Research Article

Knowledge of premarital screening among male university students in Riyadh, Saudi Arabia

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Abstract

Background: In the Kingdom of Saudi Arabia, where the consanguineous marriage rate is high, premarital counseling is the service offered to young couples on their way to marriage to guide, educate, and prepare them for the establishment of a healthy family.

Objective: To assess knowledge of premarital screening and their relation to socio-demographic background of male university students in Riyadh City.

Materials and Methods: It was a cross-sectional study included a representative sample of male university students at King Saud University, Riyadh City, Saudi Arabia. A multistage random sampling technique was applied in three stages. In the first stage, one student from literate collage and one from scientific college were selected by simple random method. In the second stage, three levels were selected by random sampling from each college. In the third stage, about 50 students were recruited from each of the classrooms. A self-administered questionnaire consisted of two main parts was used; the first part was based on socio-demographic data and the second part dealt with the students' knowledge about the hereditary disorder in premarital screening program.

Result: The study included 320 male students. Their age ranged between 18 and 30 years with a mean of 21.2 years and standard deviation of ±1.6 years. They were almost equally distributed between participated two colleges (Science and Arts). Almost a quarter of students (23.1%) reported family history of hereditary diseases, whereas 10.9% of them reported personal history of hereditary diseases. Their main sources of information about premarital screening were friends (60.8%), television (35.9%), and medical courses (22.2%). Older, science college students, those of higher academic level and having information about premarital screening from school and from friends showed significant higher level of knowledge.

Conclusion: This study highlights that knowledge of male university students in King Saud University in Riyadh, Saudi Arabia about the PMS program was insufficient in some areas such as transmission of hepatitis B and C viruses through sexual transmission and from mother to fetus. In light of our results, there is certainly a need for more information and education about the program.

KEY WORDS: Knowledge, premarital screening, male, Saudi Arabia

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Introduction

Premarital counseling (PMC) is one of the health promotion activities that provided in the maternal and child health service programs.[1] It is one of the most important strategies for prevention of genetic disorders, congenital anomalies, and several medical psychosocial marital problems.[2]

In a country such as Kingdom of Saudi Arabia (KSA), where the consanguineous marriage rate is high, PMC is the service offered to young couples on their way to marriage to guide, educate, and prepare them for the establishment of a healthy family.[3]

Several screening programs in the Gulf region and Mediterranean countries have been very effective and the genetic disorders and multifactorial health problems such as diabetes, obesity, and bronchial asthma are common in the Saudi community.[4–9]

Most studies among the Arabs have indicated that postnatal mortality is higher among offspring of consanguineous parents than among nonrelated parents.[10,11] It is important to screen all Saudi infertile couples for these infections before embarking on fertility treatments.[12]

According to the World Health Organization (2006), methods of preventing genetic diseases include premarital screening and genetic counseling, prenatal diagnosis, preconception diagnosis and implantation of normal embryos after in vitro fertilization, and in utero therapy using stem cell transplantation.[13]

To reduce these problems and their impact on the social, emotional, psychological, and cost dimensions of the family and the health system in KSA, it is essential to practice PMC that was successful in some Western and Arab countries. Knowledge of premarital genetic screening allows a person to take steps to reduce his or her risk. For people at an increased risk of certain disorders, health-care professionals may recommend more frequent screening starting at an earlier age. Health-care providers may also encourage regular checkups or testing for people with a medical condition that runs in their family.[14]

Under the Royal decree of 4/1/1423 H(8/3/2002 G), the Ministry of Health in Saudi Arabia set organizational arrangements for the Saudi Premarital Screening Program, which started on 1/1/1425 H under the second Royal decree, which made premarital screening for genetic diseases mandatory for all couples who plan to marry. The marriage contract would not be issued until the result of this screening test was submitted.[15]

Legislation of the Saudi premarital screening program for all Saudi couples is expected to have an effective impact on the prevention of inherited hemoglobinopathies, to reduce the financial burden on individuals and the government and to minimize the social and psychological problems resulting from having affected children.[16]

This study was carried out to explore the knowledge regarding premarital screening among male students of King Saud University (KSU) in Riyadh City, Saudi Arabia.

Materials and Methods

This was a cross-sectional study conducted between September and November, 2015 at KSU, which is a public university in Riyadh City, capital of the KSA. It includes about 35,000 male students distributed over 21 colleges (12 scientific and 9 literate).

The minimum sample size for this study has been decided according to Swinscow and Cohen[17] and with considering the prevalence of knowledge (70%) of premarital screening in the population.[18] The estimated sample size was 323 male students and it was increased to 336 male students to compensate for drop out.

A multistage random sampling technique was applied as follows: Stage I: two men's collages were selected by simple random method (one scientific [college of Science] and one literate [college of Arts]. Stage II: in each randomly selected collage, three levels were selected by random sampling. Therefore, three levels were selected in each collage, giving a total of six classrooms. Stage III: to achieve the required sample size, about 56 students were recruited from each of the classrooms. Therefore, in each classroom, students were selected using simple random sampling from the classroom lists of names.

The data needed for the study were collected using a self-administered questionnaire. The questionnaire consisted of two main parts; the first part was based on sociodemographic data and the second part dealt with the students' knowledge about the hereditary disorder in premarital screening program.[19] We have added a part dealt with the students' knowledge about the sexually transmitted diseases in premarital screening.

A pilot study was conducted among 50 medical students to test the validity and reliability of the questionnaire. We started by translation-back-translation (English-Arabic-English). Then, reliability and validity were evaluated among those 50 students by calculating Cranach's alpha for the 9 knowledge items. Test-retest reliability was assessed by computing correlation coefficients between testing and retesting results. Face validity was confirmed by three consultants in three different specialties related to the topic (family medicine, Genetics, and infectious diseases). Cranach's alpha was 0.65 that is acceptable. The correlation coefficient ranged between 0.88 and 0.93. Conclusively, the Arabic version of the questionnaire was proved to be valid and reliable.

Before data collection, informed consents were asked from all samples; all participants had the right not to participate in the study or to withdraw from the measurements prior to completion. The researcher explained the purpose to all respondents.

The Statistical Package for Social Sciences (SPSS version 20.0) was used for data entry and analysis. Descriptive statistics were computed in the form of frequency and percentage for categorical data and in the form of measures of central tendency (mean, median, and mean rank) and measures of dispersion (standard deviation and interquartile range) for continuous variables. Regarding analytic statistics, chi-square test was used to test for the association and/or difference between categorical variables. As the knowledge score was abnormally distributed (significant Kolmogorov–Smirnov test), nonparametric statistical tests were applied to test for the difference between score of PMS knowledge in different groups. Mann–Whitney statistical test was used for

the comparison of two groups, whereas Kruskal–Wallis test was applied for the comparison of more than two groups. Differences were considered as statistically significant when the *p*-value is less than 0.05.

Results

The study included 320 students with a response rate of 95.2%. Table 1 presents the socio-demographic characteristics of the participants. Their age raged between 18 and 30 years with a mean of 21.2 years and standard deviation of ±1.6 years. Slightly more than half of them (52.5%) were recruited from college of Arts. They were almost equally distributed between the four academic years. Majority of the students (90%) were singles and slightly more than half of them (53.1%) were upbringing in Riyadh City.

From Figure 1, it is clear that almost a quarter of students (23.1%) reported family history of hereditary diseases, whereas in Figure 2, 10.9% of students reported personal history of hereditary diseases.

Majority of the KSU male students (94.1%) reported that they heard about premarital screening. Their main sources of information about premarital screening were friends (60.8%), TV (35.9%), and medical courses (22.2%). Schools and colleges were reported by 8.1% and 16.5% of the respondents, respectively, as sources of PMS information as shown in Figure 3. More than half of them (57.6%) depended on one source of information while 8.1% depended on more than three sources for getting information about premarital screening.

Table 2 presents the answers of respondents to questions reflecting their knowledge about premarital screening. Majority of them recognized correctly that hereditary disorder can be transmitted by gene (98.2%), hereditary disorder can affect any body system (91.6%), and human immunodeficiency virus can be transmitted by sexual transmission (88%). Most of the students answered correctly that human immunodeficiency virus can be transmitted from the mother to the fetus (83.2%) and consanguinity can increase hereditary disorder in offspring (79.3%). Almost two-thirds of them answered correctly that hepatitis (B) virus (65.6%) and hepatitis (C) virus (66.8%) can be transmitted from the mothers to the fetus while almost half of them recognized that hepatitis (B) virus (53%) and hepatitis (C) virus (52.4%) can be transmitted by sexual transmission.

As shown in Table 3, older students (>23 years) reported higher knowledge score about PMS compared to younger students (≤20 years) (mean ranks of score were 198.83 and 141.50, respectively, $p = 0.002$). Science college students showed higher knowledge score about PMS (mean rank = 200.37) than students of Arts college (mean rank = 146.48). This difference was statistically significant, $p < 0.001$.

The lowest PMS knowledge score was reported among students of academic year 1 (mean rank = 119.38) while the highest PMS knowledge score was reported among those of academic year 4 (mean rank = 224.43). The difference was statistically significant, $p < 0.001$. Students who depended on schools, colleges, and family as a source of information regarding premarital screening reported the highest PMS knowledge score (mean rank = 230.08) while the lowest scores were reported among those who depended on medical courses (mean rank = 140.05) and friends (mean rank = 145.81). Other factors were not significantly associated with knowledge regarding PMS.

Discussion

In the Arabian Peninsula, high percentages of consanguineous marriages and the tribal nature of marriages have resulted in high incidence of genetically based disorders.[20] The consanguinity rate is in the region ranges from 25% to 60%.[19,21,22] In accordance with that, this study showed that 23.1% and 10.9% of students reported presence of family and personal histories of hereditary disorders, respectively. In a study carried out to determine the prevalence of beta-thalassemia among subjects coming for PMS in the Al-Hasa area, KSA, found that the prevalence was 3.4%.[22]

In Saudi Arabia, a Royal decree was passed in 2003 for a mandatory premarital screening test followed by a nondirective genetic counseling for hemoglobinopathies, the decision of marry is then left to the couple. Prenatal diagnosis and termination of pregnancy are not offered to carrier couples, even though a 1990 ruling allows termination of pregnancy in the first 120 days after conception, if the fetus had shown beyond doubt to be affected with a severe disorder that is not amendable to treatment.[24–26] The effectiveness of carrier screening programs depends largely on the knowledge and attitudes of the target population.

Genetic disorders cause a significant burden in Saudi Arabia, and hereditary hematologic disorders make up a significant proportion of these genetic disorders.[19,24] Screening for carrier status of hereditary hematologic disorders may help in decreasing the occurrence.[19]

In this study, the knowledge of the male university students' sample was explored using a structured questionnaire. The questions tested the student's knowledge of genetic and infectious disorders. Although the vast majority of the students reported that they have heard of premarital screening, the results of this study clearly showed that the participants' knowledge was inadequate about some important issues such as the transmission of hepatitis B and C by sexual transmission and from the mother to the fetus. This finding is consistent to what has been reported in similar studies carried out in Saudi Arabia, Egypt, Syria, and Oman.[19,27–29] This could be attributed partially to the participants' young age where they lack the ability to appreciate the seriousness of the infectious diseases and its huge impact on the affected families. Health education should be directed toward improving young adults' knowledge of these vital issues.

In this study, the most reported source of information on PMS was friends followed by television (TV), which agrees

Table 1: Sociodemographic characteristics of the study group of male university students

Sociodemographic characteristics	Number of students (*n* = 320)	%
Age (years)		
≤20	105	32.8
21–23	162	50.6
>23	53	16.6
Range (years)	18–30	
Mean ± SD (years)	21.2 ± 1.6	
College		
Arts	168	52.5
Science	152	47.5
Academic year		
1	91	28.4
2	78	24.4
3	80	25.0
4	71	22.2
Marital status		
Single	288	90.0
Married	32	10.0
Upbringing		
Riyadh	170	53.1
Others	150	46.9

SD, standard deviation.

Table 2: Student's knowledge regarding premarital screening

Statements	Correct answers *N* = 320	
	Frequency	Percentage
Hereditary disorder can be transmitted by gene	305	95.3
Hereditary disorder can affect any body system	288	90.0
Consanguinity can increase hereditary disorder in offspring	244	76.3
HIV can be transmitted by sexual transmission	268	83.8
Hepatitis B virus can be transmitted by sexual transmission	172	53.8
Hepatitis C virus can be transmitted by sexual transmission	170	53.1
HIV can be transmitted from the mother to the fetus	268	83.8
Hepatitis B virus can be transmitted from the mother to the fetus	210	65.6
Hepatitis C virus can be transmitted from the mother to the fetus	219	68.4

HIV, human immunodeficiency virus.

Table 3: Factors associated with knowledge regarding premarital screening among male university students (*n* = 320)

Factors	Total premarital screening knowledge score (0–9)			*p*
	Median	IQR	Mean rank	
Age (years)				
≤20 (*n* = 105)	6.5	5–8	141.50	
21–23 (*n* = 162)	7	6–9	170.06	
>23 (*n* = 53)	7	6–9	198.83	0.002[a]
College				
Arts (*n* = 168)	6.5	5–8	146.48	
Science (*n* = 152)	8	6–9	200.37	<0.001[b]
Academic year				
1 (*n* = 91)	6	5–7	119.38	
2 (*n* = 78)	7	6–8	167.48	
3 (*n* = 80)	8	6.25–8	201.61	
4 (*n* = 71)	8	5–9	224.43	<0.001[a]
Marital status				
Single (*n* = 288)	7	6–8	166.13	
Married (*n* = 32)	7	5–9	186.01	0.482[b]
Upbringing				
Riyadh (*n* = 170)	7	6–8	175.90	
Others (*n* = 150)	7	5–8	158.88	0.111[b]
Family history of hereditary diseases				
Yes (*n* = 256)	7	6–8	160.80	
No (*n* = 78)	7	5–8.50	168.83	0.405[b]
Personal history of hereditary diseases				
Yes (*n* = 35)	7	6–9	169.99	
No (*n* = 285)	6	5–9	149.84	0.092[b]
Hearing about PMS				
Yes (*n* = 301)	7	6–8	173.61	
No (*n* = 19)	7	5.5–8	169.09	0.632[b]
Source of information				
No	7	6–8	170.38	
TV	7	5–8	159.22	
Friends	6	5–7	145.81	
Course	6	5–7	140.05	
Newspapers	6.5	5–9	159.52	
Others (school/college/family)	8	7–9	230.08	
More than one source	7	6–9	188.72	0.004[a]

IQR, interquartile range
[a]Kruskal–Wallis test.
[b]Mann–Whitney test.

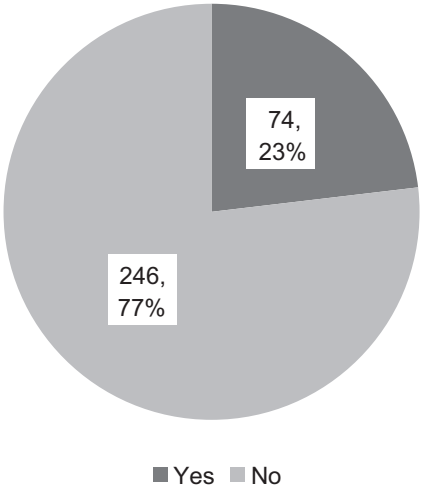

Figure 1: Family history of hereditary diseases among male students, King Saud University, Riyadh.

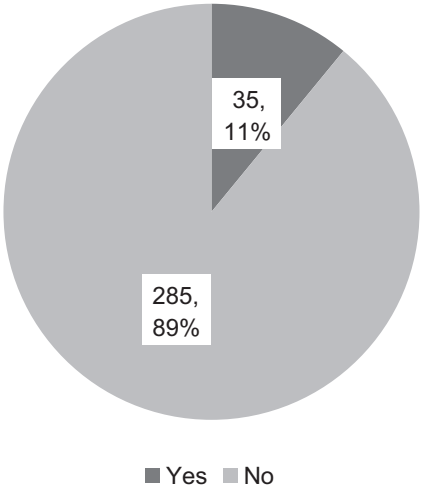

Figure 2: Personal history of hereditary diseases among male students, King Saud University, Riyadh.

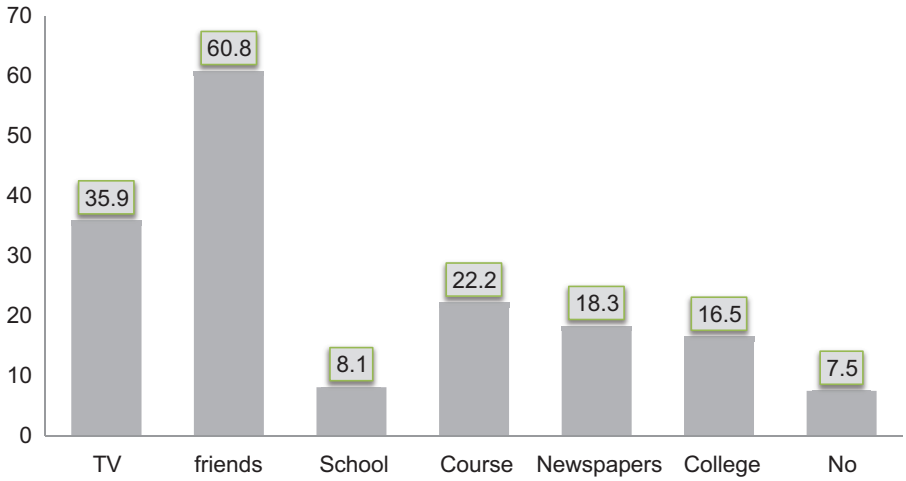

Figure 3: Source of information regarding premarital screening among male students, King Saud University, Riyadh.

with previous findings regarding PMC carried out among unmarried female university students[30] and attendees of governmental outpatient clinics[30] in Jeddah, Saudi Arabia. Health education on this matter should be simultaneously provided to students and their families through media. Proper PMC would also help to disseminate the information on PMS program and will result in increased utilization. In this study, about a quarter of the participants have obtained their information on PMS from schools or colleges. This can be significantly improved by adapting various strategies such as including PMS program in the school curriculum and arranging regular educational lectures on PMS and its objectives. Another study has shown that TV is the most common source of knowledge.[14] Dabbous et al.[31] found that radio and TV were the most common reported means of health education (65%). The discrepancy between the current and previous studies may result from the low number of educational TV programs regarding the PMSGC in KSA or from the reporting of more than one type of mass media in other studies. Therefore, the media plays a prominent role in enlightening the populace regarding the PMSGC program.

In this study, the PMS knowledge score was significantly higher among students enrolled in Science faculty compared to college of Arts, which may reflect understanding of PMS,

genetic, and infectious diseases acquired during their studies. This indicates the importance of introducing such information in secondary schools and university curricula of different colleges.

Contrary to expectation, having a family and/or personal history of genetic disease did not influence PMS knowledge significantly. This may partially be explained by the fact that many students included multifactorial disorders such as diabetes mellitus and allergy as hereditary disorders.

There was no significant difference in PMS knowledge among those raised in Riyadh compared to those raised in the other cities, towns, and villages. The role of education at the university level may therefore, override any cultural or familial difference. The same finding has been previously mentioned by Al-Aama et al.[19] in their study among King Abdul Aziz University students in Jeddah.

Although the sample size is considered as the representative of the KSU student population, the study did not assess the knowledge among female students and those in other geographical regions of this multicultural society, nor did it study other essential members of the population, such as those who have not continued their education, and the elders whose decisions may have an impact on other family members.

Conclusion

This study highlights that the knowledge of male university students in KSU about the PMS program was insufficient in some areas that necessitate a need for more information and education about the program.

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