Original Article

Consanguineous marriage among the parents of hearing impaired students in Mashhad

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The aim and background: The prevalence of consanguineous marriage is about 30 % in Iran and this can increase the probability of incidence of genetic impairments such as hearing impairments. Hearing impairment in comparison with other hereditary disorders is the most incident.
The purpose of this survey is to identify the prevalence of consanguinity among the parents of sensory-neural hearing impaired students in Mashhad.

Materials and methods: One hundred and forty parents of hearing impaired students in primary school and guidance school in Mashhad took part in the study. The questionnaire that consisted of some questions about the history of family and hearing loss was given to the mothers. After finishing the trend of research, the results were analyzed using the SPSS program.

Results: The results showed that, in 61.4 % of people, consanguinity was present, which, first cousin consanguineous marriage was found among the parents of 43.6 % of the students and second cousin consanguinity was present in 17.9 % of them and there was significant relation between consanguineous marriage and having more than one disabled children in the family, as, 77.7% persons who had more than one handicapped child, had consanguineous marriage.

Conclusion: According to prevalence of hearing impairment in consanguineous marriage that was measured 61.4% in this study, therefore, it seems essential, the prevention of hereditary hearing impairment. Consanguineous marriages is one of the cultural problems at present time, that may lead to some inherited disorders like hearing impairment; so we should give enough information about the risk of consanguinity and its related outcomes to the involved people.

Keywords: Sensory-neural hearing impairment, Consanguineous marriage, Hereditary hearing impairment.

Introduction

In consanguineous or close marriages, the ancestors are common. In this instance the chance of identical unfavorable alleles meeting is far greater than in unrelated marriages. Prevalence of consanguineous marriage is about 40% in Iran and this can increases the probability of incidence of genetic disorders such as hearing impairments (1).
According to the last statistics of 2008 year, the average incidence of neonatal hearing loss in the United States, is 1.1 per 1000 infants, with some variation among states (0.22 to 3.61 per 1000) (2).
Deafness is the most common sensory-neural disorder in human. Many environmental and genetic factors cause this disability.
Hereditary hearing impairments are classified into two types of syndromic and non syndromic. About 80% of non-syndromic types are autosomal recessive (3).
Influences of consanguineous marriage on hereditary hearing impairments have been documented and because of the high of consanguinity in Iran, the study of autosomal recessive non-syndromic deafness in families with history of repetitious consanguineous marriage and deafness in their children has been pointed out by several authors.
Researchers declared that consanguinity is the cause of 70% of hearing impairment and deafness (4). This percentage is about 85% in some provinces that consanguineous marriage is more common.

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The purpose of this survey is to identify the prevalence of consanguinity among the parents of hearing impaired students in Mashhad.

Materials and methods

In this study which was performed in schools for disabled students in Mashhad, 140 mothers of hearing impaired students participated in the research. A questionnaire that consisted of questions about age, history of hearing loss, parent's consanguinity, number of handicapped children in family and parent's education and implemented for all cases.

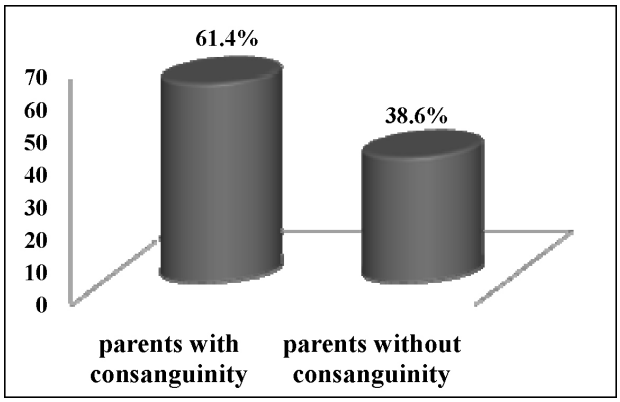
In this study, first cousin marriages (third degree relatives) defined as consanguineous. Finally the data were analyzed using analytical-descriptive statistics.

Results

In this study, 36 hearing impaired students were between 6 and 8 years old and 60 persons were between 9 and 12 years old and the age of 44 students were more than 13 years old. First cousin marriage was found among the parents of 61 students (43.6%), and second cousins were in 27 persons (17.9%). The parents of 52 students did not have any consanguinity.

Figure 1 shows the prevalence of hearing impairment between students with parents' consanguinity and students without parents' consanguinity (in percent).

Figure 1. Prevalence of hearing impairment between students with parents' consanguinity and students without parents' consanguinity (in percent)



11 students had moderate hearing loss (than 55 dBHL) and 17 persons had moderate to severe hearing loss (56 to 70 dBHL) and the degree of hearing loss in 65 persons was severe (71 to 90 dBHL) and in 47 persons was profound (upper than 90 dBHL).

Table 1. Degree of hearing loss in students

Degree of H.L	Frequency	Frequency (%)
Moderate	11	7.9%
Moderate to severe	17	12.1%
severe	65	46.4%
profound	47	33.6%
Total	140	100%

18 students had one or more disabled sister or brother. Forty four mothers were under high school diploma, that was the most frequent and 15 mothers were illiterate. Only 23.6% of mothers had some awareness about possibility of disabled children in consanguineous marriage and 76.4% of them did not have any information about the issue and outcomes of consanguineous marriage. The results of this study show that, first cousin consanguineous marriage was the most consanguinity in parents of hearing impaired children.

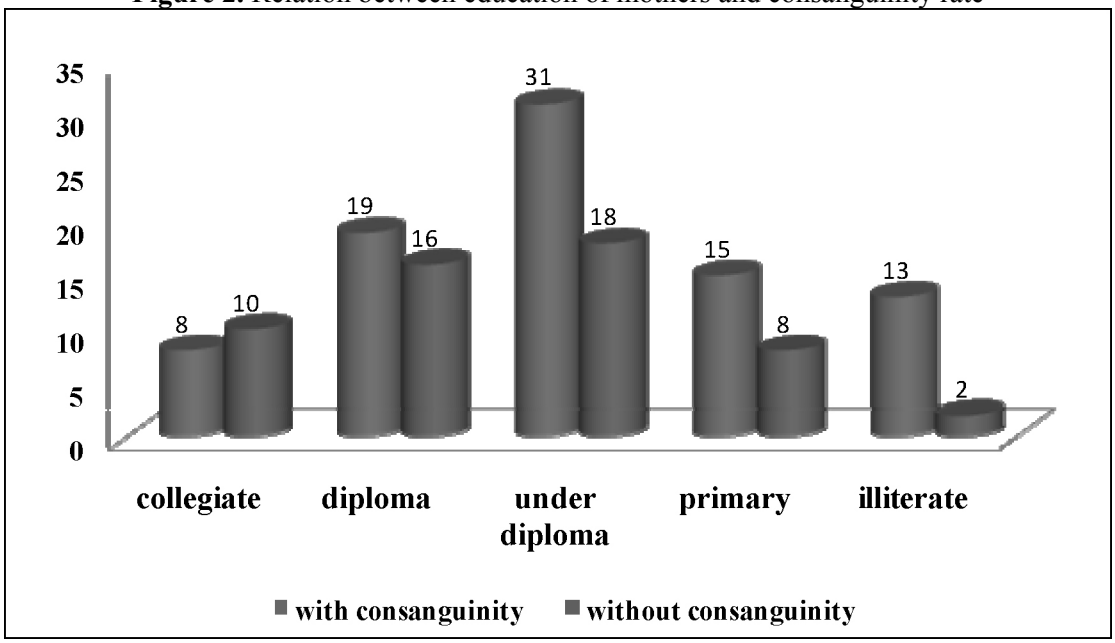
There was significant relation between consanguineous marriage and more than one disabled children in the family, as, 77% persons who had more than one disabled child, had consanguineous marriage. About paying more attention to education of parents, prevalence of consanguinity in mothers who had less education was more and consanguineous marriage in mothers who had university education was the least. Relation between consanguinity and education has been shown in figure 2.

Discussion:

Since our country is greatly impressed culturally by traditional beliefs about marriage, consanguinity is rather common in Iranian families. In this study, results showed that 61.4% of parents had consanguineous marriage. In survey of Nikbakht et al. (2006), consanguinity had been reported in 63.6% parents of students of Baghcheban primary schools in Tehran (1).

Lotfi et al. declared that prevalence of consanguinity in parents of hearing impaired children was 62.9 %(5). Also Saadat (2001) reported that consanguinity included 30% cases of marriages in Iran (1), so with comparison of these numbers, we realize that,

Figure 2. Relation between education of mothers and consanguinity rate



prevalence of consanguineous marriage in parents of hearing impaired children had been more considerable, for instance, consanguinity in Iran in comparison with American countries is very high, which, may leads to birth of children with genetic disorders (5).

The study performed by Abdulbari et al. about hearing assessment of 2277 neonates showed that, consanguinity is more usual in parents of hearing impaired children than parents of normal children. The rate of consanguinity in parents of hearing impaired children was 60.5% and in parents of normal children was 25.3 %(6). Zakzouk et al. performed the study about impacts of consanguinity on hearing impairment in children in UAE. Prevalence of hearing impairment in these children was 13% and first cousin consanguinity was present in 19% of them and second cousin consanguinity was present in 28% of parents and

prevalence of hearing impairment in children of parents who had consanguineous marriage was more significantly, that is similar to what we found out in our research (7). Reddy et al. carried out the same study about the role of consanguinity in neuro-sensory deafness. Final results showed that, the parents of 58.2% of children had consanguineous marriage and parents of 41.8% of them had no consanguinity, whereas, prevalence of consanguinity was 22.3% in society. There was significant difference about the prevalence of consanguinity in parents of hearing impaired children in relation to prevalence of these marriages in the society and therefore consanguineous marriage discussed as a risk factor in creation of hearing loss (8).

About the awareness of people for the outcomes of consanguinity, the findings of this study showed that, a few parents were aware about the probable risks of consanguineous marriage, therefore we should give enough information about the risk of consanguinity and its related consequences to the people, and take the necessary steps to advise them.

Conclusions:

Prevalence of consanguineous marriage is rather high in our country and it is seen more among parents of hearing impaired children noticeably. Presentation of a prevention program is crucial to decrease the number of children with hereditary disorders and we should provide information for families about the probable risks of consanguinity. Genetic consulting is a necessity and should be available for people who are at risk to have children with genetic disorders including hearing impairments. Moreover neonates and preschools hearing screening must be performed in all parts of the country.

Acknowledgment:

We are grateful to the principals of schools for deaf for their sincere cooperation in making this study possible. We are also indebted to the parents of the hearing impaired students for their cooperation and valuable dedicated times to this study.

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