Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2014; 2(5E):1797-1805 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com **DOI:** 10.36347/sjams.2014.v02i05.062

Research Article

Knowledge, Beliefs and Behavior Intention about Premarital Screening among King Saud University Female Students in Riyadh

Ebtisam M. Fetohy Khalil[1], Sabah M. Abdelkader*[2], Mariam Dawood Alsaeed[2], Nouf Mohammad Alshahrany[2]
[1]Professor of Health Education, Community Health Sciences Department, College of Applied medical sciences, King Saud University, Riyadh, Kingdom of Saudi Arabia and Health Administration & Behavioral Sciences Department, High Institute of Public Health, Alexandria
[2]Assistant professor of Maternal and Child Health, Community Health Sciences Department, College of Applied medical sciences, King Saud University, Riyadh , Kingdom of Saudi Arabia

***Corresponding author**
Sabah M. Abdelkader
Email: sabahabdelkader@hotmail.com

Abstract: Hereditary or contagious diseases can disturb life leading to psychological, social and economic problems as well as medical complications with their reflection on the patient, the family and the society. Premarital screening is an important tool to control, minimize, and prevent genetic disorders, and some infectious diseases. This study aimed at assessment of the knowledge, beliefs and behavior of KSU female students in Riyadh, regarding the national premarital screening program (PMS). A cross sectional descriptive study was conducted in King Saud University targeting female students. A total of 120 king Saud University's female students were selected randomly. Data was entirely collected over a period of one month. Study tool used was Self administered questionnaire. Most of The King Saud University's female students had fair knowledge and fair behavior towards premarital screening. The majority of them had high perceived severity of diseases prevented by premarital screening and benefits of premarital screening. The King Saud University's female students who had good behavior intention got the highest mean score of knowledge and perceived benefits. Perceived severity of disease prevented by premarital screening and total knowledge score predicted the King Saud University's girl student's premarital screening behavior intention. Health education effort should be directed towards enhancing King Saud University's female students' knowledge, beliefs and behavior about premarital screening. There is also a need to enhance perception and increase knowledge regarding the benefits of premarital genetic testing. Continuing education for the public is particularly important in developing countries where the rapid evolution of health priorities requires a flexible response. Application of comprehensive health education programs about reproductive health and the importance of premarital care through different mass media especially T.V. is important..
Keywords: Hereditary, psychological, Knowledge, premarital.

INTRODUCTION

Marriage is an important event in a person's life. It is family building from which an individual enters a new phase in building emotional and social relations. It should ensure protection of the parties from genetic and infectious diseases to build a happy and stable family functioning successfully.

Hereditary or contagious diseases can disturb life leading to psychological, social and economic problems as well as medical complications with their reflection on the patient, the family and the society [1].

Healthy marriage is State of compatibility and harmony between spouses in terms of health, psychological, sexual and social legitimacy in order to create healthy families and having healthy and happy children.

Consanguineous marriage and its relationship to genetic diseases

The most specialized scientific studies of common genetic diseases, specifically diseases of blood hemoglobin "HB", affirm that consanguineous marriage is the main cause of child disabilities and congenitally crippled. Many scientific researches conducted on consanguineous marriages also revealed that the incidence of such diseases and disabilities in children of consanguineous parents was cleared by medical examination before marriage, where greater opportunity a couple of relatives in fast genetic recessive traits when each parent has a pathologic character.

Multiple studies and scientific opinions reported that these genetic diseases are common in Saudi Arabia, prompting Saudi authorities to guide

relevant sectors to seek implementing the medical examination before marriage in order to ensure the safety of future generations and society from diseases and disabilities [2. Genetic disorders and in particular hemoglobinopathies such as sickle cell anemia and thalassemia are common in Saudi Arabia, particularly in the eastern and Southern regions. In 2004, the Saudi Ministry of Health implemented a mandatory premarital screening program in order to decrease the incidence of these genetic disorders in future generations. This program was named "premarital medical test." In 2008, this test was updated to include mandatory screening for hepatitis B and C viruses and Human Immunodeficiency virus (HIV). The new updated program was given the name of "Program of healthy marriage [3]. Hemoglobinopathies are among the most commonly inherited genetic disorders in humans. The World Health Organization (WHO) estimated that at least 2.6% of the world's populations are genetic carriers for hemoglobinopathies (2.9% for thalassemia and 2.3% for sickle cell disease) [4].

Premarital screening is an examination before the marriage to detect some genetic blood diseases (e.g. sickle cell anemia and thalassemia) and some infectious diseases as (e.g. hepatitis B, C/HIV"AIDS"). Premarital screening is an important tool to control, minimize, and prevent genetic disorders, and some infectious diseases; limit the spread of infectious diseases; reduce the prevalence of some genetic blood diseases (thalassemia-sickle cell anemia); Avoid social and psychological problems for families whose children suffer from genetic diseases; Raise awareness of the concept to universal health marriage [1].

Hence it is important to explore knowledge, beliefs and behavior of population towards premarital screening.

Aim of the study

Assessment of the knowledge, beliefs and behavior of KSU female students in Riyadh, regarding the national premarital screening program (PMS)

Specific objectives

- To assess the knowledge of KSU female students in Riyadh, regarding the national premarital screening program (PMS).
- To assess the beliefs of KSU female students in Riyadh, regarding the national premarital screening program (PMS).
- To assess the behavior of KSU female students in Riyadh, regarding the national premarital screening program (PMS).

METHODOLOGY

Study design: A cross sectional descriptive study was used.

Study settings and population: The study was conducted in King Saud University (College of applied medical sciences, Scientific colleges in Malaz, and literary colleges in Oleisha) targeting female students. A total of 120 king Saud University's female students were selected randomly.

Study limitations: Some students did not have enough time for answering all questions, so there was some missing data. Response rate was 100/120 x 100 = 83.3%.

Procedure: data was entirely collected by the researchers over a period of one month. Study toolused was Self administered questionnaire including data about:

a) 9 health knowledge, 2 health behavior

b) Health belief model scale consisted of one susceptibility, one severity, 6 benefits and 6 barrier likert scale.

Statistical analysis: It was conducted using SPSS software program, version 16. ANOVA test and Stepwise Multiple Regression test were used

Knowledge statements: were 7 statements, each statement scored 1 for correct answer, 0 for wrong answer or don't answer, expect questions 28 scored 2 for correct complete answer,1 for Correct incomplete answer,0 for wrong answer. The total knowledge score ranged from 0-9 and was divided as follows:

Poor knowledge	0-4
Fair knowledge	5-7
Satisfactory knowledge	8-9

Two behavior intention statements: The total behavior intention score ranged from 2-8 and was divided as follows:

Poor behavior intention	2-3
Fair behavior intention	4-6
Good behavior intention	7-8

Health belief model: One susceptibility statement, One severity statement, 6 benefit statements. The total benefit score ranged from 6-30 and was divided as follow:

Low benefit	6-13
Moderate benefit	14-22
High benefit	23-30

Barrier statements: 6 statements, the total barrier score ranged from 6-30 and was divided as follow:

Low barrier	6-13
Moderate barrier	14-22
High barrier	23-30

The total health belief model score ranged from 1- 30 and was divided as follows:

Low	1-10
Moderate	11-20
High	21-30

RESULTS

Table 1 shows that 59.0% of the King Saud University's female students belonged to two age groups from 22 to24, 74.0% of them from scientific colleges, 78.0% of them were single and 36.0% of them had income from 5 thousand to 10 thousand Saudi Riyals.

Table 1: Socio-demographic characteristics of King Saud University's female students Riyadh, KSA

Variable		No. (100)	%
Age group (years)	20-21	32	32.0
	22-24	59	59.0
	25-27	9	9.0
Type of College	Scientific	74	74.0
	Literary	26	26.0
Marital status	Married	20	20.0
	Single	78	78.0
	Divorced	2	2.0
Income	Less than 5 thousand Riyals	10	10.0
	From 5 thousand to 10 thousand Riyals	32	32.0
	From 10 thousand to 15 thousand Riyals	22	22.0
	More than 15 thousand Riyals	36	36.0

Table 2: Relationship between knowledge and Health Belief Model components' beliefs about premarital screening among King Saud University's female students Riyadh, KSA

	Knowledge score				F	p
	Poor	Fair	Satisfactory	Total		
	Mean ±SD	Mean ±SD	Mean ±SD	Mean ±SD		
Perceived susceptibility discovered by PMS	2.57±1.33	3.35±0.73	2.53±0.85	3.25±.089	10.78	0.000
Perceived disease severity discovered by PMS	2.3±1.16	2.72±0.89	3.15±0.89	3.03±0.99	4.43	0.014
Perceived PMS benefits	22.90±6.71	24.2±7.87	25.68±7.20	25.010±4.23	8.29	0.000
Perceived PMS barriers	5.22±3.15	7.29±2.68	6.92±3.09	7.05±2.87	6.072	0.003
Total health belief model (HBM)	10.57±6.53	12.13±4.61	13.83±3.31	12.29±4.56	7.304	0.001

Table 2 reveals that the mean perceived barrier is higher among King Saud University's female students having satisfactory knowledge score (18.92±3.09) than those having poor knowledge score (17.33±3.15). This difference was statistically significant, p=0.003. The table points out that the mean perceived severity, benefit and barrier increased with increasing level of knowledge. It was (2.3 ±1.16) among those having poor knowledge compared to (3.15±0.89) among those having satisfactory knowledge score. This difference was statistically significant, p=0.014.

Surprisingly, the table demonstrates that the mean score of perceived susceptibility to diseases discovered by premarital screening was highest among those having (3.35±0.73) fair knowledge score and lowest among satisfactory level. This difference was highly statistically significant, p=0.000.

The table also points out that the mean perceived benefits score increased with increasing level of knowledge. It was (22.90± 6.71) among those having poor knowledge compared to (25.68±7.20) among those having satisfactory knowledge score. This difference was statistically significant, p=0.000.

The table illustrates also that the mean total HBM increased with increasing level of knowledge. It was (10.57±6.53) among those having poor knowledge score compared to (13.83±3.31) among those having satisfactory level of knowledge about premarital screening. This difference was statistically significant, p=0.001.

Table 3: Relationship between premarital screening behavior intention and knowledge, Health Belief Model components' beliefs about premarital screening among King Saud University's female students, Riyadh, KSA

	Total behavior intention score				F	p
	Poor	Fair	Good	Total		
	Mean ±SD	Mean ±SD	Mean ±SD	Mean ±SD		
Total knowledge score	4.63±2.15	6.14±1.75	6.67±1.88	6.05±1.87	4.270	0.017
Perceived PMS barriers	18.02±3.10	18.82±3.56	19.20±4.82	19.08±3.64	2.55	0.0840
Perceived disease severity discovered by PMS	2.30±0.64	2.22±0.62	2.58±0.69	2.52±0.69	1.68	0.191
Perceived susceptibility discovered by PMS	2.29±0.64	2.59±0.74	2.45±0.64	2.52±0.63	0.81	0.450
Perceived PMS benefits	23.37±4.57	23.16±5.38	25.79±3.35	25.20±4.37	3.49	0.034
Total health belief model	10.81±5.28	12.14±4.47	14.06±4.19	12.45±5.26	1.77	0.176

Table 3 points out that the mean total knowledge score increased with increasing level of behavior intention. It was (4.63 ±2.15) among those having poor premarital screening behavior intention and increased to (6.67±1.88) among those having good premarital screening behavior intention. This difference was statistically significant p=0.017.

The table reveals also that the mean total PMS behavior barrier score increased with increasing level of total behavior intention score. It was (18.02±3.10) among those having poor behavior intention score and increased to(19.20± 4.82) among those having good behavior intention score. There was no significant difference, p=0.084

In addition, the table demonstrates that the mean score of perceived severity of diseases discovered by PMS was highest among those having (2.58±0.69) good behavior intention score. There was no significant difference, p=0.191.

Moreover, the table demonstrates that the mean score of perceived susceptibility to diseases discovered by PMS was highest among those having (2.59±0.74) fair behavior intention score. There was no significant difference, p=0.450.

The table illustrates also that the mean perceived benefit of PMS was higher among King Saud University's female students having good behavior intention score (25.79±3.35) than those having poor behavior intention score (23.37±4.57). This difference was statistically significant, p=0.034

The table points out that the mean total HBM score increased with increasing level of behavior intention score. It was (10.81±5.28) among those having poor Premarital screening behavior intention and increased to (14.06±4.19) among those having good premarital screening behavior intention. There was no significant difference, p=0.176.

Table 4: Relationship between type of college and premarital screening behavior intention, knowledge, Health Belief Model components' beliefs about premarital screening among King Saud University's female students Riyadh, KSA

Type of college	Scientific	Literary	Total	F	p
	Mean ±SD	Mean ± SD	Mean ± SD		
Total behavior intention score	4.93±1.31	5.34±1.52	5.04±1.37	1.749	0.189
Total knowledge score	6.41±1.54	5.00±2.33	6.05±1.87	12.245	0.001
Perceived barrier score	19.78±3.16	18.00±4.50	19.32±3.626	4.836	0.03
Perceived severity score	2.83±0.438	2.34±0.438	2.71±0.640	12.684	0.001
Perceived susceptibility score	2.18±0.565	2.46±0.581	2.26±0.579	4.396	0.039
Perceived benefit score	25.702±3.301	23.038±5.799	25.010±4.231	8.179	0.005

Table 4 points out that the mean total behavior intention score was surprisingly lower (4.93±1.31) among those studying in scientific colleges compared to (5.34±1.52) among those female students studying in literary college. There was no significant difference, p=1.89

The table illustrates also that the mean total knowledge score was lower (5.00±2.33) among students studying in literary colleges compared to (6.41±1.54) among those studying in scientific colleges. This difference was highly statistically significant, p=0.001.

In addition, the table points out that the mean perceived barrier score was lower (18.00±4.50) among

those studying in literary colleges compared to (19.78±3.16) among those studying in scientific colleges. This difference was statistically significant, p=0.03.

Moreover, the table reveals that the mean perceived severity score was (2.34±0.438) among those studying in literary colleges compared to (2.83±0.438) among those studying in scientific colleges. This difference was highly statistically significant, p=0.001.

The table also shows that the mean perceived susceptibility score was lower (2.18±0.565) among students in scientific colleges compared to (2.46±0.581) among students in literary colleges. This difference was statistically significant, p=0.039.

The table demonstrates that the mean perceived benefit score was lower (23.038±5.799) among female students studying in literary colleges compared to (25.702±3.301) among those students studying in scientific colleges. This difference was statistically significant, p=0.005.

Table 5: Total health belief model's components among King Saud University female students in Riyadh

Variables	Low		Moderate		High		Total	
	No.	%	No.	%	No.	%	No.	%
Perceived Susceptibility	7	7 .0	60	60.0	33	33.0	100	100.0
Perceived severity	10	10.0	9	9.0	81	81.0	100	100.0
Perceived Benefit	4	4.0	19	19.9	77	77.0	100	100.0
BarrierPerceived	9	9.0	77	77.0	14	14.0	100	100.0
Total Health belief model	9	19.0	46	46.0	35	35.0	100	100.0

Table 5 shows that 60.0% of King Saud University's female students had moderate perceived susceptibility to disease of premarital screening. It was noticed that the majority (81.0%) of King Saud University's female students had high perceived premarital screening severity, (77.0%) had high perceived premarital screening benefit and (77.0%) had moderate perceived premarital screening barrier. Around half (46.0%) of King Saud University's female students have moderate level of total HBM as shown also in Fig. 2.

Table 6: Summary of stepwise multiple regression of variable affecting behavior of premarital screening

Model	R	R^2	Adjusted R^2	Beta	SE	p
constant P. Severity Total-knowledge	0.312	0.097	0.079	 0.202 0.199	1.32	0.007

The stepwise multiple regression in table 6 shows that factors entered the regression of individual behavior were: age, income, total-knowledge, perceived susceptibility, perceived severity, perceived benefit, perceived barrier, income , and only perceived Severity and total knowledge score predicted university female students' behavior of premarital screening.

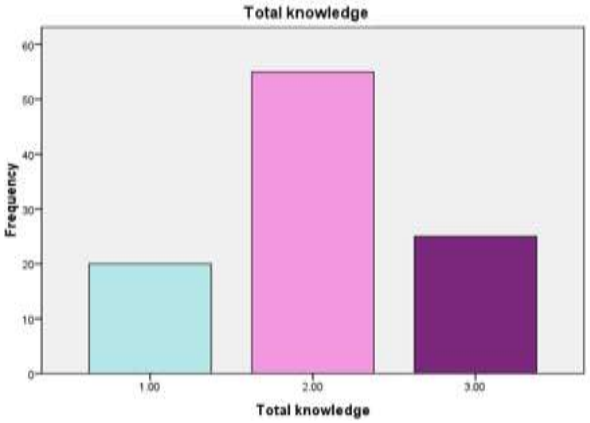

Fig. 1: Total knowledge score among KSU female students

Label of Fig.:1-poor (20%), 2-Fair (55%), 3-Satisfactory (25%)

Fig. 1 shows that only 25% of students had satisfactory level of knowledge about premarital screening.

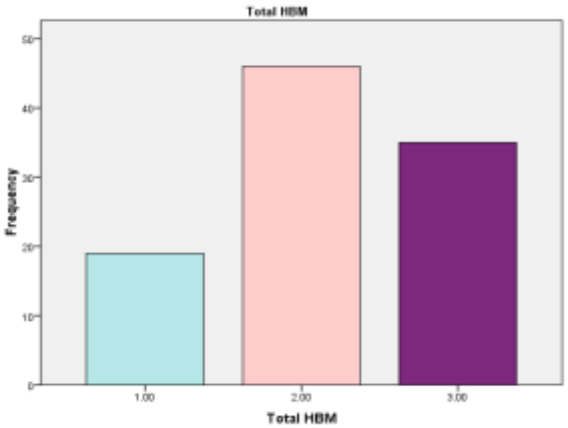

Fig. 2: Total HBM score among KSU female students

Label of Fig.:1-low (19%), 2-moderate (46%), 3-high (35%).

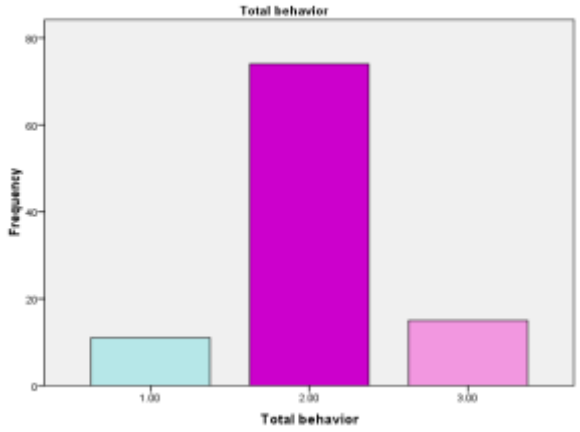

Fig. 3: Total health behavior intention
Label of Fig.:1-poor, 2-fair, 3-good

Fig. 3 points out that most of female students in KSU (74%) had fair level of behavior intention to premarital screening.

DISCUSSION

On planning any preventive program, many aspects need to be considered to ensure its success. In a program like premarital screening, there is a great need to focus on the target population, mainly young adults such as university students because their beliefs and attitudes will affect their choices in life including their choice on a partner. The importance of PMS cannot be overemphasized as many countries have shown its usefulness and effectiveness in decreasing the incidence of diseases tested for [5, 6].

The present study revealed that 20% of female studentshad poor knowledge**,** 55% of them had fair knowledge and 25% of them had satisfactory knowledge**)**, Fig. 1. These results go in line with that of a recent study conducted in King Abdul Aziz University (KAU), Jeddah found that university students had inadequate knowledge about the national premarital screening (PMS) program where less than one-third of the students knew which disorders are tested by the PMS [7]. A study done in Alexandria to assess knowledge and attitudes of nursing students toward premarital counseling revealed that 46.5% had an average score in knowledge [8]. The current study showed better results although it was done among students from all faculties, while that of Alexandria was done among nursing students only, with some background about the program. Al Sulaiman *et al*., 2008 found that there was a fair knowledge among three groups of Saudi participants about the nature of tests for targeted disorders in PMS [9]. Another study done by Al Sulaiman *et al*. in 2010 [10], which explored the impact of PMS program and genetic counseling on couples at risks of thalassemia and sickle cell anemia in area of the country with high hemoglobinopathy prevalence, found a lack of awareness about genetic diseases and misunderstanding of the impact of gene on health. The study showed some early benefits of the PMS in prevention of the targeted diseases and confirmed that **t**he program helped in early detection of the disease in their offspring. Another study done in Syria, 2009, showed that although university students had a considerable knowledge of PM testing, they had limited knowledge about certain aspects [11]. In Nigeria a cross-sectional survey conducted among university students, 2006, found that most of the study respondents (63.6%) knew the benefits of genetic counseling [12].

Conversely, Ibrahim *et al*. [13], assessed knowledge and attitude of female students found that 80.9% of them had poor knowledge, 12.5% of them had fair knowledge, while only 6.6% of them had satisfactory knowledge at pretest before the conduction of the health education program. The current study demonstrated that 77.0% of female students had high perceived benefits, table 6. Ibrahim *et al*., [13] reported that 99% of female students agreed on the importance of premarital screening (PMS)**.** This study pointed out that the mean knowledge score was significantly higher among the girls studied in scientific college (6.41±1.54) than among those girls study in literary college (5.00±2.33), table 4.Similarly, Ibrahim et.al., 2011found that predictors of female students knowledge were being a health science student, age≥20years, family history of hereditary disease and family income college ≥10, 000 Saudi Ryal per month. Meilleur *et al*. [14], in a study on genetic testing and counseling for hereditary neurological diseases in Mali found out that studying biology was the only predictor of high knowledge score. The higher knowledge score among those enrolled in health science faculties may reflect understanding of PMS, genetic, infectious diseases acquired during their studies. This indicates the importance of introducing such information in secondary schools and university curricula.

In recent years, premarital counseling has gained acceptance [15]. The present study illustrated that 77% of the female students had high perceived benefits this recent coincide with that of Ibrahim *et al*. [13], where was an overall positive attitude towards the program; 99% of female students either strongly agreed or agreed on the importance of PMS. These results agree with results of many other studies. An educational program conducted among female students in King Saud University, Riyadh, found that students' attitude was positive. (81.8%) of students in the Pre-test and 85.9% in the Post-test approved the importance of PMS) [16]. Al Suliman *et al*. [9], found that there was positive attitude of Saudi population towards the program and the majority of participants agreed that the PMS program should apply to all couples in all regions of Saudi Arabia. Results from Germany, 2009, found that there was an overall positive attitude toward genetic testing among the respondents aged 14—95years of German sample [17]. Hassan *et al*. [18],

reported that 80.9% of medical students in Alexandria, Egypt, supported the idea of premarital examinations. Similarly, results of a study done to assess the attitude of Pakistani doctors, medical students, lawyers, parliament members and parents of thalassemic children towards genetic diagnosis found that premarital carrier screening was favored by 77% of respondents [19]. Results of a study conducted to explore the attitude ofthe students of Health Sciences College in Abha, towards PMC illustrated that 70% of the participants accepted PMC [20]. Result of the study by Black and Meyer [21] showed that there was an overall positive attitude toward genetic testing among the respondents aged 14-95 years of German sample. Similarly, El-Hazmi [22] assessed attitudes in a community based study and found that 94% of participants considered pre-marital screening and counseling to be important in preventing genetic blood diseases; 87% thought testing should be mandatory. The Alexandria study conducted among nursing students showed that 65.5% of them had a positive attitude towards premarital counseling [8].

On the other hand, only 33% of the studied female students in the present had perceived susceptibility to diseases screened by premarital counseling and 77% of them had moderate perceived barriers, similarly the Syrian study reported that although students had some positive attitude, they still had negative attitude and perceptionstowards other aspects of PMS [11]. Reports from three different Islamic countries by Karimi *et al*. [23]; Monaghan [24], AlKhaldi *et al*. [19], provided evidence that religious beliefs could be obstacles to the success of pre-marital screening programmes, regardless of other factors such as education level.

In the Ibrahim *et al*. [13] study the vast majority of students agreed that PMS will help to reduce the prevalence of some genetic and STDs. Also similar results was obtained from other Riyadh [16] study and agreed with results on another study conducted among decision makers in Palestine [25]. Results of a study reported in 2010 from KAU found that most of students favor the PMS program but there were concerns regarding mandating the testing and interference with individual decision making [26].

Ibrahim *et al*. [13] study showed that 64.6% agreed on that in case of discovering presence or carrying inherited disease, marriage decision must be left for freedom of the couple, which is also agree with the Palestinian's results [25]. Hassan *et al*. [18] reported that the majority of medical students emphasized the free choice of the partners regarding finalizing the marriage whatever the results of PMS and less than one third had a positive attitude towards the results.

About two-thirds of students (67.1%) in the Ibrahim *et al*. [13], study agreed that when test results showed presence of genetic diseases, the marriage decision should be changed. Al Suliman *et al*. [9], reported also that more than 60% of all three Saudi participants were in favor of preventing at-risk marriages.

The result of the present showed that the HBM's components beliefs were different between scientific and literally college where perceived benefits and severity and barriers statistically higher among scientific students while perceived susceptibility was higher among literally students, Table 4. Conversely, study of Odelola [27] showed that there was no significant difference in the attitude towards premarital genetic screening due to course of study among students of Osun State Polytechnics [27]. This finding was not supported by that of Alam [16], which studied attitudes among female students in King Saud University and discovered that 86% of them, irrespective of course of study felt positively about pre-marital screening. Furthermore, Ibrahim *et al*. [13] stated that the difference in the result of their educational program about pre-marital screening for unmarried female students in King Abdul-Aziz University, Jeddah, and a study done in Alexandria [18] to assess knowledge and attitude of nursing students towards pre-marital counseling may be because Alexandria's study was done among nursing students only, with some background about the program, while the other study was done among students from all faculties [13].

Behavioral intention

The present study illustrated that only 15% of the studied female students had good intention to premarital screening and 74% of them had fair intention. Students who had good knowledge had good intention, knowledge is the first predictor of intention. Students who had high perceived benefits had good intention. Conversely, in Southern Iran, pre marital screening had been mandatory for 10 years, yet high-risk couples still get married and give birth to *children with homozygous for beta-thalassaemia, and* often, this is because of religious and traditional or cultural restraints [23]. They further stated that in the case of Islam, consanguineous marriages are permitted, so thalassemia persists in some parts of the community, making the programme redundant. Some people believe that their fate is determined by God and therefore accept the risk of having a sick child [23]. A recent report in The Jordan Times showed that many Jordanians view the results of their unions as fate [24]. Al Kindi *et al*. [28] reported that the participants' attitudes towards PMS were favorable, where the majority (92%) believed that PMS is important and agreed to carry it out in the future. This is similar to what has been reported in other Arab countries [7, 29, 30]. The majority of the participants reported that they will perform PMS to prevent transmission of diseases to their children. This reflects that the participants had a good understanding of the preventive value of PMS.

A minority of the participants refused or was not sure about carrying out PMS. They listed various barriers such as feeling that such test is an insult to them, afraid that the test results will not be in favor of their choice, they do not want to interfere with God's will, afraid of a positive result which will prevent continuation of marriage and because they think that their families will refuse continuation of marriage. This reflects that some students were still unaware of the importance of PMS and that they consider mandatory procedures as an insult on an individual's freedom. All these reasons can be contributed to the misunderstanding of the aim of PMS and misconception of the Islamic rules. This misunderstanding was also observed in studies conducted in Saudi Arabia [20, 29]. Therefore, religious leaders are strongly recommended to take part in correcting this mistaken belief.

Al Kindi *et al*. [28] found that Making PMS as an obligatory procedure before marriage was favored by about half (53%) of the participants and around one-third (36%) of them favored putting laws and regulations in place to prevent marriage in case of positive results. This is far lower than what was found in Saudi Arabia where 85% agreed on making PMS as a mandatory procedure before marriage and 63% agreed on legal interference in case of positive results [29]. Therefore, this negative attitude could be improved by intense health education especially for those at high risk of transmitting genetic disorders. The majority of students in Ibrahim *et al*. [13] study reported the majority of students agreed that Ma'zoon should have the right to accept marriage contract only if the future couple did PMS, and that religious people should adopt ideas of the PMS in their discussion. These results also agree with results of the Palestinian's study [25]. Abd Alzeem *et al*. [31] reported that a slight improvement in attitude score among studied group of students was detected in item related to conviction to receive PMC(intention) (from 85.5 to 92.5%). intervention from 7.89± 1.16 to13.14± 0.8.

CONCLUSION

It could be concluded that most of The King Saud University's female students had fair knowledge's and fair behavior towards premarital screening. The majority of them had high perceived severity of diseasesprevented by premarital screening and benefits of premarital screening**.** The King Saud University's female students who had good behavior intention get the highest mean score of knowledge and perceived benefits. Perceived severity of disease prevented by premarital screening and total knowledge score predicted The King Saud University's students girls premarital screening behavior intention.

Recommendation

Health education effort should be directed towards enhancing King Saud University's female students' knowledge, beliefs and behavior about premarital screening. There is also a need to enhance perception and increase knowledge regarding the benefits of premarital genetic testing.

Continuing education for the public is particularly important in developing countries where the rapid evolution of health priorities requires a flexible response. Application of comprehensive health education programs about reproductive health and the importance of premarital care through different mass media especially T.V. is important.

REFERENCES

1. Available from http://www.moh.gov.sa/HealthAwareness/Beforemarriage/Pages/default.aspx
2. Available from http://www.gulfkids.com/ar/index.php?action=show_art&ArtCat=6&id=272
3. Fakhoury H; Premarital screening. National Guard Health Affairs, 2009. Available from http://www.ngha.med.sa/English/PatientsCorner/Articles/Pages/PremaritalScreening.aspx
4. WHO fact sheet: Sickle cell disease and other hemoglobin disorder. Available from http://www.who.int/mediacentre/factsheets/fs308/en/index.html
5. Al Arrayed S; Campaign to control genetic blood diseases in Bahrain. Community Genet., 2005; 8(1): 52-55.
6. Bozkurt G; Results from the north cyprus thalassemia prevention program. Hemoglobin, 2007; 31(2): 257-264.
7. AL-AmA JY, AL-NabulsI BK, Alyousef MA, Asiri NA, AL-Belwi SM; Knowledge regarding the national premarital screening program among university students in Western Saudi Arabia. Saudi Med J., 2008; 29(11): 1649-1653.
8. Mitwally HH, Abd El-Rahaman DA, Mohamed NI; Premarital counseling: view of the target group. J Egyptian Public Health Assoc., 2000; 75(1-2): 31-51.
9. Al Sulaiman A, Sulaiman A, Al Mishiri A, Al Sawadi A, Owaidah TM; Knowledge and attitude toward the hemoglobinopathies premarital screening program in Saudi Arabia: population based survey. Hemoglobin, 2008; 32(6): 531-538.
10. Al Sulaiman A, Saeedi M, Sulaiman A, Owaidah T; Post-marital follow-up survey on high risk patients subjected to premarital screening program in Saudi Arabia: population based survey. Prenat Diagn., 2010; 30: 478-481.
11. Ghariebah H, Mater FK; Young Syrian adults' Knowledge, perceptions and attitude to premarital testing. Int Nurs Rev., 2009; 56(4): 450-455.
12. Moronkola OA, Fadairo RA; University students in Nigeria: Knowledge and attitude toward sickle cell disease, and genetic counseling before marriage.

Int Q Common Health Edu., 2006-2007; 26(1): 85-93.
13. Ibrahim NKR, Al-Bar H, Al-Fakeeh A, Al-Ahmadi J, Qadi M, Al-Bar A, Milaat W; An educational program about premarital screening for umarried female students in King Abdul-Aziz University, Jeddah. Journal of Infection& Public Health, 2011; 4: 30-40.
14. Meilleur KG, Coulibaly S, Traore M, Landoure G, Pean AL- Sangare M, Mochel F *et al*.; Genetic testing and counseling for hereditary neurological diseases in Mali. Journal of Community Genetics, 2011; 2: 33-42.
15. Abdel-Meguid N, Zaki MSA, Hammad SA; Premarital genetic investigation: effect of genetic counseling. East Mediterr Health J., 2000; 6(4): 652-660.
16. Alam AA; Perception of female students of king Saud University towards premarital screening. J Saudi Soc Fam Commun Med., 2006; 13(2): 83-88.
17. Balck F, Berth H, Meyer W; Attitude toward genetic testing in a German population. Genet Test Mol Biomarkers, 2009; 13(6): 743-750.
18. Hassan HZ, Tayel S, Shukair NF; Premarital counseling: IKnowledge and attitude of Alexandria medical students. Bull High Inst Public Health, 2001; 31(2): 335-350.
19. Gilani AI, Jadoon AS, Qaiser R, Nasim S, Meraj R, Nasir N *et al*.; Attitude towards genetic diagnosis in Pakistan: a survey of medical and legal communities and parents of thalassemic children. Commun Genet., 2007; 10(3): 140-146.
20. Al-Khaldi YM, Al-Sharif AI, Sadiq AA, Ziady HH; Attitude to premarital counseling among students of Abha Health Sciences College. Saudi Med J., 2002; 23(8): 986-990.
21. Balck FBH, Meyer W; Attitude toward genetic testing in a German population. Genetic Test Mol Biomarkers, 2009; 13(6): 743-750.
22. El-Hazmi MA; Pre-marital examination as a method of prevention from blood genetic disorders. Community views. Saudi Medical Journal, 2006; 27(9): 1291-1295.
23. Karimi M, Jamalian N, Yarmohammadi H, Askamejad A, Afrasiabi A, Hashemi A; Pre-marital screening for beta-thalasemia in Southern Iran: Options for improving the programme. Journal of Medical Screening, 2007; 14: 62-66.
24. Monaghan S; Genetics: For better or for worse. Middle East Health, 2007. Available fromhttp://216.230.204.101/mehealth/ sep03_article1.pdf,
25. El Sharif N, Rifai A, Assi S, Al Hmidat A; Attitude and opinions of Palestinian decision-makers about premarital examination law. East Mediterr Health J., 2006; 12(6): 873-885.
26. Al-Aama JY; Attitude towards mandatory national premarital screening for hereditary hemolytic disorders. Health Policy, 2010; 97(1): 32-37.
27. Odelola JO, Adisa O, Akintaro OA; Attitude towards pre-marital genetic screening among students of Osun State Polytechnics in Nigeria. International Journal of Educational Administration and Policy Studies, 2013, 5(4): 53-58.
28. Al Kindi R, Al Rujaibi S, Al Kendi M; Knowledge and attitude of university students towards premarital screening program. Oman Med J., 2012; 27**(**4**):** 291-296.
29. Al-Kahtani NH; Acceptance of premarital health counseling in Riyadh city, 1417H. J Family Community Medicine, 2000; 7: 27-34.
30. Eshra DK, Dorgham LS, el-Sherbini AF; Knowledge and attitudes towards premarital counselling and examination. J Egypt Public Health Assoc., 1989; 64(1-2):1-15.
31. Abd Al AzeemS, ElsayedE, El SherbinyN, Ahmed L; Promotion of knowledge and attitude towards premarital care: An interventional study among medical student in Fayoum University. Journal of Public Health and Epidemiology, 2011; 3: 2141-2316.