



INTERNATIONAL JOURNAL OF RESEARCH IN PHARMACEUTICAL SCIENCES

Published by JK Welfare & Pharmascope Foundation

Journal Home Page: www.pharmascope.org/ijrps

Fertility and sterility in some Iraqi families

Eqbal Dohan Chillab^{*1}, Dhuha Salman², Nabaa Salah¹, Dhurgam A. Rahman³¹Department of Radiology Technologies, Al-Mustaqbal University College, Hilla, Babylon, Iraq²Department of Pathological analytical, Al-Mustaqbal University College, Hilla, Babylon, Iraq³Department of Biology, University of Al-Qadisiyah, College of Science, Iraq

Article History:

Received on: 12.05.2019

Revised on: 08.08.2019

Accepted on: 12.08.2019

Keywords:

Fertility, hereditary, families, Consanguineous, Iraq

ABSTRACT

The present study aims at examining some hereditary effects (sterility and fertility) in sampled Iraqi families. The study includes 1000 families chosen from different areas. The samples are randomly chosen and from different cultural levels. The results show that there are normal differences in the ratio of the influencing factors on reproduction, such as fertility and sterility among foreign married and consanguineous ones. The high rate is found in the first step Consanguineous marriage where it reaches 3.5 (9.2-7.9X²) with the possibility of 0.05 free degree for the first and the second steps as compared with the foreign marriage. The ratio of the spontaneous abortion, the embryo death and the child death under the age of two years are high as compared with the rate of the foreign marriage which are as follows: (22.1), (3.3) and (5.2) respectively (valued 6.8-8.3X²) with the possibility of 0.05 free degree. Also, it is noticed that the ratio of the reproduction disorder of the sample under study is 53%, which is high as compared with the rate of the other studies that were carried out in Iraq. Also, it has been seen that there is a decrease in the internal marriage factor (F=0.27) and the ratio of Consanguineous marriage in this study is 56.6%, which is high as compared with other studies. This is evidence that the heredity danger awareness from the consanguineous marriage is below the required level.

*Corresponding Author

Name: Eqbal Dohan Chillab

Phone:

Email: Eqbal.dohan@gmail.com

ISSN: 0975-7538

DOI: <https://doi.org/10.26452/ijrps.v10i3.1471>

Production and Hosted by

Pharmascope.org

© 2019 | All rights reserved.

INTRODUCTION

Iraq underwent severe circumstances and changes in the last three decades like wars and their consequences in the social and economic aspects of life, especially hereditary factors as sterility, fertility, spontaneous abortion, fetus mortality, births and

child death under two years of age. Researches point out that 50% of miscarriages are of hereditary factors. Other factors vary like environmental pollution and consanguineous marriage. The latter represent high ratios in Iraq as in other Arab countries (20-60%). This depends on many economic, social, cultural, religious and traditional reasons that are common in such countries (Al-Awadi *et al.*, 1985).

To understand such factors and many other factors, this study focuses on consanguineous marriage and its relation to fertility and sterility in Iraqi families. Sterility means the inability to reproduce within 5 years of marriage with the desire of propagating in regard of the physiological, anatomical and functional statuses (Al-Gazali *et al.*, 1997) (El-Hamzi *et al.*, 1995).

There are two types of sterility. The first types are the absolute failure to reproduce. The second types are having a previous pregnancy that ended with

natural or birth miscarriage and no second pregnancy after one year of the first pregnancy. There are several reasons leading to sterility like physiological diseases that include ovulation failure, temperature influence on sperm and, some bacterial infections like syphilis, cellular synthetic temperature disorders, hormones, endocrine failure and exposure to various materials due to the use of certain weapons in wars or environmental changes as the case with Iraq (Hanan, 2003).

In studying the different parameters of reproductive health in the Iraqi families to show the abnormalities in such settings, it is well known that the ratio of 20% is considered high in different countries of the world (Galoube, 1999).

Besides the variation in families and the effect on the parameters, consanguineous marriage (marriage of two persons of one remote or close ancestor on the mother or father side) influences reproductive health. As for relatives who share one distant ancestor (two or more generations), their generative influence would be weak (Galoube et al., 1995).

Consanguineous marriage does not always mean that there is a potential health risk on children from hereditary diseases as some people think. This is a common mistake because consanguineous marriage sometimes comes with advantages in some cases when there are good hereditary qualities in the family-like intelligence, beauty and other desired qualities. However, consanguineous marriage has adverse effects, and this is up to the embryologists and reproduction clinics to diagnose. We notice that 7% of hereditary handicapped cases result from consanguineous marriages. Scientists recommend that consanguineous marriage can be allowed every other generation (Jaberi et al., 2000).

American studies published in well-established medical magazine pointed out that Consanguineous cousin marriages are less common and deformities in the children from such marriages are almost the same as other non-Consanguineous marriages, and that child deformity and other hereditary diseases in Consanguineous marriages are 7 – 8%; while it is 5% in non-Consanguineous marriages. The study recommends that doctors must not rush to discourage consanguineous marriages. Instead, doctors should advise them to have the proper tests before getting married.

Noteworthy in the previous studies in Iraq, reproductive disorder ratio has been noticed to increase continuously. It was said that the reason is the problematic events Iraq was exposed to, which led to unpredictable changes in the environment, increase in pollutants and alterations in the social context

and health issues to impose various genetic disorders (Dohan et al., 2019).

MATERIALS AND METHODS

To study fertility and sterility in a sample of Iraqi families in different areas, a special questionnaire was formed based on several references.

A total of 1100 copies of the questionnaire was delivered, of which only 1000 responded ones were recovered. The rest of the copies was not recovered. The response rate was 90.9%, which is a good rate considering the educational level for most families and the usual suspicious attitude toward responding to questionnaires, as the responses involve other details that the subject is not willing to give away, along with the stress suffered by Iraqis in the current circumstances.

Responses were recorded immediately for each sampled family with as much accuracy as possible. After completing responses, copies were collected, indexed and divided according to the degree of Consanguinity of the couple (1st, 2nd, and unrelated). Cases of sterility, pregnancy, miscarriage, fetus mortality, deliveries and child mortalities (under 2 years of age) along with the various factors acting with such parameters to identify the extent of change in them. Inbreeding coefficient (F) was set to represent one of the Consanguinity degree parameters giving that the virtual value of outbreeding = zero, 1st Consanguinity degree = 1/16, 2nd degree = 1/64 and 3rd degree = 1/256. The total for F = F1+F2+F3+F4. Later, statistical analysis was done by choosing X² and Chi-2. X2 contingency square between percentages) = 3.84 with 0.05 likelihood for one degree being compared with Chi2 in the tables.

RESULTS AND DISCUSSION

In this study, sample inbreeding coefficient was identified to be F = 0.27, which is very high and indicates an increase in the ratio of Consanguineous marriages among Iraqi families compared with previous studies in Iraq. The rate is 0.021, and when compared to Arab countries like Yemen, India and Iran, the ratios are 0.125, 0.04 and 0.021, respectively. Table 1 shows that the sterile families ratio is 3.7, which very high compared with the previous studies.

Table 2 also shows the correlation among Consanguinity, fertility and sterility. Results reveal that there are significant differences between 1st inbreeding and 2nd inbreeding marriages compared with unrelated marriages:

Chi-2 = 6.3 with 0.05 likelihood for each degree.

Table 1: The correlation among Consanguinity degree, fertility and sterility

Consanguinity degree	# factors	Fertility	Reproductive (%)	Sterility	Infertility (%)	Chi-2 compared to non-relatives
1st	400	385	96.2	15	3.7	6.3
2nd	166	160	96.3	6	3.6	7.9
Unrelated	434	417	96.1	17	3.9	-
Total	1000	962	96.2	38	3.8	-

Table 2: Parameters of fertility and Consanguinity degree of a couple

Consanguinity degree	# families	# pregnancies	Miscarriages	%	Fetus mortalities	%	Births	Child mortalities	%	Chi2 vs non-relatives
1st	400	1213	293	24.1	53	4.3	867	67	7.7	8.3
2nd	166	511	80	15.6	13	2.5	418	13	3.1	6.8
Unrelated	434	1315	167	12.6	53	4.0	1095	47	4.2	-
Total	1000	3039	540	17.7	119	3.9	2380	127	5.3	-

Table 3: Sample distribution for two Consanguinity degrees

Consanguinity degree	# factors	%	Chi2 compared to non-relatives
Unrelated	434	43	
1st degree	400	40	13.7
2nd degree	166	166	22.8
Total	1000		

Table 4: Correlation between Consanguinity degree and fertility disorders

Consanguinity degree	# families	Affected families	%	Chi2
Unrelated	434	120	27	3.8
Relatives	566	293	51	-
Total	1000	413	31	-

The ratio is 2.3%, which is due to the situation in the country or consanguineous marriages in this sample. Regarding sterility ratio in the families based on Consanguinity degree, there are no significant differences although the rate is slightly higher in unrelated marriages. However, researches show sterility ratio to be high in consanguineous marriages due to the situation of the country, Consanguinity degree and other different factors.

In this table, the ratio of pregnancies is 3.0 for each family, which is less than the previous rates.

Table 3 reveals that the correlation between Consanguinity degree and fertility parameters leads to the increase in miscarriages; related couples have more miscarriages than unrelated couples, which could be due to genetic mismatch in similar mar-

ried couples along with genetic differences, certain genetic compounds, immunity, fetus mortality and child mortality; and there is significant variation between related and unrelated couples ($\text{Chi}^2 = 8.3$ with 0.05 likelihood per unit).

Reasons behind such results could be the situation of the country in general, economic difficulties, bad health services and other factors. However, miscarriages and fetus mortalities tend to be higher with various Consanguinity degrees. That being said, the same ratio in unrelated marriages are less than before as it is 43.4% here, which is close to that recorded in Arab countries and more than that in Japan (Zaoui and Biemont, 2002).

Noteworthy, child mortalities significantly higher than that in the previous studies. This is predictable

in light of the socio-economic situation in the country and the continuous armed conflicts during the last decades, which have been affecting the health and fertility of the families. Noteworthy, such ratio decreases in the different Arab and other countries in the world (Bittel and Edith Crown University, Australia, 2001) Kostiner and The Royal Institute of International Affairs, The United Kingdom (1996) (Ewaid and Abed, 2017) .

Table 3 shows the distribution of two Consanguinity degrees, and there are significant differences between the first degree marriages and non-Consanguineous marriages (Chi2 is 12.5 with 0.005 likelihood), and between the second-degree marriages and non-Consanguineous marriages (Chi2 is 22.8 with 0.005 likelihood). The degree is added to the values of the non-Consanguineous marriages as most genetic scientists take it for having a genetic dimension of the first Consanguinity degree (Galoube et al., 1995) (Ibraheem et al., 2017) .

Consanguineous marriage ratio became higher than non-Consanguineous marriage ratio, which is inconsistent with other studies (Jurdi et al., 2002) (Radovanvic and Shah, 1999) (Ewaid et al., 2019a) (Ewaid et al., 2019b). Consanguineous marriage ratio is also higher than that in other countries in the world, which denotes the lack of awareness of genetic risks of consanguineous marriage.

Table 4 shows the correlation between consanguineous marriage and fertility disorders. Results show that the ratio of fertility disorders (miscarriage, fetus mortality, and child mortality in less than two years of age) for unrelated couples is 27% compared to 51% in Consanguineous marriages, which is very high and significant as it is almost twice as much. This denotes the importance of Consanguinity function in the various physiological activities related to reproduction besides exposure to pollutants (Abed and Salim, 2019) (Chalap and Al-Awsi, 2019).

CONCLUSIONS

The bottom line is that fertility disorders in Iraqi families increase so massively that follow-up is vital and that families have to consult health services more as this is of influence on the future of our beloved country.

REFERENCES

Abed, S. A., Salim, M. A. 2019. The first record of Asian Pied starling *Gracia contra Linnaeus*, 1758 (Aves, Sturnidae) in Iraq. *Eco. Env. & Cons*, 25(1). pp. (106-110).

Al-Awadi, S. A., Moussa, M. A., Naguib, K. K., Farag, T. I., Teebi, A. S., El-Khalifa, M., El-Dossary, L. 1985. Consanguinity among the Kuwaiti Population. *Clinical Genetics*, 27:483-486.

Al-Gazali, L. I., Bener, A., Abdulrazzaq, W. N., Micallef, R., Al-Khayat, A. I., Gaber, T. 1997. Consanguineous Marriage in the United Arab Emirates. *J. Biol. Sociosci*, 29(4):491-97.

Bittel, A. H., Edith Crown University, Australia 2001. Center for Human Genetics. In *Background Summary of Consanguineous Marriages*, Australia.

Chalap, E. D., Al-Awsi, G. R. L. 2019. A General Overview of the Genetic Effects of Extracellular Polymers For *Enterococcus Faecium* in Cancer Cells". *International Journal of Research in Pharmaceutical Sciences*, 10(1):436-479.

Dohan, C. E., Ali, T. R., et al. 2019. Genetics of Sickle Cell Anemia Disorders in Baghdad City. Iraq. *Indian Journal of Public Health Research & Development*, 10(2):817-822.

El-Hamzi, M. A., Al-Swailem, A., Warsy, A., Sulaimani, R. 1995. Consanguinity among the Saudi Arabian Population. *American Journal of Medical Genetics*, 32:623-626.

Ewaid, S. H., Abed, S. A. 2017. Water quality index for Al-Gharraf River, southern Iraq. . *The Egyptian Journal of Aquatic Research*, 43(2):117-122.

Ewaid, S. H., Abed, S. A., Al-Ansari, N. 2019a. Crop Water Requirements and Irrigation Schedules for Some Major Crops in Southern Iraq. 11:756-756.

Ewaid, S. H., Abed, S. A., Al-Ansari, N. 2019b. Water Footprint of Wheat in Iraq. 11:535.

Galoube, A. A. N. 1999. Survey of some Reproductive Parameters in Iraq. *The Reterinarian*, 9(3).

Galoube, A. A. N., Yessen, A. A., Hussein, S. M. 1995. Relationship of Consanguineous Degrees and Inbreeding Coefficient in Iraq. *Al-Qadisiyah Journal*, 46.

Hanan, H. 2003. Consanguineous Marriages in the Arab World. . *Selected Studies*, 6:1-15.

Ibraheem, L., Hussein, Abed, S., Ali 2017. Accumulation detection of some heavy metals in some types of fruits in the local market of Al-Diwaniyah City. Iraq. *Rasayan J. Chem*, 10(2):339-343.

Jaberi, L., Halpern, G. J., Shohat, T. 2000. Trends in the Frequencies of Consanguineous Marriage in the Israeli Arab Community. *Clint. Genet*, 58:106-110.

Jurdi, R., Sexena, P. C., American University in Cairo, Egypt 2002. The Prevalence and Correlates of Consanguineous Marriages in Yemen: New Demography of the Arab Region of the Social Research Cen-

ter. Egypt.

Kostiner, J., The Royal Institute of International Affairs, The United Kingdom 1996. Yemen: The Tortuous Quest for Unity, 1990-1994. The United Kingdom.

Radovanvic, Z. N., Shah, J. B. 1999. Prevalence and Social Correlates of Consanguinity in Kuwait. Annual of Saudi Medicine, 19:206-210.

Zaoui, S., Biemont, C. 2002. Frequency of Consanguineous Unions in the Talemcen Area West Algeria. Sante, 12(3):289-295.