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Premarital Screening Program Knowledge and Attitude among Saudi University Students in TABUK City 2019

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ABSTRACT

Background: *Saudi Arabia has a high prevalence of Inherited diseases such as Sickle cell anaemia (SCA), Thalassemia and hepatitis are chronic diseases that affect the individual quality of life, which can be limited by increasing the knowledge among the community.* ***Objectives:*** *To assess the level of knowledge and the attitude among Saudi Tabuk University students regarding premarital screening program.* ***Subjects and Methods:*** *A cross-sectional study was conducted from April 2019 to August 2019 among Saudi students of the University of Tabuk, both male and female. A self-administered questionnaire about knowledge and attitude of the Saudi community towards premarital screening program was used for data collection. It consists of 3 main sections; demographical data, student's general knowledge about the screening program and the attitude of the students towards premarital screening.* ***Results:*** *The study included 437 students. The age ranged between 18 and 29 years with a mean ± SD of 21.5 ± 2.2 years. More than half of them (56.8%) were females. Overall, slightly less than half of the students (48.3%) had sufficient knowledge regarding premarital screening. Female (p=0.003), married (p=0.044) and were medical students (p=0.024) were more knowledgeable than their counterparts. Overall, almost two-thirds of the students (69.8%) had a positive attitude towards premarital screening.* ***Conclusion:*** *Although knowledge regarding premarital screening among Tabuk university students was insufficient among almost half of them, they had an overall positive attitude towards the program.*

Keywords: Premarital Screening, Infectious diseases, Tabuk city, Saudi Arabia

INTRODUCTION

Background/Literature Review

In our culture, marriage is an important and essential event in a person's life. A healthy life for the couple and their children is required to live a stable life.

Since we have hereditary and infectious diseases running in families either because of inheritance or infectious causes, kingdom of Saudi Arabia has started a premarital screening program in 2004 G-1424 L. It is a mandatory screening program conducting for all couples intending to marry to identify any genetic blood diseases like Sickle cell disease (SCA), thalassemia and infectious diseases like HIV, Hepatitis B, and C aiming to limit the spread of these diseases [1]. The response to the screening result is voluntary.

This program is better than the neonatal screening because it is primary prevention. These diseases are not fatal but chronic that needs continuous treatment and management, thus it will cost the country as well as the individual [2].

Worldwide, the most common inherited hemoglobinopathies are sickle cell anaemia and thalassemia major, according to World Health Organization (WHO) and approximately 240 million are heterozygous for inherited hemoglobinopathies including SCA and thalassemia [3].

Saudi Arabia as well is known for its high prevalence of these diseases. SCA and thalassemia are the most common genetic disorders according to several studies were conducted in the kingdom [4]. According to the general statistics organization, KSA the estimated prevalence of beta_thalassemia and SCA are 1-5%-17% respectively.

The prevalence of SCA and B-thalassemia was highest in the eastern region, followed by southern and western

regions. It was lowest in the central and northern regions. In particular, Qassim, Hail, Jouf and Northern borders demonstrated the lowest prevalence [4]. This high prevalence could be due to the general endogamy marriage. The consanguinity marriage is of a high percentage in Saudi Arabia at 56%, 33.6% for first-degree cousins and 22.4% among other relatives [5,6]. Nevertheless, studies have proved that 48% of genetically incompatible couples completed their marriage [6,7].

A previous study was conducted in Jeddah city among unmarried males and females from the general population showed that a majority of the participants had poor knowledge score and that how had an educational level of a university degree or above had higher knowledge. Furthermore, more than half of them had a positive attitude toward the screening program [8].

In contrast, another study was conducted in Taif city among university students showed most of them were aware of hereditary diseases and had heard about the Pre-marital screening (PMS) program. Moreover, the majority of them were willing to change their decision to marry if the result comes incompatible [9].

Another study was done among female university students in Hail city showed that 63.9% of them have positive consanguinity. Positive attitudes were obvious throughout the participant as they thought that it is an important screening program. A fair knowledge about the content of the screening program was obtained from the participants [10]. Counseling before the tests were done only for a minority of the participants in a study was done in governmental hospital outpatient clinics [11]. Regarding health awareness in a study was done in Maddinah, most f the population agreed that social media is the most important method for health education [12].

However, in the Arab and Gulf countries the situation is similar to Saudi Arabia. It is a major physical and social dilemma; it causes a significant burden on the health care system. However, the screening programs in Saudi Arabia and Gulf countries have been very effective. In the Arab and Gulf countries researches have shown that the prevalence of genetic diseases is high that's why the PMS program was implemented as a mandatory program for all couples intended to marry [13,14]. Results of studies were done in gulf countries such as Kuwait, Oman and Bahrain came not to differ from studies were done in Saudi Arabia regarding the level of knowledge, agreement to implement the programme as mandatory and response to the result if came incompatible.

So far, no study was conducted in Tabuk city to measure the knowledge and attitude of the community regarding premarital screening program. That's why the awareness, attitude, and beliefs of the community towards the PMS program need to be tested.

Problem Statement

Education about the situation helps to deal with it in the best way, especially when it comes to inherited preventable diseases such as SCA and thalassemia.

Better educating and counseling programs for the community will have a better impact on disease control.

This study is aiming to focus the light on this area of deficiency to implement better educational programs.

Rationale

Up to my knowledge, no published studied in Tabuk has been done about the knowledge and attitude of the Saudi community towards the premarital screening program, which is important to minimize the common inherited diseases.

Inherited diseases such as SCA, Thalassemia and hepatitis are chronic diseases that affect the individual quality of life, which can be limited by increasing the knowledge among the community.

The prevalence of SCA, Thalassemia and hepatitis in the Saudi community emphasizes the importance of this study.

MATERIALS AND METHODS

Study Setting

This study was conducted by university students of Tabuk University. Tabuk city is located in the northwest of the kingdom, with a population of 796425 according to the 2010 census in the Saudi general authority of statistics official website.

Tabuk University has been established in 2006 G. Currently, there are 1,659 faculties at the university, with females representing 40% and both male and female students exceeding 36,000. As for the main campus, it is located in Tabuk city in the northwest of the Kingdom. Based on the University's commitment to serving the region, many branches of the University of Tabuk had been constructed in the near provinces.

Study Duration

The study was done from April 2019 to August 2019.

Study Design

This is a cross-sectional survey.

Study Population

The study population was the students of the University of Tabuk, both male and female.

Inclusion Criteria

Saudi students, both male and females studying at Tabuk University, aged over 18 years.

Exclusion Criteria

Non Saudi students.

Sample Size

Target minimum sample of 381 participants was estimated using the online EZ Survey software (Raosoft Inc., Seattle, Washington, USA, http://www.raosoft.com/samplesize. html) with a 5% margin of error and 95% confidence level. This sample was increased to 420 to compensate for possible none of the incomplete responses.

Sampling Method

By stratified random sampling technique, the students who fit our selection criteria were included in the study.

Data Collection Tool

A questionnaire about knowledge and attitude of the Saudi community towards premarital screening programs was taken from Al Sulaiman A [2], after permission from the author. It is a self-administered questionnaire with an introduction explaining the purpose of the study without names to ensure the privacy.

The questionnaire consists of 3 main sections: The first 5 questions include questions about demographical data. The next 5 questions test the student's general knowledge about the screening program. The last 5 statements investigate the attitude of the students towards premarital screening. Regarding knowledge questions, a score of "1" was assigned to the right answers whereas a score of "0" was assigned to the wrong answers. The total score and its percentage were computed for each participant. Those scored below "60%" were considered having "insufficient knowledge" while those scored 60% or more were considered having "sufficient knowledge".

A pilot study was done on 50 participants to augment the validation of the questionnaire.

Data Collection Technique

Questionnaires were distributed on the students and the data collection was continued till the required number is completed.

Data Entry and Statistical Analysis

Data entry and statistical analysis were performed using the Statistical Package for Social Sciences software (SPSS), version 25. Frequency and percentage were used to describe qualitative variables whereas mean, range and standard deviation were applied to describe quantitative variables. Chi-square test was used to test for the association between categorical variables and p-value<0.05 was considered for statistical significance.

Ethical Considerations

- The ethical approval by the Research Ethics Committee of King Salman Armed Forces Hospital was obtained prior to the study

Verbal consent was obtained from each participant to voluntarily participate in the study after explaining the study and the aim of conducting it Data were used for the purpose of the research only

RESULTS

The study included 437 students. Their demographic characteristics are summarized in Table 1. The age ranged between 18 and 29 years with a mean ± SD of 21.5 ± 2.2 years. More than half of them (56.8%) were females. The majority of the respondents (88.6%) were singles. Most of them (79.4%) were recruited from non-medical colleges and originally from the Northern Region of the Kingdom (78.7%).

Table 1 Demographic characteristics of the participants

Gender	Frequency	Percentage (%)
Male	189	43.2%
Female	248	56.8%
Age (years)		
≤ 20	158	36.2%
21-25	259	59.2%
>25	20	4.6%
Range		
Mean ± SD	18-29	
	21.5 ± 2.2	
Marital Status		
Single	387	88.6%
Married	42	9.6%
Divorced/widowed	8	1.8%
Specialty		
Medical	90	20.6%
Non-medical	347	79.4%
Region		
Northern	344	78.7%
Others	93	21.3%

Knowledge about Premarital Screening

The majority of the students (97.3%) knew that premarital screening is done for males and females. Also, the majority of them (89.7%) could recognize that premarital screening is mandatory. Almost three-quarters of the students (75.5%) knew that premarital screening is a blood test. Regarding the target diseases by premarital screening, sexually transmitted diseases and infectious diseases such as viral hepatitis were recognized by 60.9% and 51.7% of the students whereas some hereditary diseases were recognized by only 27.9% of them (Table 2). About one-third (35.2%) of the students knew that the results of premarital screening need between 6 and 10 days. Overall, slightly less than half of the students (48.3%) had sufficient knowledge regarding premarital screening as displayed in Figure 1.

As demonstrated in Table 3, female students were more knowledgeable regarding premarital screening than male students as 54.4% of them compared to 40.2% of male students had sufficient knowledge, p=0.003. Also, married students were more knowledgeable than singles and divorced students (59.5% versus 47.8% and 125%, respectively), p=0.044. Medical students had a higher significant rate of sufficient knowledge compared to non-medical students (58.9% versus 45.5%), p=0.024). Students` age and region of origin were not significantly associated with knowledge about premarital screening.

Table 2 Knowledge of Tabuk University students about the premarital screening

	Right responses	
	No.	Percentage (%)
Premarital medical examination is? (blood analysis)	330	75.5%
Premarital screening is done for (Males and females)	425	97.3%

Results of premarital screening need (6-10 days)	154	35.2%
Premarital screening is done to discover		
-Sexually transmitted diseases	266	60.9%
-Infectious diseases such as viral hepatitis	226	51.7%
-Some hereditary diseases	122	27.9%
Is premarital screening mandatory? (Yes)	392	89.7%

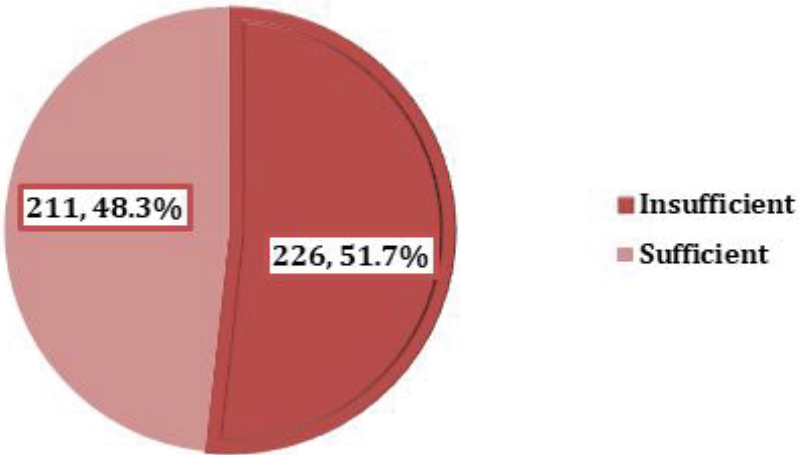

Figure 1 Overall knowledge level of the Tabuk University students about premarital screening

Table 3 Factors associated with knowledge of premarital screening among Tabuk University students

	Knowledge of premarital screening		p-value*
	Insufficient N=226	Sufficient N=211	
	N (%)	N (%)	
Gender			
Male (n=189)	113 (59.8%)	76 (40.2%)	0.003
Female (n=248)	113 (45.6%)	135 (54.4%)	
Age (years)			
≤ 20 (n=158)	92 (58.2%)	66 (41.8%)	0.12
21-25 (n=259)	124 (47.9%)	135 (52.1%)	
>25 (n=20)	10 (50.0%)	10 (50.0%)	
Marital Status			
Single (n=387)	202 (52.2%)	185 (47.8%)	0.044
Married (n=42)	17 (40.5%)	25 (59.5%)	
Divorced (n=8)	7 (8.5%)	1 (12.5%)	
Specialty			
Medical (n=90)	37 (41.1%)	53 (58.9%)	0.024
Non-medical (n=347)	189 (54.5%)	158 (45.5%)	
Region			
Northern (n=344)	178 (51.7%)	166 (48.3%)	0.982
Others (n=93)	48 (51.6%)	45 (48.4%)	
*Chi-square test			

Attitude towards Premarital Screening

It is realized from Table 4 that the majority of the students (81.9%) either strongly agreed or agreed that they should have counseling sessions before and after the premarital screening. More than half of them (54.9%) either strongly agreed or agreed that a premarital screening program is important to reduce the genetic disease percentage in Saudi Arabia. Less than half of them (48.3%) either strongly disagreed or disagreed that marriage should be allowed if

the result came incompatible. Most of them (79.6%) believed that there is no harm or disadvantage of premarital screening.

Overall, almost two-thirds of the students (69.8%) had a positive attitude towards premarital screening as clear from Figure 2.

As shown in Table 5, none of the studied factors (age, gender, marital status, specialty and region of origin) was significantly associated with the attitude level of the students towards premarital screening.

According to students` opinions, the harm or disadvantage of premarital screening results is being mainly embarrassing to women (53.9%) or woman`s family (43.8%) Figure 3.

Table 4 Attitude of Tabuk University students towards premarital screening

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
Do you think the we should have counseling sessions before and after premarital screening?	226 (51.7%)	132 (30.2%)	74 (16.9%)	5 (1.1%)	0
Do you think that premarital screening program is important to reduce genetic disease percentage in Saudi Arabia?	159 (36.4%)	81 (18.5%)	42 (9.6%)	153 (35.0%)	2 (0.5%)
Do you think that marriage should be allowed if the result came incompatible?	76 (17.4%)	98 (22.4%)	52 (11.9%)	166 (38.0%)	45 (10.3%)
Do you think that there is harm or disadvantage of premarital screening?	Yes	No	Not sure		
	35 (8%)	348 (79.6%)	54 (12.4%)		

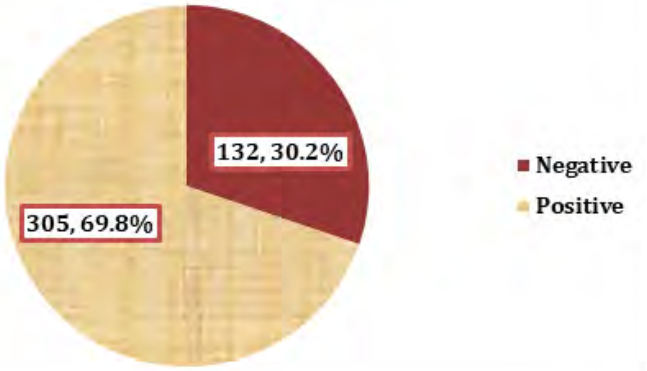

Figure 2 Overall attitude level of the Tabuk University students towards premarital screening

Table 5 Factors associated with the attitude of Tabuk University students towards premarital screening

	Attitude towards Premarital Screening		p-value*
	Negative N=132	Positive N=305	
	N (%)	N (%)	
Gender			
Male (n=189)	59 (31.2%)	130 (68.8%)	0.688
Female (n=248)	73 (29.4%)	175 (70.6%)	
Age (years)			
≤ 20 (n=158)	43 (27.2%)	115 (72.8%)	0.581
21-25 (n=259)	83 (32.0%)	176 (68.0%)	
>25 (n=20)	6 (30.0%)	14 (70.0%)	
Marital Status			
Single (n=387)	116 (30.0%)	271 (70.0%)	0.895
Married (n=42)	13 (31.0%)	29 (69.0%)	
Divorced (n=8)	3 (37.5%)	5 (62.5%)	
Specialty			

Medical (n=90)	22 (24.4%)	68 (75.6%)	0.182
Non-medical (n=347)	110 (31.7%)	237 (68.3%)	
Region			
Northern (n=344)	109 (31.7%)	235 (68.3%)	0.195
Others (n=93)	23 (24.7%)	70 (75.3%)	
* Chi-square test			

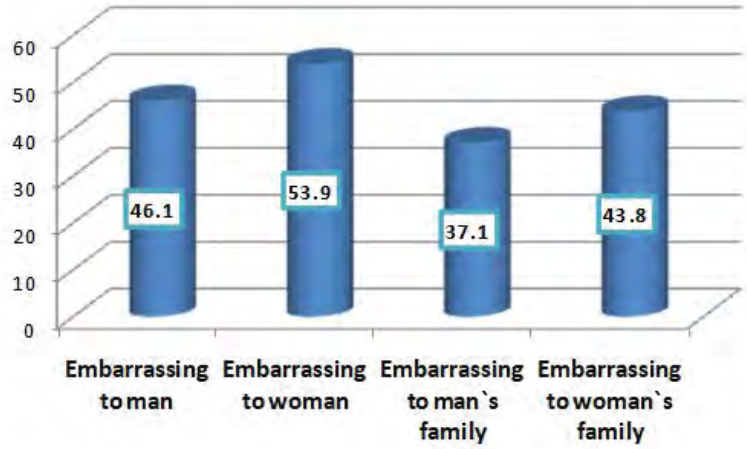

Figure 3 Harm or disadvantage of premarital screening, according to student`s opinions (n=89)

DISCUSSION

As Saudi Arabia still has one of the highest prevalence of consanguineous marriage (56%) [6], the awareness, knowledge, beliefs, and attitude of the population towards the premarital screening program are required to be investigated in order to identify methods to reduce the prevalence of the diseases associated with consanguineous marriage. Therefore, this study was carried out to assess the level of knowledge and the attitude among Saudi Tabuk University students regarding premarital screening program.

In KSA, premarital screening is mandatory for everyone; however, partners have the right to marry regardless of the results of the premarital screening. An alarming finding in this study was observed that a considerable proportion of the university students (39.8%) agreed that marriage should be allowed if the result came incompatible, mostly because if marriage is discontinued this will be embarrassing to women and their families. In another relatively older study, 88% of incompatible partners screened in 2005-2006 decided to marry [16]. However, this rate has decreased to 48% in 2009 [17]. Recent figures in this regard are lacking to investigate the effectiveness of the PMS program in reducing at-risk marriages. However, in a study carried out among university students in Taif, 82.9% were willing to change their marriage decision in case of incompatibility [9]. In King Abdulaziz University, Jeddah, 67% of female students were in favor of marriage cancellation when PMS results revealed a genetic disease [18]. In Riyadh, more than 60% of the studied people in a population-based survey believed that marriage plans should be canceled with a high risk of hereditary disease [2]. These findings from different studies are encouraging. However, still, a considerable percentage planned to continue incompatible marriages which indicate the existence of cultural barriers that need to be tackled.

Issuing a law that prohibits incompatible marriages is needed. In a study carried out among Taif University students recently, 91.8% are demanding the implementation of such law [9].

In gulf countries, the PMS program is implemented as a mandatory program for all couples intended to marry [13,14]. In the present study, the majority of the students could recognize that premarital screening is mandatory. The same has been observed in a study carried out among Taif University students [9].

Regarding the target diseases by premarital screening, in this study, 60.9% and 51.7% of the students could identify sexually transmitted diseases and infectious diseases such as viral hepatitis. However, some hereditary diseases were recognized by only 27.9% of them. In another study conducted in Taif city among university students, most

of them were aware of the ability of PMS in detecting communicable diseases (85.3%) and only 34.5% recognized the ability of PMS in detecting hereditary diseases [9]. In Western Saudi Arabia, almost half of the population had poor knowledge regarding the diseases included in the PMS [8]. This could be attributed to the lack of early health education in schools and universities.

In this study, 48.3% of the students had sufficient knowledge regarding premarital screening. In a previous study conducted in Jeddah city among unmarried males and females from the general population, the majority of them had poor knowledge score [8]. In Hail city, a fair knowledge about the content of the screening program was observed among female university students [10]. In King Saud University, Riyadh, 20% of university students had inadequate knowledge concerning PMS [19]. The variation in the rates of PMS knowledge could be attributed to using different tools in assessing knowledge as well as the cultural difference between different cities in the Kingdom. Therefore, there is a need for PMS educational programs as well as genetic counseling programs targeting university students at Tabuk University. A previous successful educational program has been conducted among students of King Abdulaziz University, Jeddah where their rate of inadequate knowledge about PMS had decreased from 80.9% before the education campaign to 21.9% after it [18].

Female students were more knowledgeable regarding premarital screening than male students in this study. However, no gender difference was observed in a recent study carried out in Qatar [20]. Married students were more knowledgeable than singles students, mostly due to their previous experience. Also, as expected medical students, as a result of the nature of their study had a higher significant rate of sufficient knowledge compared to non-medical students.

It is realized from this study that the majority of the students agreed that they should have counseling sessions before and after the premarital screening. However, in a previous Saudi study, counseling before the PM tests were done only for the minority of the participants in governmental hospital outpatient clinics [11].

In the present survey, more than half of the students agreed that premarital screening program is important to reduce genetic disease percentage in Saudi Arabia and almost half disagreed that marriage should be allowed if the result came incompatible as well as most of them believed that there is no harm or disadvantage of premarital screening. Overall, almost two-thirds of them expressed a positive attitude towards premarital screening. This positive attitude has been shown in other studies carried out in the Kingdom of Saudi Arabia. In Abha, 70% of health science students accepted the PMS program [21]. In King Abdulaziz University, Jeddah, 99% of female students believed in the importance of PMS [18]. In Taif, a positive attitude toward PMS among University students was reported [9]. In a community-based study conducted in Riyadh, 94% of the respondents considered PMS as an important preventive measure for genetic blood disorders [22]. In Hail city, positive attitudes were obvious throughout the female university students towards PMS as they thought that it is an important screening program [10].

Study Limitation

The study was conducted at a University in one city of the Kingdom, which could not represent the entire population of university students all over the Kingdom. The cross-sectional design does not prove causality. Female students responded more than male students, which may be explained by that investigator was female, which may affect the generalizability of the results. Despite those limitations, the study carries a public health consideration in investigating this important topic in Tabuk.

CONCLUSION

A considerable proportion of Tabuk university students had insufficient knowledge regarding premarital screening program. Female, married and medical students were more knowledgeable compared to their counterparts. On the other hand, the attitude of most of the students was positive towards premarital screening, with no difference between them according to their socio-demographic characteristics. However, a considerable proportion of the students agreed that marriage should be allowed if the result came incompatible, mostly because if marriage is discontinued this will be embarrassing to women and their families.

Recommendations

Based on the results of the study and their discussion, the following are recommended:

1. Efforts are needed to improve knowledge of university students regarding PMS, including lectures and courses at universities as well as governmental campaigns in social media

2. Organizing educational genetic counseling programs for university students is recommended
3. Encourage early genetic screening, which may help to get maximum benefits from the test
4. Addressing cultural restrictions that prohibit discontinuity of marriage, if incompatible results exist is very important
5. The implementation of a law that prohibits incompatible marriages
6. Further study is required to include students from different universities with different backgrounds of students in the Kingdom and to include equal male and female students

DECLARATIONS

Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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