

Effect of Women's Status on Consanguinity in the Arab Society of Israel

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Abstract

Background: Consanguinity is a traditional phenomenon that is common in many communities worldwide. In Arab countries, its prevalence is considered to be high, despite its decrease in some Arab societies. According to the Arab society in Israel, the rates of consanguineous marriages (CMs) recently were found to be increasing in the last decade. Generally, various socio-demographic factors play an important role in determining the prevalence rates of consanguineous marriages. **Objective:** The purpose of the current study is to determine the prevalence rates of consanguineous marriages among the Arab society in Israel, relating to various women's socio-demographic factors. The study explored the effect of wives' age at marriage, their educational attainment, their employment, and their income level on consanguinity in this community. **Method:** The data were obtained from a health national survey that was carried out during the year 2017, among the Arab society in Israel. The subjects supplied the required information about themselves through personal face-to-face interviews using a survey questionnaire prepared specifically for this purpose. A detailed analysis was conducted to determine statistical significance. **Result:** It was observed that the prevalence rate of consanguineous marriages among the women from the Arab society in Israel seems to be high (~42%). Furthermore, the prevalence rates of CMs were found to be inversely proportional to the wife's age at marriage and their educational attainment. A significant difference could be detected between the rates of CMs and non-CMs in relation to wife's employment factor and wife's income level (i.e., 70% of the employed women had non-CMs and 65% of the high wife's income level had non-CMs). **Conclusion:** Our findings

demonstrated that women's status played a vital role in the prevalence rates of CMs, thus, we recommend the improvement of the various women-related socio-demographic factors.

Keywords

Consanguinity, Women's Status, Socio-Demographic Factors, Prevalence Rate, Arab Society in Israel

1. Introduction

Consanguineous marriages (CMs) were found to have a rare occurrence in Western countries. On the contrary, they are especially frequent in North Africa and most of west, central, and south Asia, where 20% to 50% of all marriages are consanguineous. Many studies demonstrated that consanguineous marriages were deeply rooted in Arab and Muslim populations, with more than 50% consanguineous unions in many Muslim countries. The consequences of CMs on social relations and the health of individuals are well-recognized. The prevalence of this phenomenon was found to be associated with various geographic, demographic, religious, cultural, and socio-economic factors. Women-related factors were also found to highly affect the extent of consanguinity prevalence. These factors include women's age at marriage, their educational attainment, their employment, their income level, their reproductive health and fertility behaviors, their residential areas, and their autonomy.

To the best of our knowledge, there is no single study that focused specifically on women-related factors to find out their effects on consanguinity in our community. Therefore, in our current study, we aimed to investigate the effect of women's various socio-demographic factors on the prevalence rates of CMs in the Arab society in Israel.

2. Literature Review

Many communities around the world have a long tradition of marrying relatives. The highest prevalence of inbreeding was observed in North and sub-Saharan Africa, the Middle East, and West, Central, and South Asia. Furthermore, the impact of consanguinity on reproduction and Mendelian disorders is well known and documented (Bittles & Black, 2010). Middle Eastern countries generally hold accepting and positive attitudes toward consanguineous marriages (Buunk, 2017), which is different from Western nations where marriage between cousins is not commonly practiced (Antfolk et al., 2014).

Consanguineous marriage (CM) refers to unions contracted between biologically related individuals (Khan & Mazhar, 2018). Clinically, consanguinity is defined as a union between two people who are related as second cousins or closer (Hamamy, 2012). CMs had been practiced since the early existence of modern

humans. Until now consanguinity was spread among several global communities with variable rates depending on religion, culture, and geography (Tadmouri et al., 2009). It was found that there are various factors such as demographic, religious, socio-economic status, local traditions and educational level that affect the rates of CMs (Fuster & Colantonio, 2004).

It was established that in many communities CMs are affected by many women-related socio-demographic and cultural factors (Al Gharaibeh & Bromfield, 2012; Van Buren & Van Gordon, 2020). Various studies revealed that women's educational level, age at first marriage, economic and occupational status are associated with consanguinity (Kerkeni et al., 2006; Kaplan et al., 2016). Furthermore, a decrease in CMs could be attributed to the women's increasing age at marriage, high education and employment, in addition to higher level of education of husbands, declining family size, increasing rate of urbanization, exposure to mass media and higher economic status (Islam, 2018). A recent study in Saudi Arabia, found that there was a significant difference in interest in undergoing molecular testing between women in consanguineous and non-consanguineous marriages (Suliman, 2021). In Turkey, a study revealed that, the consanguineous couples were younger at the time of their marriages than non-consanguineous couples. The educational levels of both spouses in consanguineous marriages were lower than those in non-consanguineous marriages (Sahin et al., 2020). On the other hand, it was documented that CMs were more prevalent amongst young and uneducated women, living in rural areas, with poorer wealth status and having less exposure to mass media to access information (Iqbal et al., 2022).

One of our latest studies found that CMs among the Arab society of Israel decreased during the years 2000 to 2004, from 33% to 25.9%, then they started increasing rapidly till the end of the survey period (2017) where it reached 41.6% (Zalan et al., 2021). Another recent study established that consanguinity among the Arab population in Israel was found to be significantly related to religion and place of residence (Sharkia et al., 2021). A research work estimated the prevalence of CMs and associated factors among Israeli Bedouins. It found that the prevalence of CMs was 44.8 % and the factors that were significantly associated with consanguinity were less years of schooling and younger age at marriage of the wife (Na'ammih et al., 2014). A later study by the same group found that CMs were associated with consanguinity between the couples' parents (both husband and wife), a high consanguinity rate in the place of residence and younger (wife's) age at marriage (Na'ammih et al., 2015). A further study in the Muslim society in Israel was conducted to present estimates of the relative contributions of women's school enrolment and educational attainment to the decline in CM. The study found that between the years 1975-1979 and 2005-2010, CM declined by almost 60%. The rise in the women's age of leaving school explains about a third of the decline, while their educational attainment did not contribute to the decline (Schellekens et al., 2017).

3. Methodology: Subjects and Methods

3.1. Study Population and Survey Design

The Galilee society, “The Arab national society for health research and services”, usually conducts various comprehensive national surveys in the Arab society of Israel every about three years, to examine the changes in various socio-economic and health status. These surveys aim to produce the required information and spread knowledge about the Arab society in Israel, thus, consequently understanding the needs, challenges, fears, and the possible opportunities for a better future planning. This leads to the development of proper policies and programs, on local and governmental levels, based on scientific and objective backgrounds. An important health-related aspect examined, was the issue of consanguineous marriages (CMs). In the current study we present the extracted data from the health national survey that was carried out during the year 2017. This was performed so as to find out the effect of women’s various socio-demographic factors on the incidence of consanguineous marriages.

For sampling, a multistage design was used. The sample was designed in three stages: selection of enumeration areas in one stratification level; selection of 30 responsive households in the chosen enumeration area; and selection of two persons, a male and a female. This selection was made from each household in the second stage using the spreadsheet (Kish) for random selection. The study population was divided into homogeneous strata, taking into account gender and age group variables. All the participants recruited for the study gave their informed written consent after being provided with an explanation of purpose, conducted in accordance with the declaration of Helsinki.

3.2. Data Collection and Analysis

The data were collected from all subjects through personal face-to-face interviews using a survey questionnaire prepared specifically for this purpose. The fieldwork team was recruited from a group of field experienced surveyors. A training course was conducted for these surveyors by the supervisors and the project administrators. The following steps were taken into account:

- 1) The type of relationship between the couples was obtained from the couples themselves, through oral interviews.
- 2) Information about the women’s age, education, employment and income level were obtained from the women themselves by direct face to face interview.
- 3) Data validations were confirmed by the local councils of the region.
- 4) Furthermore, the data were cross-checked by contacting local village representatives, who are familiar with all families in their respective villages.

The various women-related socio-demographic factors were divided into few parameters. The parameter “wife’s age at marriage” was defined as her age at the time of her first marriage that was categorized as <18, 18 - 22, 23 - 26, 27 - 31, and ≥32 years. While the parameter “wife’s educational attainment” was determined according to the number of years that the wife spent in education, which

was categorized as ≤ 6 , 7 - 9, 10 - 12, and ≥ 13 years. The “employment” parameter was divided to three categories: employed, unemployed and outside of labor force (which included homemakers, disabled, and retired). The “income level” parameter was divided into three groups and expressed in New Israeli Shekels-NIS *viz*, < 2611 (low), 2612 - 3925 (medium) and ≥ 3926 (high).

The dependent variable of this study is consanguinity, which was derived from the individual questionnaire that asks the ever-married women if they have a blood-relation to their husband. Relationships were grouped into two major categories: consanguineous and non-consanguineous marriages. Data management and statistical analyses were conducted using SPSS. The statistical significance of associations between consanguinity and women’s various socio-demographic factors were examined using Chi-square. Statistical significance was determined at $P < 0.05$.

4. Results

Our study includes a total of 1894 persons who are 18 years of age and over. Various characteristics of the study sample according to gender are presented in **Table 1**. It was found that majority of the studied cases (the maximum number; 1338 out of 1894) are in the range of 18 - 49 years of age category, as they constitute about 71%, while the older age group of 50 - 64 years had about 18% of the cases, and the least cases (the minimum number; 216 out of 1894) are located

Table 1. Characteristics of the study sample by gender.

Factors	Men % (N = 929)	Women % (N = 965)	Total % (N = 1894)	<i>P</i>
<u>Age (Y):</u>				
18 - 49	72.6 (674)	68.6 (664)	70.6 (1338)	0.199
50 - 64	16.9 (157)	19.0 (183)	18.0 (340)	
≥ 65	10.5 (98)	12.2 (118)	11.4 (216)	
<u>Education:</u>				
>12	20.9 (194)	20.3 (196)	19.7 (370)	0.772
≤ 12	79.1 (735)	79.7 (769)	80.3 (1504)	
<u>Income Level:</u>				
Low	49.0 (455)	53.2 (513)	51.1 (968)	0.369
Medium	25.9 (241)	23.7 (229)	24.8 (470)	
High	25.1 (233)	23.1 (223)	24.1 (456)	
<u>Labor force participation</u>				
Employed	72.3 (672)	29.4 (284)	50.4 (955)	0.020
Unemployed	5.6 (52)	3.2 (31)	4.4 (83)	
Outside labor force	22.1 (205)	67.4 (650)	45.2 (856)	

in the 65 years of age and above (~11%). These rates were found to be almost similar in both genders. Regarding years of education, it was found that majority (~80%) of the cases had 12 years of education or even less, while, just about 20% had academic qualification (more than 12 years of education), with similar findings in both men and women. Slightly more than half of the participants (~51%) belong to families with an income level lower than that of the average income level of the Arab families in Israel, while the rest are almost distributed similarly (about a quarter) between the medium and high-income levels.

The statistical analysis for these variables did not reveal significant differences between men and women in the study sample, where P values in each one was more than 0.05.

According to the participation in the labor force factor, about 50% of the participants were found to be employed. There is a significant difference ($P = 0.02$) between the rate of employment in men and women (72.3% vs. 29.4% respectively). On the other hand, majority (~67%) of the women were found to belong to the “outside labor force” category. This probably indicates that in the Arab society of Israel majority of the women are still working as homemakers.

The numbers and prevalence rates of consanguineous marriages (CMs) according to various women-related socio-demographic factors: “wife’s age at marriage”, “wife’s educational attainment”, “wife’s employment” and “wife’s income level” and their subsequent categories are presented in **Table 2**. It was found that the prevalence rates of CMs are proportional to the “wife’s age at marriage” as well as the “wife’s educational attainment”, in an inverse manner, i.e., the lower the wife’s age at marriage and her educational attainment, the higher is the incidence rates of CMs. The differences in the prevalence rates of CMs between the lowest “wife’s age at marriage” group (<18 years) and the highest one (≥ 32) were found to be considerably high (63.3% and 20% respectively). On the other hand, this trend was also observed in the “wife’s educational attainment” factor, as the differences between the lowest (≤ 6 years) and the highest ones (≥ 13 years) were also significantly high (51% and 27% respectively). These differences were found to be statistically significant for both factors ($P = 0.02$ and 0.00 respectively).

It was found that there is a significant difference ($P = 0.001$) between the rates of CMs and non-CMs in relation to wife’s employment factor. This was basically reflected in the employed category as in it 70% of the women had non-CMs, while just about 30% of them were involved in the practice of consanguinity. According to the wife’s income level factor, a significant difference between the rates of CMs and non-CMs could be found. This difference was particularly evident in the high wife’s income category i.e., 35% of them had CMs, while about 65% of them had non-CMs.

5. Discussion

Many studies worldwide recognized consanguinity as an important factor that

Table 2. The numbers and prevalence rates of CMs according to various women-related socio-demographic factors and their subsequent categories.

Socio-demographic factor and its categories	CMs		Non-CMs		Total	P
	N	%	N	%	N	
Wife's age at marriage (years):						
<18	82	63.6	47	36.4	129	0.02
18 - 22	244	44.3	307	55.7	551	
23 - 26	61	28	157	72	218	
27 - 31	10	21.3	37	78.7	47	
≥32	4	20	16	80	20	
Total	401	41.6	564	58.4	965	
Wife's educational attainment (years):						
≤6	185	51	178	49	363	0.00
7 - 9	145	40.9	210	59.1	355	
10 - 12	17	33.3	34	66.7	51	
≥13	54	27.5	142	72.5	196	
Total	401	41.6	564	58.4	965	
Wife's employment:						
Employed	84	30.2	194	69.8	278	0.00 1
Unemployed	9	44.4	12	55.6	21	
*Outside the labor force	308	46.2	358	53.8	666	
Total	401	41.6	564	58.5	965	
Wife's income level:						
Low	227	44.3	286	55.7	513	0.02
Medium	95	41.5	134	58.5	229	
High	79	35.4	144	64.6	223	
Total	401	41.6	564	58.5	965	

*Outside the labor force that include the homemakers, the disabled and retired people.

affects the health of current and future generations and poses a real public health problem. Thus, it constitutes a major factor leading to high rates of genetic disorders and congenital malformation in addition to infant mortality (Akrami & Osati, 2007; Sharkia et al., 2010; Subalakshmi & Mohan, 2021). Furthermore, as the prevalence of infectious diseases declines due to effective preventive and treatment measures that are based on modern technology, public health concerns focusing on the role of genetic diseases as causes of severe morbidity and mortality are likely to increase (Hamamy et al., 2011).

There were several surveys that had been conducted in Arab countries, and the rates of CMs had been found to vary from 11.6% in Bahrain (Al-Arrayed &

Hamamy, 2012) to 64.6% in Al-Ramadi (Iraq) (Yahyaa et al., 2019). Recent studies had revealed that the prevalence rates of CMs remain high in certain societies, owing to the common belief in the social, cultural, political, and economic advantages of CM (Bhinder et al., 2019; Islam, 2021; Nawaz et al., 2021; Zalan et al., 2021).

In spite of the serious health effects of CMs, many communities continue to practice them, and according to the results of various studies, several factors have been implicated as determinants of the high prevalence of CMs in this setting, namely: socioeconomic, socio-cultural, religious, geographic and demographic factors (Oniya et al., 2019). Numerous studies confirmed that many factors (cultural, religious, political, socio-demographic, geographical, and economic) play a crucial role in determining the prevalence of CMs in many societies worldwide. Such factors are related to the status of women particularly, their age at marriage and their educational level (Denic et al., 2012; Kelmemei et al., 2015; Shenk et al., 2016; Islam, 2018). Our results demonstrated that the wives' early age at marriage (≤ 22 years) as well as their low educational attainment (≤ 6 years) are associated with a high prevalence of consanguinity. In concordance with our results, many studies indicated that there is a significant correlation between women's age at marriage as well as their educational level in relation to the prevalence of CMs (Bittles, 2012; Al-Kandari & Al-Kandari, 2018; Yahyaa et al., 2019; Sharma et al., 2021). Specifically, data from a recent Jordanian Demographic Survey, estimated that there could be a 9% reduction in the likelihood of CM if there is a one-year increase in age at marriage (Islam, 2018).

With respect to age at first marriage, the chances of entering into CM in the Arab communities are higher for spouses who marry at a younger age than those who marry late. This implies that marriage isn't an individual choice, but the decision has been taken earlier and the arrangement has been negotiated by both families long back. This illustrates the fact that the control over this issue is in the hands of parents in both families of the spouses (Al-Kandari & Al-Kandari, 2018). This sort of marriage arrangement turned out to be cheaper and more accessible for both families (Hamamy & Alwan, 2016). Women's high level of education is one of the main factors that may play a role in lowering consanguinity rates. Generally, educated people make informed decisions based on their knowledge of the adverse health effects resulting from the marriage between parents (Gunaid et al., 2004). On the other hand, some studies found a contradicting result to ours regarding these two factors, as they found that the level of education or age at marriage has no effect on the choice of a CM (Kanaan et al., 2008; Assaf & Khawaja, 2009; Hami et al., 2009; Islam, 2012; Mahboub et al., 2020).

Economic factors and occupations related to women were previously shown to be associated with the prevalence rates of CMs. Our results revealed that women's employment and their high-income level make them less involved in CMs. These results were consistent with other studies that revealed similar findings

in various communities (Assaf & Khawaja, 2009; Al-Kandari & Al-Kandari, 2018; Islam, 2018; Iqbal et al., 2022) The highest prevalence of CMs were observed among families with unfavorable socioeconomic conditions. The reasons for this association could be attributed to the economic benefits of the consanguineous union, namely: lower cost and greater simplicity or ease of premarital negotiation and marital arrangements, lower parental and partner expectations, and financial benefits of dowry (Heidari et al., 2014). On the other hand, in some cases, economic reasons could motivate the occurrence of CMs (Abdalla & Zaher, 2013).

6. Conclusion

It could be concluded that there are various women-related socio-demographic factors that assist in the prevalence of high rates of CMs in the Arab society of Israel. Therefore, unfortunately, CMs in our society are associated mainly with girls who got married at an early age in life, who were less educated, belong to the outside the labor force category, and had low-income levels. Professional public health specialists are expected to seek, investigate, understand, and manipulate the various determining factors that lead to an increased incidence of CMs as this is considered to be vital in developing adequate preventive means and strategies in an attempt to enhance health of future generations. Furthermore, in order to decrease the occurrence of this phenomenon, we are expected to work on reversing the contributing factors. Thus, working on social educational programs that are intended to increase awareness about the negative health impact of CMs on offspring might act as a constraint for preference of consanguinity.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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