the relationship between consanguinity and the occurrence of genetic diseases. Majority of the subjects were aware of severe impacts of cousin marriages

on the next generation (Table 6.21). For instance, data showed that majority of the respondents agreed that cousin/family marriages increase the risk of genetic diseases in children (Tables 6.29, 6.29.1, 6.29.2, 6.29.3, and 6.29.4). Further Table 6.30 showed that at least 25% of the subjects believed that cousin/family marriages increased the risk of infant mortality.

Genetics diseases increase dependency ratio of effected persons on other family members and they cannot live healthy and independent (social, economical) life. However there is need to suggest the people to refrain from cousin marriage to some extent, the biggest part of the society may repentance from the genetic disorders or problems so that children may be able to participate in every field of life.

7.3 Suggestions

1. The government should appoint the Lady Health Visitors (LHV) to convey the basic knowledge about bad impacts of consanguinity to females during visit to provide health facilities.
2. Local religious Scholar (*Moulvi*) should address people to escape consanguinity in the context of Holy Quran and Hadith. As consanguinity provokes the lethal diseases, verily, Islam persuades to prohibit from dreadful and dangerous diseases.
3. In the schools and colleges, Government should invite the parents on the occasion of convocation, as well as distribution of prizes, harmful cultural tradition and customs should be discouraged, for example consanguinity.

At educational institution different seminars should be promote and invite students and their parents to aware them abnormalities that generate due to practice of consanguinity.

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ANNEXTURE

Questionnaire

People perception about cousin marriages and genetic diseases a case study of rural Bhall , Rawalpindi.

Madeeha Fardous

This questionnaire is conducted for the fulfillment of thesis work on the topic “People perception about cousin marriages and genetic diseases”. I am a student of M.Sc Sociology in Quaid-i-Azam University Islamabad. The purpose of this research is purely academic. This is not used to be harming any person. Personal information will not be disclosed and will be kept confidential. Thanks....

<p>Personal demographic</p> <p>1. Name (optional)</p> <p>2. Age/Date of birth.....</p> <p>3. Gender.....</p> <p>4. Place of living.....</p> <p>5. Origin (Rural / Urban)</p> <p>6. Mother language</p> <p>7. Caste (major / minor).....</p>	<p>8. Single / Married.....</p> <p>9. Marriage type (see No. 17)</p> <p>10. If married: number of children.....</p> <p>11. Educational status</p> <p style="padding-left: 20px;">i. Illiterate/Literate</p> <p style="padding-left: 20px;">ii. Years of schooling/education.....</p> <p>Address/ cell: (optional)</p>
<p>12. Occupational group</p> <p style="padding-left: 20px;">i. Unemployed.....</p> <p style="padding-left: 20px;">ii. Employed</p> <p style="padding-left: 20px;">iii. Self-identified category</p> <p style="padding-left: 20px;">iv. Income estimate in Rs.....</p> <p>13. Family size</p> <p style="padding-left: 20px;">i. Number of family members.....</p> <p>14. Family type</p> <p style="padding-left: 20px;">i. Nuclear. ii. Joint. iii. Extended</p> <p>15. House-hold authority</p> <p style="padding-left: 20px;">i. Patrilineal. ii. Matrilineal. iii. Mixed.</p>	<p>16. House features</p> <p style="padding-left: 20px;">i. Size of house/plot (<i>marla</i>)</p> <p style="padding-left: 20px;">ii. Number of bedrooms.....</p> <p style="padding-left: 20px;">iii. Total rooms</p> <p style="padding-left: 20px;">iv. House is <i>Kacha</i>, <i>pakka</i>, mixed</p> <p>17. Parental consanguinity/ marriage type</p> <p style="padding-left: 20px;">i. Reciprocal marriage (<i>Watta satta</i>)</p> <p style="padding-left: 20px;">ii. First cousins.....</p> <p style="padding-left: 20px;">iii. Mother was father’s cousin’s daughter...</p> <p style="padding-left: 20px;">iv. Second cousin (grandparents were cousins)</p> <p style="padding-left: 20px;">v. Distantly related (<i>Baradri</i>).....</p> <p style="padding-left: 20px;">vi. Non-related.....</p>

Attitude towards cousin/ family marriages

18). **For married individuals:** Did you marry within your family?

- a) Yes b) No

19). If yes, then from which side of the family you get married?

- a) Maternal side. b) Paternal side. c) Relatives

20). **For un-married individuals:** Do you plan to marry within the family?

- a) Yes b) No

21). If yes, then from which side of the family you want to marry?

- a) Maternal side. b) Paternal side c) Relatives

22). Are you in favor of cousin/ family marriages?

- a) Yes b) No

23). Mention the reasons of preference of cousin/ family marriages? (In order of preference)

- a) Strong social ties b) Blood purity c) any other.....

24). Are cousin/ family marriages prevailing in your family generations after generations?

- a) Yes b) No

25). To avoid cousin/ family marriages is considered unethical in your family?

- a) Yes b) No

26) In your opinion cousin/family marriage is religiously preferred/ encourage?

- a) Strongly agree. b) Agree. c) Do not know. d) Disagree e) Strongly disagree

27). Are you aware of severe impacts of cousin/ family marriages on the next generations?

- a) Yes b) No

Attitude towards genetic defects/ birth anomalies (e.g., deafness, blindness, mental retardation, disability, cleft lip, bent feet, crippled.....)

28). Is there any genetic disease/ birth anomaly in your family?

- a) Yes b) No

29). If yes, then how many children/family members are suffering with such disease?
(Mention separately if there is more than one type of disease)

- a) 1-2. b) 3-4. c) 5-6. d) more

30). From which disease your family members/children have suffered?

- a) Deafness. b) Blindness. C) Mental retardation. D) Disabled. E) Any other

31). Is the disease coming from one of the forefather / foremother of the family?

- a) Grandfather (maternal/ paternal) b) Grandmother (maternal/ paternal)
c) Father d) Mother e) None of all

32). In your opinion, what can be the reasons of genetic/ family diseases?

- a).....b)..... c).....

33). Do such defects appear due to specific act (e.g., sin) of the family/ grand parents?

- a) Strongly agree. b) Agree. c) Do not know d) Disagree e) Strongly disagree.

34). Do you think any of the following can cause genetic defects in children?

- a) *Peer ke bad-dua.* b) *Bhoot pret.* C) Heavenly bodies. D) other factors.....

35). In your opinion, cousin/ family marriages increase the risk of genetic diseases in children?

- a) Strongly agree. b) Agree. c) Do not know. d) Disagree. e) Strongly disagree.

36). Do you think cousin/ family marriages are the main cause of infant mortality?

- a) Strongly agree. b) Agree. c) Do not know. d) Disagree e) Strongly Disagree

Medical help seeking behavior

37. Do you think genetic defects / birth disorders can be treated?

- a) Strongly agree. b) Agree. c) Do not know. d) Disagree e) Strongly disagree.

38. To whom people FIRST consult in case such defects appear in the family?

- a) Doctor. b) *Hakeem*. c) *Peer sb*. d) *Molvi sahib*. e) *dam-darood*. f) Other.....

39. Do the people / family ever consult a doctor or visit hospital for genetic defect?

- a) Yes b) No

40. Which types of diseases could be treated by visiting the religious person/ *molvi sahib*?

.....

41. Do you think traditional / local healers can treat the genetic disorders?

- a) Strongly agree. b) Agree. c) Do not know. d) Disagree. e) Strongly disagree.

42. In our opinion which of the following is more effective in the treatment of genetic defects?

- a) Doctor. b) *Hakeem*. c) *Peer sb*. d) *Molvi sahib*. e) *dam-darood*. f) Other.....

43. In your opinion vows can help full for healing purpose in case of genetic disease?

- a) Strongly agree. b) Agree. c) Do not know. d) Disagree. e) Strongly disagree