



Knowledge and Attitude towards Consanguineous Marriage among Secondary School Students in Al- Mukalla District, Yemen

Haddad Salim Al-Hebshi^{1*}, Ala'a Salem Bazarah², Noof Khaled Bin Alsheikh Abobaker³, Ahmed Mohammed Al-Haddad⁴, Noman Ahmed Alhatemi⁵

¹Faculty of Nursing, Hadhramout University, Al-Mukalla, Yemen.

^{2,3}College of Medicine and Health Sciences, Hadhramout University, Al-Mukalla, Yemen.

⁴Department of Medical Laboratories, College of Medicine and Health Sciences, Hadhramout University, Al-Mukalla, Yemen.

⁵Faculty Nursing, Jibla University for Medicine and Health Sciences, Ibb, Yemen

ABSTRACT

Background: Consanguineous marriage is defined as a relationship or union between two individuals who are sharing common ancestors as the first or second cousins. **Aim:** This study was aimed to determine the knowledge and attitude towards consanguineous marriage among secondary school students in Al-Mukalla district, Yemen. **Method:** A cross sectional study was conducted among governmental and private secondary school students in Al-Mukalla district during the educational year 2021/2022. A multistage sampling method was used for selection the participants. The data were collected by using a 406 pre-tested self-administered questionnaire computed from another study. **Results:** The total of 406 students aged (15-22) years participated in the study. (79.3%) in age group (15-18). Male students comprised (53%) of the sample and the remaining (47%) were females. Most of the participants had moderate knowledge and neutral attitude (81.3% and 69% respectively). About one half of them heard about the association between consanguineous marriage with thalassemia and congenital anomalies. Friends, school and internet were the most prevalence sources of information. Males had significantly higher knowledge score than females, on other hand females had higher attitude score towards consanguineous marriage compared to males ($P=0.002$ and $P=0.000$ respectively). **Conclusion and recommendations:** Most of the participants had moderate knowledge and neutral attitude towards consanguineous marriage. Educational campaigns are needed to raise awareness at the school level to transfer knowledge from classroom to homes. Social media and television should play an important role in conveying health information to the public in urban and rural area.

Key words: Consanguineous marriage, Knowledge, Attitude, Secondary students

INTRODUCTION

Consanguineous is a Latin term which means sharing the same blood (Ahmed, et al. 2016). Generally, consanguinity marriage is defined as a relationship or union between two individuals

who are sharing common ancestors as the first or second cousins (Aslamkhan, 2015). Previous research has declared that, first cousins' couples are more prone to develop hereditary disorders and therefor the closer the biological

relationship, the more likely occurrence of genetic problems (Kokdener 2016; Bittle, 2008). Additionally, many studies reported an association between consanguinity and many common genetic diseases such as; sickle cell anemia, thalassemia, hemophilia, congenital heart diseases, congenital malformations and hearing deficit (Bittle, & Hssain, 2000; Bowirrat, & Zaher, 2013). Consanguineous marriage is most commonly between first cousins and it is traditionally preferred in Africa and Asia particularly in the Muslim communities (Ciceklioglu, et al., 2013; El-Ghany, et al. 2019).

On the other hand, this type of marriage, consanguineous marriage, is not common in the developed countries where the level of education is high as many studies revealed an association between the level of education and the prevalence of consanguinity marriage in which the higher the education, the lower the consanguinity marriage rate (El-Ghany, et al., 2010); Hmamy, 2012).

Consanguineous marriage prevalence varies widely from one country to another with worldwide prevalence ranges from (20-50%) of all marriages (Isalm, 2017). In Europe, the consanguinity rates are less than 0.5% while in Africa and Asia (22-55%) of all marriages are consanguineous (Jabeen, & Malik, 2014; Jurdi, & Saxena, 2003). A study in Pakistan reported that (52.5%) of females married to their first cousins weren't educated (Mahboub, et al. 2019). Another study in Turkey reported an association between being married to a relative and low level of education (El-Mouzan, et al. 2007). Recent study in Saudi Arabia reported high consanguinity marriage rate (56%) (Port, &

Bittles, 2001) and the knowledge on the consequences of consanguineous marriages among Saudi adults was below average (41.2%) (Sandridge, et al. 2010). Omani adults have moderately high knowledge (69%) about health consequences of consanguineous marriage and there is a high positive attitude towards consanguineous marriage (75%) (Isalm, 2017). Study in Pakistan has discussed that Asians have positive attitude towards consanguineous marriages because they have benefits like consanguinity can be lessen the risk of divorce, consanguineous marriages promote more harmonious and loving relationship between husband/wife and in-law's family and the couples will be stronger cultural compatibility, it is also thought that bride will be more respected due to consanguinity by her in-law's , relatives will behave in a better way with bride because she is from their relatives (Jabeen, & Malik, 2014).

Significance of the study:

Consanguineous marriage leads to serious public health problems. Despite the magnitude of the problem, research data on young people's knowledge about consanguineous marriage and their attitude toward it is an issue that is directly relevant are scarce in Yemen. To our knowledge no previous studies focus on the knowledge and attitude of the population regarding consanguineous marriage. There is no study implemented in our country about knowledge and attitude, except a study that only determined prevalence of consanguineous marriage which was (40%).

Aim of the study:

The aim of study was to determine the knowledge and attitude towards consanguineous marriage among governmental and private secondary school students in Al-Mukalla district, Yemen.

Research hypothesis:

H0: There will be no significant difference between knowledge and attitude towards consanguineous marriage among governmental and private secondary school students in Al-Mukalla district, Yemen.

H1: There will be significant difference between knowledge and attitude towards consanguineous marriage among governmental and private secondary school students in Al-Mukalla district, Yemen.

Methodology:**Study Design:**

This study is a cross sectional analytical study that was carried to assess knowledge, and attitude of secondary school students towards consanguineous marriage in Al-Mukalla district, Yemen.

Setting:

The study was carried out in governmental and private secondary school students for both males and females in Al-Mukalla district, the capital of Hadhramout Governorate, during the study period between February and May 2022.

Sampling:

The study sample included governmental and private secondary school students (males and females), who were available in the educational year 2021-2022 during the study period. The list of all targeted population was obtained from the office of Education Ministry in Hadhramout

government, and the total number of students was (8142) and calculated according to the statistics of the educational year 2021-2022.

Study tools and data collection:

The data were collected using self-administering questionnaire which developed by a previous study with some modification by the 2nd group of the fourth-year students of Medical College of Hadhramout University from the literature review.

The questionnaire consisted of three sections as the following:

- 1- Personal and socio-demographic data (Name was not included).
- 2- Questions related to the knowledge of consanguineous marriage.
- 3- Questions related to the attitudes towards consanguineous marriage.

Pilot study (pre-test):

The pre-testing questionnaire was conducted among 20 students who voluntarily and randomly selected from different governmental and private secondary schools in Al-Mukalla district. The sample of students which was used in this pre-test was not included in this study.

The questionnaire was pre-tested to determine the question sequence and the identification of difficult words. During the pre-test a few difficult words in some questions were found and these words were changed into simple local words.

Inclusion criteria:

All Yemeni students in 8 governmental and 2 private secondary schools in Al-Mukalla district.

Exclusion criteria:

New secondary schools which have incomplete classes. All students who were absent at the

period of study, and all student who refused to cooperate or didn't complete the survey.

Sample size:

The sample size will be calculated using the following formula:

$$\text{Sample size } (n) = pq(z)^2/(d)^2$$

n = sample size required, p = proportion of the characteristic in the population ($p= 40\%$) (Sedahi, et al. 2012)

$q = 1-p$ ($1 - 0.40$) =0.60, d = precision or error allowable ($d = 5\%$), $z = 1.96$ correspondence with 95% Confidence level.

$$n = 0.40 \times 0.60 (1.96)^2 / (0.05)^2 = 369$$

So the sample size was 369 students, then we added 10% (37 students) as a drop out to the sample size to avoid any missing during data collection, so the sample size was increased up to 406.

Ethical considerations:

An approval of the project was obtained from Hadhramout University- College of Medicine and Department of Community Medicine. Written permission was obtained from Ministry of Education in Hadhramout governorate through official letter to all managers of 10 selected secondary schools to facilitate our data collection.

Objectives of the study were clarified for participants and a verbal consent was obtained from them. All selected students were cooperative and agreed to participate in the study will be kept in strict confidence and will be used only for benefit of the community.

Statistical Analysis:

The data was checked for completeness, coded then entered into a computer by statistical

package for Social Sciences (SPSS v24). Obtained data was analyzed using descriptive statistical tools (frequencies, percentages). The mean and Standard Deviation (SD) were also calculated for continuous variables. Chi-square test was applied to compare the difference of mean scores of student's knowledge and attitudes between males and females. P-value was considered significant at level <0.05 . The data was presented in tables and graphs.

Results:

A total of 406 questionnaires were distributed among governmental and private secondary school students in Al-Mukalla district.

Table (1) summarizes the socio-demographic characteristics of secondary school students in Al- Mukalla district. The majority of students 79.3% were aged (15-18 years) and 20.7% were between (18-22 years). Male students comprised 53% of the sample and the remaining 47% were females. More than half of the participants 88.7% were living in urban areas and only 11.3% were living in rural areas. Most of the students 98% were single while only 2% were married. 38.2% of the participants were in the first grade of secondary school while 32.7% at the second grade and 29.1% at the third grade. Regarding the education level of the student parents, the father's education level for most of the students 44.6% was secondary education, whereas the mother's education level for the student's majority 41.9% was elementary education. 63.8% of the student's parents with no consanguinity relationship while 35.7% were first-degree relations and only 0.5% were with second-degree relations.

Figure (1) shows student's knowledge about consanguineous marriage, 81.3% of students show moderate level of knowledge, while 8.4% show low knowledge.

Table (2) demonstrates level of knowledge about consanguineous marriage among secondary school students in Al-Mukalla district. 72.4% have no previous information about the possibility that consanguinity couples may have diseased offspring higher than non-consanguinity couples, while 19.2% have agreed. 37.2% of students responded with yes about the question of an association between consanguinity marriage and certain diseases. The majority of students 59.4%, 37.9%, 58.9%, 85.2%, and 72.9% have no idea about relation between consanguinity marriage and sickle cell, thalassemia, and congenital heart disease, hemophilia, inborn errors of metabolism and retinal diseases respectively. On other hand, 56.4% of students responded with yes for congenital anomalies. It was also found that just 21.2% of students knew that the pre-marital screening test.

Figure (2) illustrated that the major sources of information reported by the students in descending orders were friends, school and internet (28.4%, 24.8% and 16.9% respectively). On the other hand, smaller percentages of students reported that they received their information about consanguineous marriage from media, family and medical staff (12.3%, 9.3% and 8.3% respectively).

Table (3) indicates the different attitudes towards consanguineous marriage. The majority of

students 267 (65.8%) support consanguineous marriage, moreover 258 (63.6%) of students agree with advising their friends about consanguineous marriage, as well 248 (61.1%) of students agree with planning to have kids if had a negative premarital screening test. On the other hand, the majority of students 124 (30.5%) disagree that premarital screening may encourage males and females to marriage as well 103 (25.4%) of students disagree that married couples know that hereditary diseases may appear in their children due to consanguineous marriage, furthermore 124 students (29.5%) disagree plan to have more than after having a child with a hereditary disease.

Table (4, 5 and 6) show chi-square test statistical results for the knowledge and attitude comparison by gender. Females had significantly higher scores in knowledge and attitude towards consanguineous marriage compared to male peers (p -value = 0.002 and 0.000 respectively).

Table (1): Socio-demographic characteristics of secondary school students

Parameter	Frequency	Percentage
Age (years)		
15-18	322	79.3
19-22	84	20.7
Mean Age ±SD*	17.32 ± 1.370	
Gender		
Male	215	53.0
Female	191	47.0
Residence		
Rural	46	11.3
Urban	360	88.7
Marital Status		
Single	398	98.0
Married	8	2.0
Class		
First Secondary School	155	38.2
Second Secondary School	133	32.7
Third Secondary School	118	29.1
Relation between parents		
No consanguinity	259	63.8
First - degree relation	145	35.7
Second - degree relation	2	0.5
Others....	0	0

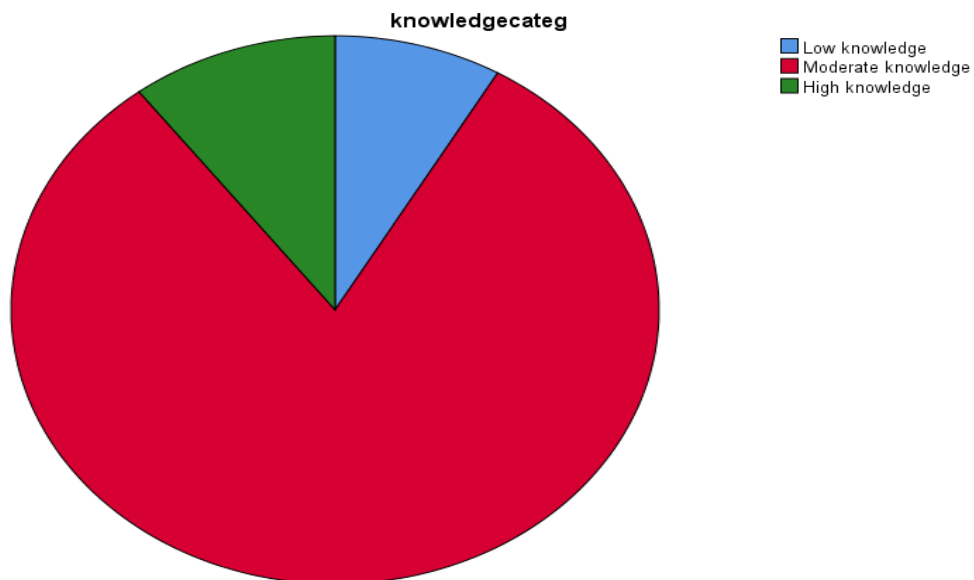


Figure (1): The Preventive factor from widespread genetic disease in offspring

Table (2): Participant's knowledge about consanguineous marriage

Question	Yes		No		Do not know	
	No.	%	No.	%	No.	%
Is it possibility that consanguineous couples may have diseased offspring higher than non-consanguineous couples?	78	19.2	34	8.4	294	72.4
Is there an association between consanguineous marriage and certain diseases?	151	37.2	37	9.1	218	53.7
Is there a relationship between (sickle cell anemia) and consanguineous marriage?	97	23.9	68	16.7	241	59.4
Is there a relationship between (thalassemia) and consanguineous marriage?	217	53.4	35	8.6	154	37.9
Is there a relationship between (congenital heart diseases) and consanguineous marriage?	22	5.4	145	35.7	239	58.9
Is there a relationship between (congenital anomalies) and consanguineous marriage?	229	56.4	122	30.0	55	13.5
Is there a relationship between (hemophilia) and consanguineous marriage?	23	5.7	37	9.1	346	85.2
Is there a relationship between (inborn errors of metabolism) and consanguineous marriage?	29	7.1	81	20.0	296	72.9
Does consanguineous marriage increase the risk of deafness and retinal diseases?	53	13.1	274	67.5	79	19.5
Is the pre-marital screening test preventive factor from widespread of genetic disease in offspring?	109	26.8	86	21.2	211	52.0
Total mean score ± SD*	2.48 ± 1.539					

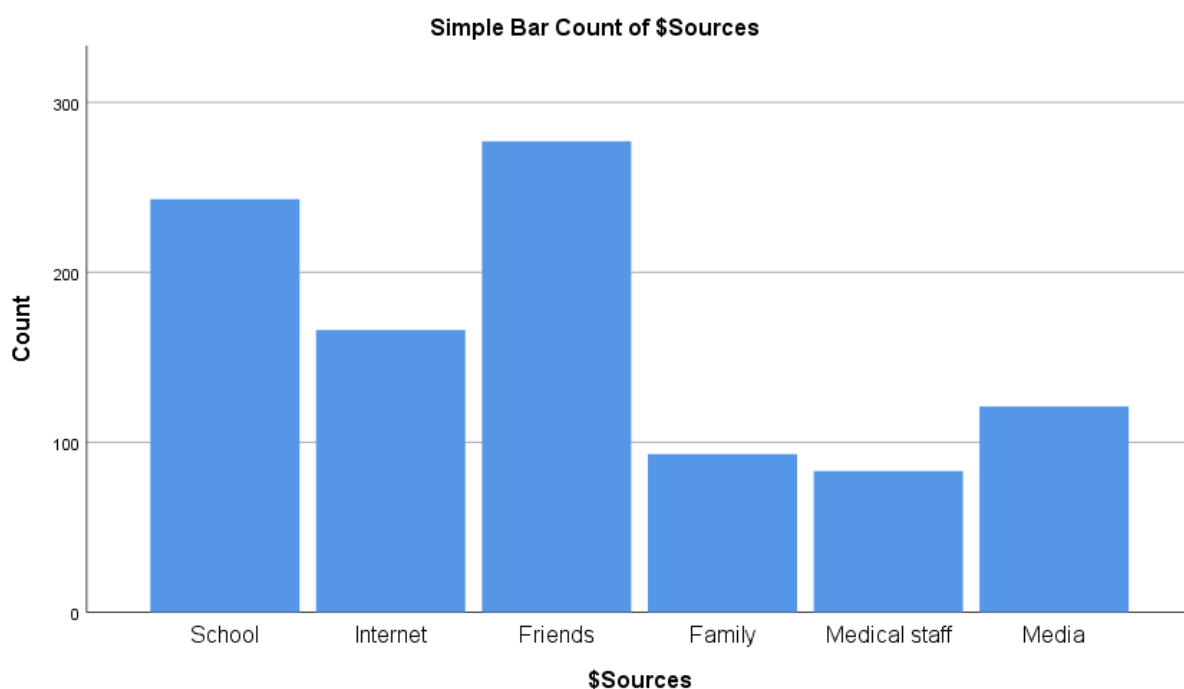


Figure (2): The source of information about consanguineous marriage

Table (3): Participant's attitude towards consanguineous marriage

Items		Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Mean	SD	Result
I support consanguineous marriage	No.	188	79	30	40	69	2.32	1.538	Agree
	%	46.3	19.5	7.4	9.9	17.0			
I will plan to have kids if had negative premarital screening test	No.	118	130	12	95	51	2.58	1.432	Agree
	%	29.1	32.0	3.0	23.4	12.6			
I will plan to have more children after having a child with hereditary disease	No.	37	83	59	95	132	3.50	1.364	Disagree
	%	9.1	20.4	14.5	23.4	32.5			
I would advise my friends with consanguineous marriage	No.	77	181	12	111	25	2.57	1.243	Agree
	%	19.0	44.6	3.0	27.3	6.2			
I would allow my daughter / son to marry from a relative with a known family history of genetic disease	No.	72	117	31	63	123	3.12	1.535	Neutral
	%	17.7	28.8	7.6	15.5	30.3			
Consanguineous marriages are preferred because of low risk of divorce	No.	65	105	100	96	40	2.85	1.230	Neutral
	%	16.0	25.9	24.6	23.6	9.9			
Marriages between relatives are less cultural compatibility between husband and wife	No.	12	54	97	153	90	3.63	1.060	Disagree
	%	3.0	13.3	23.9	37.7	22.2			
The main reason for consanguineous marriage is that the entails will be keep between membrane of the family	No.	38	72	88	132	76	3.33	1.232	Neutral
	%	9.4	17.7	21.7	32.5	18.7			
Premarital screening may encourage the male and female from marriage.	No.	90	82	17	162	55	3.02	1.426	Neutral
	%	22.2	20.2	4.2	39.9	13.5			
Married couples knows that hereditary diseases may appear in their children due to their consanguineous marriage.	No.	22	34	39	128	183	4.02	1.171	Disagree
	%	5.4	8.4	9.6	31.5	45.1			

Table (4): The total attitude of students towards consanguineous marriage

Attitude	No.	%
Positive	55	13.5
Neutral	280	69.0
Negative	71	17.5
Total mean score \pm SD*	2.85 \pm 1.607	

Table (5): Association between knowledge and gender

Gender	Knowledge			p-value
	Low	Moderate	High	
Male	21	167	27	0.002
Female	13	163	15	

Table (6): Association between attitude and gender

Gender	Attitude			p-value
	Negative	Neutral	Positive	
Male	20	155	40	0.000
Female	51	125	15	

Discussion:

Yemen, in specific; Hadhramout governorate has a notable preference for consanguineous marriages, which is related to the deeply rooted cultural beliefs, social life and customs. Such marriages are considered to be more stable, due to close similarities in social and cultural values between the couples. Hence, determining the knowledge and attitude towards consanguinity and its health-related issues among secondary school students in Al-Mukalla district is a crucial step towards suggesting a solution to this matter.

Most of the participants (81.3%) have adequate level of knowledge. Similar findings were

reported in Oman where the majority of the participants had moderately high knowledge (69%) (Aslamkhan, 2015). This adequate knowledge may imply the overall good information about negative consequences of consanguineous marriage with the increased number of such marriages in these communities. In contrast, other studies reported in Saudi Arabia and Iran where majority of their participants (53.3%) (Ahmed, et al. 2016) and 44.6% (Sedahi, et al. 2012) respectively had poor knowledge. This could be attributed to the lack of knowledge and awareness campaigns in these communities. With regard to attitudes, the findings generally revealed (69%) of participants

had moderate attitude towards consanguineous marriage. In contrast, a study that has been conducted in Saudi Arabia showed most of the participants had negative attitude (57.21%) (Ahmed, et al. 2016). This contrast with this study suggested that community do not care about health problems associated with consanguineous marriage, even with the overall adequate level of knowledge about negative consequences of this marriage.

Friends were the main source of information (28.2%) about consanguineous marriage and thus reflects a good communication and common exchange of information among people, as well as school was another main source of information (24.7%) and thus illustrates the importance of targeting future education campaigns in these key sites in order to change behaviors earlier in life and generate a better awareness among the public. In contrast to Saudi Arabia, the social media was reported to be the main source of information (37.2%) (Ahmed, et al. 2016) and thus could be explained by to the fact that our community has poor Internet connection as compared with these communities hence was not used as a main source of information.

The results of comparing between males and females show that males had significantly higher knowledge score than females, on other hand females had higher attitude score towards consanguineous marriage compared to males. Similar findings were reported in other studies conducted in Saudi Arabia (Ahmed, et al. (2016); Mahboub, et al. 2019). This may be explained by the fact that female tends to accept medical information, and are more concerned

about hereditary diseases affecting their children if they were married to their relatives.

Conclusion and recommendations:

The knowledge and attitude of the respondents concerning consanguinity and its health-related issues were moderate and neutral, respectively. Friends, school and internet were found to be the main sources of their information. Higher knowledge scores were recorded among male students more than females. In contrast, female students showed positive attitude more male students.

Educational campaigns are needed to raise awareness of the health issues of consanguinity at the school level. Such campaigns will help to transfer knowledge from classroom to homes. Social media and television should play an important role in conveying health information to the public in urban and rural area and should be best utilized as well.

References:

- Ahmed, A., Alharabi, O., et al. (2016). Awareness of health consequence of consanguineous marriage among Saudi adult. Saudi Arabia. *Journal of Public Health in Developing Countries*, 2(1), 121-129.
- Aslamkhan, M. (2015). Clinical genetic and genetic counseling in Pakistan. *Genes and cells*, 1(2), 31-33. <https://doi.org/10.15562/gnc.17>
- Kokdener M. (2016). An investigation of hemophilia consanguineous Marriages and Economic Growth: Panel MLP and panel SVR Approach. *Procedia Economics and Finance*, 38(5), 294–307.

- Bittle, A. (2008). A community genetic perspective on consanguineous marriage. *Community Genetics*, 11(6), 324-330. <https://doi.org.10.1159/000133304>
- Bittle, A., & Hssain, R. (2000). Analysis of consanguineous marriage in Muslim population of India at regional and state level. India. *Annals of Human Biology*, 27(2), 71-163. <https://doi.org.10.1080/030144600282271>
- Bowirrat, B., & Zaher, A. (2013). Consanguineous marriages in Middle East. *Open Complete Medicine Journal*, 5, 1-10. <https://doi.org.10.2174/1876391X01305010001>
- Ciceklioglu, M., Demiroloz, E., Demirelöz, M., Ceber, E. & Nazli, A. (2013). Sociodemographic aspect of consanguineous marriage in an urban slum of metropolitan area in Izmir Turkey. *Annals of Human Biology*, 40(2), 139-145. <https://doi.org.10.3109/03014460.2012.749945>
- El-Ghany, G.M., Gad, A.H., & Al-Haddad, A.M. (2019). Effect of Different Teaching Methods in Improving Level of Knowledge about Reproductive Health among Female Students Hadhramout University. *IOSR Journal of Nursing and Health Science*, 8(2), Ser. XII, 60-75. <https://doi.org.10.9790/1959-0802126075>
- El-Ghany, G.M., Gad, A.H., & Al-Haddad, A.M. (2010). Knowledge and attitude about pre-marital counselling among Hadhramout University students. *Zagazig Nursing Journal*, 6(11), 46-67.
- Hmamy, H. (2012). Consanguineous marriage: Preconception consultation in primary health care setting. *Journal of Community Genetics*, 3(3), 92-183. <https://doi.org/10.1007/s12687-011-0072-y>
- Isalm, M. (2017). Consanguineous marriage in Oman: understanding the community awareness about congenital effects of and attitude towards consanguineous marriage. *Annals of Human biology*, 44(3), 273-286. <https://doi.org/10.1080/03014460.2016.1224385>
- Jabeen, N., & Malik, S. (2014). Consanguinity and its sociodemographic differential in Bhimber District, Azad Jammu and Kashmir, Pakistan. *Journal of Health, Population, Nutrition*, 32(2), 301-313.
- Jurdi, R., & Saxena, P. (2003). The prevalence and correlates of consanguineous marriage in Yemen: similarities and contrast with other Arab counties. *Journal Biosocial Science*, 35(1), 1-13. <https://doi.org/10.1017/s0021932003000014>
- Mahboub, S., Alsaqabi, A., Allwimi, N., Aleissa, D., & Al-Mubarak, B. (2019). Knowledge and attitude toward consanguinity marriage among educated adult in Riyadh. *International Journal of Community Medicine and Public Health*, 6(1), 30-37. <https://doi.org/10.18203/2394-6040.ijcmph20185223>
- El-Mouzan, M., Al-Salloum, A., Al-Herbish, A., Qurachi, M., & Al-Omar, A. (2007). Regional variation in the prevalence of consanguinity in Saudi Arabia. *Saudi Medical Journal*, 28(12), 1881-1884.
- Port, K., & Bittles, A. (2001): Population-based estimate of the prevalence of consanguineous marriage in Western Australia. *Community*

Genetics, 4(2), 97-101.

<https://www.jstor.org/stable/26664539>

Sandridge, A., Takeddin, J., Al-Kaabi, E., & Frances, Y. (2010). Consanguinity in Qatar: knowledge, attitude and practice in a population born between 1946 and 1991. *Journal of Biosocial Science*, 42(1), 59-82. <https://doi.org.10.1017/S002193200999023X>

Sedahi, M., Keshtkar, A., & Golalipour, M. (2012). The Knowledge and the Attitude of Youth Couples On/Towards Consanguineous Marriages in the North of Iran. *Clinical and Diagnostic Research*, 6(7), 1233-1236. <https://www.researchgate.net/publication/236589832>