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CONSANGUINEOUS MARRIAGES AND GENETIC DISEASES IN EASTERN PROVINCE OF SAUDI ARABIA

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Abstract:

Background: *There is a high rate of consanguinity in Saudi Arabia; however, information on its relationship with genetic disorders is limited*

Aim of study: *to study the relationship between consanguinity and the common inherited diseases in the eastern province of the Kingdom of Saudi Arabia.*

Material & Methods: *An online questionnaire was used to obtain the data. SPSS v21 program was used to analyze that data with size of 294 samples.*

Results: *The study findings in the eastern province of Saudi Arabia population with a high rate of consanguinity, it shows that there is a significant increase in the prevalence of hereditary diseases, like anemia, diabetes, cancer, cardiac problems, loss of sense and some other diseases. The main causes of consanguinity proved by the study were the couple agreement, following the traditions, and that people are not aware enough of the consequences.*

Conclusion: *In a population with a high rate of consanguinity, an action was taken by Saudi Arabia government about making premarital test mandatory.*

Key words: *Consanguinity. Genetic diseases. Eastern province.*

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INTRODUCTION:

Consanguinity refers to marriages between individuals who share at least one common ancestor. In clinical genetics, a consanguineous marriage is defined as a union between two individuals who are related as second cousins or closer, with the inbreeding coefficient (*F*) equal or higher than 0.0156[1]. Close-kin marriage continues to be preferential in many major populations, with the influence of religion apparent in the major regional differences in consanguinity prevalence across the globe[2]. With 20-30% of all marriages occurring between first cousins, increasing attention is now given to role of consanguinity in the occurrence of genetic disease[3]. There is a high rate of consanguinity in Saudi Arabia; however, information on its relationship with genetic disorders is limited[4]. First-cousin marriage may be a significant risk factor for specific types of congenital heart disease in a consanguineous population[5]. Mortality in first-cousin progeny is higher than in nonconsanguineous offspring, although demographic, social, and economic factors can significantly influence the outcome[2]. This research is aimed to study the relationship between consanguinity and the common inherited diseases in the eastern province of the Kingdom of Saudi Arabia.

METHODOLOGY:

Design:

Analytic study (cross sectional)

Population:

The study sample is determined by a multistage probability random sampling procedure. It's conduct in urban and semi-urban areas of the Eastern province of Saudi Arabia at April 2014.

Sample:

The total sample size was calculated as 294 at least. The total of 294 cases with suspected genetic etiology like bad obstetric history, mental retardation, multiple congenital anomalies, Down syndrome, kidney failure, hypertension and diabetes…etc.

Criteria for sample selection:

- Consanguineous married
- Have children

Instrument:

Questionnaires were used to obtain the data.

1. The questionnaire translated into Arabic for people to understand and it consisted of two parts:

A detailed questionnaire was developed aimed to determine how common the inherited genetic diseases with consanguineous marriage's offspring is, and determine the level of people's awareness of these diseases and the role that the consanguinity marriage plays in it. Also the questionnaire contained a few questions about the premaritaltests, to determine whether people are taking them seriously, or not, and how much do they know about these tests since it is a preventive procedure of the possible genetic disorders that children of a wrong match partners can have. The questionnaire was printed, and hand over to about 20 percent of the sample size, and the other 80% of the sample answered the questions online by the published questionnaire. After collecting data, that took no more than two weeks.

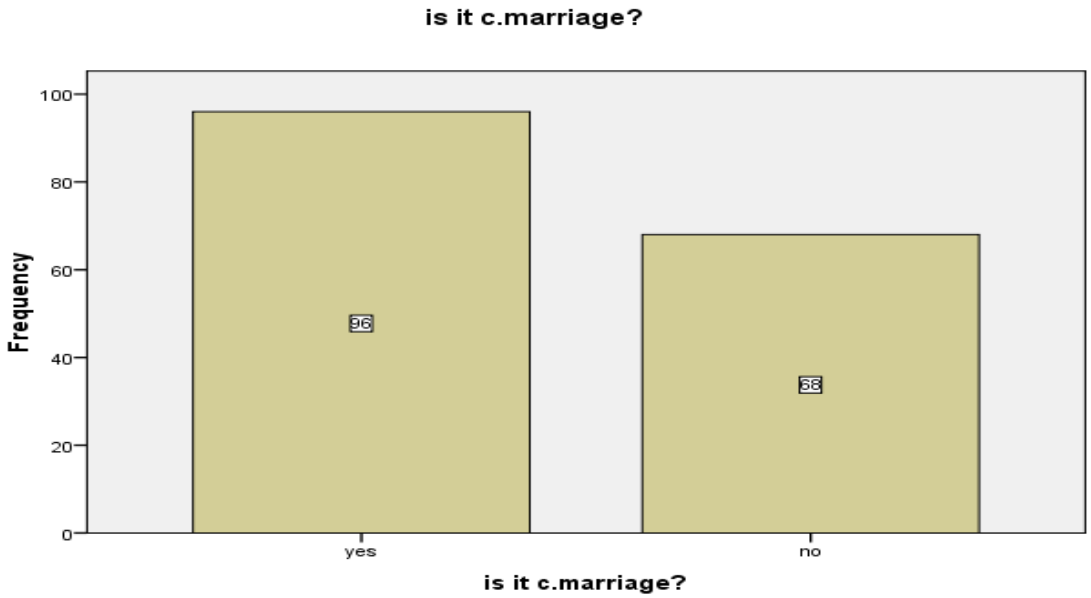
2. Statistical analysis:

The SPSS 21 program was used for analysis. At the beginning, a select cases was performed to exclude the singles and who doesn't have kids from the sample. After that, we calculated each variable using frequency. Then, bar chart was formed for the variable c.marriage (is it consanguineous marriage?). Chi-square also was done for all the variables with the variable c.marriage, which indicate that there was a significant relationship between consanguinity and genetic diseases.

RESULTS:

Of the sample of 294 persons, we excluded 50.34 % of the sample, who were single or have no children. So ultimately, we worked statistically on a sample of 164 persons. The sample involved 16 persons who haven't finish the school, which represent 9.7 percent of the sample, and 52 persons who have finished the school and got the secondary school certificate, which represent 31.7 percent of the sample. 96 persons were high educated, and they represent the highest percentage, which is 58.5.

A 97.6 percent of the 164 were married, .6 percent were divorced, and there was 1.8 percent widows. 58.5 percent of their marriages were consanguineous marriages, which we consider it a big number. 48.2 percent of the consanguineous marriages were with the agreement of the both spouses, and 23.8 percent were married because of the traditions of the family, and the rest of the sample were not married of relative non-consanguineous marriages.



The frequencies also showed that 56.1 percent parents were cousins too, when the 43.9 percent parents were not cousins. In addition, 54 consanguineous marriages have genetic disease in their family history, and 45 consanguineous marriages doesn't have.

Chi square test showed that 34 of the 96 consanguineous marriages' kids have one or more genetic diseases. On the other hand, 33 of the 68 non-consanguineous marriages' kids have one or more genetic diseases. With a B-value less than 0.05, it was proved that there is a significant relationship between consanguineous marriage and genetic diseases.

In a marriages like these, we will come the importance of the premaritaltest. We found out that 66 persons in our sample have done it before they get married, and 98 persons have not. 92.7 percent said that it is an effective way to avoid genetic diseases, and 7.3 percent think that it doesn't. However, when it comes to the community awareness of the consanguineous marriage risks, the highest percentage represented in 89 persons think that the community are not aware enough.

DISCUSSION:

The numbers in our results showed that the consanguineous marriages are the most common in the Eastern Province of Saudi Arabia. Al-Abdulkareem, A. Ballal, S. 1998, is in agreement with our results. Their research was on a sample of 1307 of the Eastern Province people. Their results showed that more than the half of the marriages were consanguineous, and that's what our results proved[6].

Our results also showed that the consanguineous marriages are significantly related to genetic diseases, such as anemia, diabetes, cancer, cardiac diseases, and others. Bittles, H. and Black, M. 2010, have come up with the same result in their research. Their results showed that In communities with a high level of consanguineous marriage, the diagnosis of a recessive disorder in one or more members of the same family is generally indicative of a recent mutation, whereas the presence of a rare disorder in several families suggests an older mutational event or previous admixture through marriage with a person from another community[2].

Halim, N. 2013, is also in agreement with our results. His research showed the significant relationship between consanguineous marriages and genetic disorders[1].

Other research was published by Ehlayel, M. Bener, A. 2013, had the same results about consanguineous marriages in primary immunodeficiency diseases in children. The relationship was significant in their sample. 61.1 percent of the diseased children were consanguineous marriages' kids[7].

Recent researches have proved this relationship and the risks of consanguineous marriages on the offspring. We didn't find a research that prove the opposite.

Limitations of our study were that some people wouldn't expose all the details about the numbers of their kids and their diseases. In our limited time, and because we are a small group, the sample size wasn't big. We had to exclude a big number of them, who wasn't married or has no children.

CONCLUSION:

This study shows that there is a relationship between consanguineous marriages and some specific diseases in the eastern province of Saudi Arabia. In a population with a high rate of consanguinity, there is a significant increase in the prevalence of genes related diseases includes anemia, diabetes, cancer, cardiac problems, loss of sense and other diseases.

REFERENCES:

1. Halim, N. Consanguinity, endogamy, and genetic disorders in Tunisia. J Community Genet. 2013 Apr;4(2):273-84.
2. Bittles, H, and Black, M. Consanguinity, human evolution, and complex diseases. Proc Natl Acad Sci U S A. 2010. 1779–1786.
3. Hanan, A. Hamamy, A. Masri, A. Al-Hadidy, K. Consanguinity and genetic disorders. Saudi Med J. 2007 Jul;28(7):1015-7.
4. El Mouazen, M. Consanguinity and major genetic disorders in Saudi children: a community -based cross- sectional study. Ann Saudi Med. 2008 May-Jun;28(3):169-73.
5. Becker, S. Al Halees, Z. Molina, C. Paterson, R. Consanguinity and congenital heart disease in Saudi Arabia. Am J Med Genet. 2001 Feb 15;99(1):8-13.
6. Al-Abdulkareem, A. Ballal, S. Consanguineous marriage in an urban area of Saudi Arabia: rates and adverse health effects on the offspring. Journal of Community Health (Impact Factor: 1.28). 02/1998; 23(1):75-83.
7. Ehlayel, M. Bener, A. Abu Laban, M. Effects of family history and consanguinity in primary immunodeficiency diseases in children in Qatar. Open Journal of Immunology 06/2013; 3(2):47-53.