International Journal of Community Medicine and Public Health
Hejri YMA et al. Int J Community Med Public Health. 2015 Nov;2(4):540-551
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20151045

Research Article

Evaluating premarital screening knowledge in Saudi students

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Received: 15 August 2015
Revised: 21 August 2015
Accepted: 09 October 2015

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ABSTRACT

Background: The purpose of this research was to investigate the impact of premarital screening (PMS) in Saudi Arabia. The use of PMS as a means to identify and approach both and infectious and hereditary disease was investigated in order to determine the impact of this practical approach.
Methods: A cross-sectional study was conducted at Jazan University from January to June 2014 to perform this research. A self-administered questionnaire was distributed to 1000 Jazan University Students, both males and females. The questionnaire consisted of 3 main parts. The first part was based on socio-demographic data, the second part dealt with the students' knowledge about the premarital screening program while the third part explored their attitudes towards the screening program.
Results: The vast majority of the participants (922; 94%) believed that a PMS program was a preventive measure. More than two thirds of the participants (613; 72.5%) favored having regulation & law for premarital screening and most of the students (891; 90.8%) believed PMS programs limited the spread of hereditary (HD) and infectious diseases (ID). Most of the participants (756; 77.1%) reported that PMS tests should be done before engagement.
Conclusions: A large majority of the participants believed PMS program worked as a preventive measure; most of participants believed PMS program limited the spread of HD & ID. This reflects the importance of health education as a backbone in improving knowledge and attitude towards premarital screening programs.

Keywords: Premarital screening, Prevention, Marriage, Saudi Arabia, Heredity

INTRODUCTION

The common marriage practices within the Kingdom of Saudi Arabia in today's world has caused certain health risks and genetic problems stemming from an emphasis on inbreeding that is socially accepted within the deep and varying cultures within this region. Particularly, the Southern regions are characterized by high consanguineous marriages rates. The Southern regions in Jazan contain several cultures and topographies such as mountains, coastal, rural, and urban territories which vary in its approach to marriage.

This study will assist the national premarital screening program to identify the extent of people's knowledge and practice of PMS, which may positively reduce the burden and costs of transmitted diseases such as HBV, AIDs, Sickle Cell Anemia, and thalassemia on the Kingdom of Saudi Arabia (KSA) and reduce the cost related to these diseases. The economic cost of these diseases that can be avoided by Premarital Screening Program which is currently very high. The estimated annual cost of treatment for an individual who is infected with thalassemia or sickle cell anemia is nearly 100000 SR, and the estimated annual treatment for an individual who is infected with hepatitis B or AIDs is around 120000 SR, and the estimated cost of bone marrow replacement for one person is around 500000 SR.[1]

Under the Royal decree of 4/1/1423 H (i.e. 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, and the third started on 8/4/1429 H under the third Royal decree which included the addition of some infectious diseases (hepatitis B&C and AIDs). The marriage contract would not be issued until the result of this screening test was submitted. However, couples still have the choice of getting married in spite of incompatible results.

Saudi Arabia is one of the significant countries who suffer from the hemoglobinopathies (sickle cell anemia & Beta thalassemia) diseases located mostly in the Eastern & Southern region of the kingdom.[2] Sickle cell anemia is considered a dangerous and debilitating disease, not only medically but also socially, economically, psychologically. These diseases create financial burdens for the patients, parents, family and relatives seeking good health services.[3,4] As compared with beta thalassemia patients, the situation is worse, as the symptoms of beta thalassemia manifest early within few months, and need recurrent blood transfusion, followed by endocrine abnormalities in the second decade of life as evidence, and may lead to growth retardation.[5]

Whereas the evidence that hepatitis B prevalence lessens after conducting hepatitis B vaccine to approximately 2% in developed countries & North America, this rate remains high in the developing countries seen up to 8%. With hepatitis C, there is no vaccination yet, so the burden of infection is still a major public health problem worldwide. The World Health Organization estimated that around 170 million people or around 3% of the world population are infected with hepatitis C.[6]

Premarital screening programs are considered as a valuable solution and can be applied to minimize and reduce the incidence of genetic and infectious diseases especially in the middle eastern countries which are characterized with high consanguineous marriages and considered as a major reason contributing to genetic disorders.[7] The Kingdom of Saudi Arabia is a large country with vast regions, and each region has its own different culture, social, and demographic features. The premarital screening program in Saudi Arabia has a major role in the effort to minimize and decrease the incidence of genetic disorders which reduce these risks.

METHODS

Research Objectives:

To assess the knowledge of the Jazan University students regarding importance of PMS.

1. To assess the attitude of the Jazan University students regarding importance of PMS.
2. To explore the relationship between knowledge and attitude regarding PMS among Jazan University students.
3. To determine the association of knowledge and attitude of PMS with demographic variables (college, academic year, age, marital status, gender & place of residency) of Jazan University students.

Research Questions:

1. Are Jazan university students aware about the importance of PMS?
2. Is there any relationship between knowledge and attitude regarding PMS among Jazan university students?
3. Is there any association of knowledge and attitude of PMS with demographic variables of Jazan university students?

Hypothesis:

1. Knowledge and attitudes about PMS among Jazan students is poor.
2. There is a significant relationship between knowledge and attitude regarding PMS among Jazan students.
3. There is a significant association of knowledge and attitude of PMS with demographic variables of Jazan students.

Study Design:

Quantitative observational descriptive cross sectional study.

Study Setting:

The study was conducted in Jazan University at Jazan region southern of Saudi Arabia.

Study Population:

Students (Male & Female) age from (18 – 27 years) who are attending Jazan University, southern region, Saudi Arabia 2014.

Study Period:

From January 2014 until June 2014

Sample size:

The total number of students attending Jazan University during this time was listed as 18,048. The students are distributed as 4910 students in the health related colleges 2229 male and 2731 female. 7579 students in the humanity college, 3,427 male and 4,152 female. There are 5,559 students in the scientific college with 2828

males and 2731 females. The sample size was calculated on the assumption that the knowledge is 30% and degree of precision is 3% at level of significance 0.05. The minimum sample size required to achieve the study objectives is 328 students (male & female) stratified according to college. To compensate for strafication, non-response and incompleteness of questionnaires, 1000 were recruited to participate in the study.

Sampling Technique:

Participants were selected using random sampling according to the inclusive criteria (unmarried or engaged) students. 1000 participants were distributed according to their tracks (related health colleges, scientific colleges, and humanity colleges) with 70 questionnaires (35 male, and 35 female) in each college. Every participant was selected using a random sample technique according to inclusive criteria of university students.

Inclusion Criteria:

1. Unmarried university students in Jazan region, Saudi Arabia 2014.
2. Engaged university students in Jazan region, Saudi Arabia 2014.

Exclusion Criteria:

1. Married university students in Jazan region, Saudi Arabia 2014.
2. University students are not willing to participate in the study.
3. University student who are not available during the time of data collection.

Instruments:

A structured questionnaire was constructed and used for data collection .The questionnaire consisted of 3 sections.

Section 1: Demographic Data.

This part of the questionnaire was used to explore the demographics of Jazan University students toward premarital screening program. It contained 10 questions about several factors including College, Academic Year, Age, Marital Status, and Gender & Place of Residency, Level of Family Income, Level of Father's Education, and Level of Mother's Education).

Section 2:

Questions to assess the knowledge of PMS among Jazan university students, Saudi Arabia 2014 (from question 11 to question 24).

These questions assessed the students regarding the knowledge of premarital screening programs which included general information about premarital screening program, importance, source of information, included diseases, complications, and knowledge about compatible & incompatible certificate to be given after results.

A "correct answer" was given 1 score, "wrong answer" was given 0 score and an additional choice of "I don't know" was given 0 score also. The total score varied from 0 – 24 points and it was classified into three levels as follows;

High knowledge (80-100%): (19-24 scores)
Moderate knowledge (60-79%): (13-18 scores)
Low Knowledge (less or equal to 59%): (0-12 scores)

Section 3:

Questions to assess the attitudes of PMS among Jazan university students, Saudi Arabia 2014 (from question 25 to question 35). With exclusion of questions 32 and question 34.

This part of the questionnaire assessed the attitudes toward premarital screening programs. It contained 9 statements which included both positive and negative statements. Responses were coded as follows:

Choice	Score
Strongly agree	5
Agree	4
I don't know	3
Disagree	2
Strongly disagree	1

These statements were measured by calculating the mean of attitude scores;

Positive attitude (80-100%): 36 - 45 scores
Neutral attitude (60-79%): 27 – 35 scores
Negative attitude (equal or less than 59%): 0–26 scores

Data Collection:

A self-administered questionnaire was designed in Arabic to facilitate the data collection. A back and forth checks was applied to ensure its consistency. After IRB approval was obtained, the researcher explained the purpose of the study to university students in Jazan region, southern of Saudi Arabia. The student's signatures were obtained on consent form and the questionnaire was distributed and data collected from participants according to their stratified colleges. Validation of the questionnaire was achieved before starting the data collection through distribution of 20 questionnaires as a pilot study.

Pilot Study:

A pilot study was conducted to examine the structure, content and clarity of the questionnaire and also to assess the feasibility of the main study, by selecting 20

participants from medical colleges in Jazan University. Changes to the questionnaire were applied to clarify some mystery questions which were difficult to understand clearly. The pilot samples were excluded from the study.

Data management:

Questionnaires were checked in the study setting for completeness and consistency. Data management included cleaning, coding, entry, analysis and presentation in tables and graphs and diagrams, was managed by Epi Info statistical package version.[7]

Statistical analysis:

Descriptive statistics was computed for knowledge and attitude among university students, Frequencies and Percentages were used to describe and evaluate the demographic characteristics of university students toward premarital screening program (PMS).

Means mean score, and standard deviations were used for selected variables as demographic data of university students (age, academic years, etc.). To assess the knowledge and attitudes scoring of the university students regarding premarital screening program.

Linear correlation was used to explore possible relationships between knowledge and attitudes of university students regarding PMS.

Statistical analysis was done by using chi-square, where "demographics characteristics" was the independent variables and the "knowledge and attitude of premarital screening program" was the dependent variable.

Logistic regression was used to control for potential confounders. A 95% confidence interval and p value was calculated, while a p value of <0.05 was considered statistically significant.

Response rate

1050 questionnaires were distributed to all colleges related to health, sciences, and humanities. The final number was 981 (490 male and 491female) participants which represented the complete data response rate (93.43%) and the rest of questionnaires considered as lost and any questionnaire collected with missing variables or data was canceled even one single variable missing. The total number of health related colleges was 326 participants (163 male, 163 female) which collected from Medicine College, Applied Medical Sciences College, Dental College, Pharmacy College and Public Health College. Total number of distributed questionnaires was 1050 and the best response rate from scientific colleges was 330 out of 350

Demographic information

This study was conducted in Jazan University at Jazan region, Saudi Arabia, 2014. Nine hundred and eighty one participants (981) completed the self-administered questionnaire with a response rate of 93.43%. The distribution of the participants according to their college were 330 (33.65%) scientific related college, 326 (33.2%) health related college, 325 (33.1%) in humanity college.

The proportion of participants was almost equally represented as female (50.1%) and male (49.9%). The mean age was 22 ± 2 years. The academic years of participants were (22.7%) third year, (21.9%) fourth year, (21.8%) second year, (15.9%) fifth year, (9.35) sixth year, (8.4%) first year. The majority of participants were single 841 (85.7%) while engaged participants were 140(14.3%).

The distribution of participants according to their place of residency were 461 (47%) in villages, 448 (45.7%) in urban, 72 (7.3%) in mountain students. The majority of the participants related to their family house were 875 (89.2%) own house compared with 106 (10.8%) rented. The family income of participants was (33.2%) more than 12000 RS, (22.7%) from 6000 to 8999 RS, (19.1%) from 9000 to 12000 RS, (16.3%) from 3000 to 5999 RS, (8.7%) less than 3000 RS. The father's education levels of participants were (40.3%) university, (16.5%) intermediate, (16.3%) secondary, (11.7%) primary, (9.4%) illiterate, (5.8%) others which indicate according to their answer institution, master, and PhD degrees. The mothers' education of participants were (30.6%) illiterate. (20.6%) primary, (18.5%) university, (14%) intermediate, (11%) secondary, (5.4%) other which indicate according to their answer institution, master, and PhD degrees (Table 1).

RESULTS

All participants of Jazan University (99.9%) had said that they heard about premarital screening program except one.

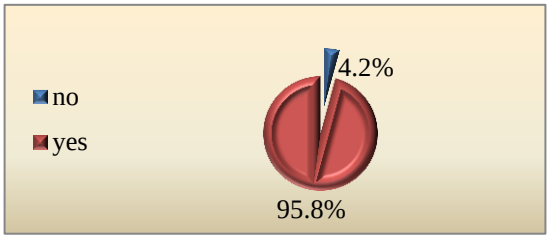

Figure 1: Knowledge of Jazan University Students regarding importance of PMS program.

The majority of participants ((84.1%) male & (86.8) female) said that they did premarital screening program to control & reduce hereditary and infectious diseases, but only (9.6%) male, (8.1%) female did PMS program to

take the result into consideration, while (6.1%) male, (4.1%) female did PMS program as routine requirement (Table 3). The majority of participants had a great knowledge about the importance of premarital screening programs (95.8%) (Figure 1). Participants were allowed to select more than one source of information about premarital screening program. (59.6%) of male participants, (63.7%) of females mentioned that the information source was their family. Followed by (55.1%) male, (38.9%) female who mentioned internet as second source. Friends as the third information source were selected by (49.4%) male, (40.9%) female. Newspaper (16.9%) male, and (9.4%) female reported as smaller percentage (Table 4).

Table 1: Socio-demographic characteristics of study participants among Jazan University.

Characteristics	Number (No)	Percentage (%)
Colleges		
Health Related college	326	33.23
Humanities Related college	325	33.13
Scientific Related college	330	33.64
Age		
Mean ± Standard Deviation	22 ± 2	
Gender		
Male	490	49.9
Female	491	50.1
Academic Years		
First Year	82	8.4
Second Year	214	21.8
Third Year	223	22.7
Fourth Year	215	21.9
Fifth Year	156	15.9
Sixth Year	91	9.3
Marital status		
Single	841	85.7
Engaged	140	14.3
Place of Residency		
Village	461	47
Urban or City	448	45.7
Mountain	72	7.3
Family House		
Own House	875	89.2
Rent House	106	10.8
Family Income Level		
Less than 3000	85	8.7
From 3000 to 5999	160	16.3
From 6000 to 8999	223	22.7
From 9000 to 12000	187	19.1
More than 12000	326	33.2
Father's Education Level		
Illiterate	92	9.4
Primary	115	11.7
Intermediate	162	16.5
Secondary	160	16.3
University	395	40.3
Other	57	5.8
Mother's Education Level		
Illiterate	300	30.6
Primary	202	20.6
Intermediate	137	14
Secondary	108	11
University	181	18.5
Other	53	5.4

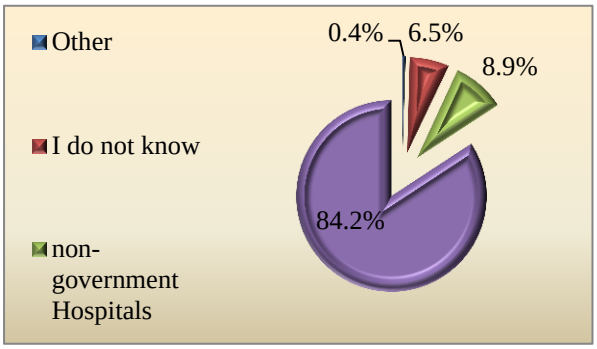

Figure 2: Sites of premarital screening test according to knowledge of Jazan University students.

The majority of participants 826 (84.2%) mentioned that premarital screening test took place in governmental hospitals for both gender. Then followed by 87 (8.9%) of participants who mentioned the non-governmental hospitals as second setting for PMS test for both gender (Figure 2). The majority of participants 795 (81.1%) mentioned that they knew the included diseases in PMS programs for both gender compared to 185 (18.9%) of participants said they didn't know about the diseases included in the PMS program for both gender as well.

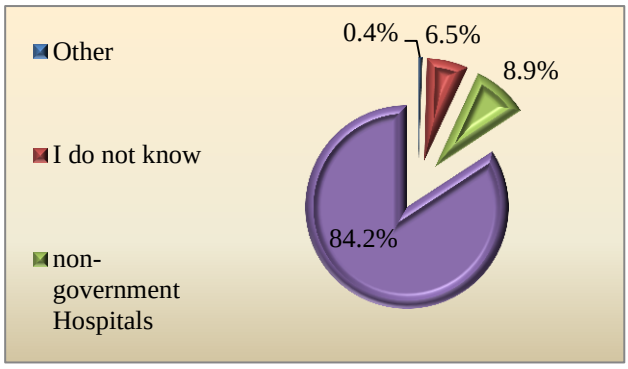

Figure 3: Distribution of carriers or affected of Jazan University students with hereditary diseases.

Participants were allowed to select more than one disease for included diseases in premarital screening program. Around three fourths of male & female (73.9%) selected sickle cell anemia and (59.4%), (50.9%) of male and female respectively selected HIV/AIDs. And lowest was syphilis 105 (21.4%) male, 149 (30.3%) female (Table 5).

The majority of students 809 (82.5%) for both gender mentioned that they knew about complications of diseases included in premarital screening program however, 172 (17.5%) of participants didn't know about complication of diseases included in PMS for both gender.

Participants were allowed to select more than one complication of diseases included in a premarital screening program. One third, 388 (79.2%) male, 361 (73.5%) female, mentioned that hereditary diseases were one of the complications. More than one third of participants 311 (63.5%) male, 279 (56.8%) female, mentioned that the infectious diseases as one of the complications. The smallest percentage was 93 (19%) male, 71 (14.5%) female who mentioned occupational effect as one of complications (Table 6).

The majority of participants 696 (70.9%) for both genders didn't know that they were affected or carriers with hereditary diseases and 187 (19.1%) for both gender mentioned that they were not affected or carriers with hereditary diseases, while 98 (10%) of participants for both genders mentioned that they were affected or a carrier with hereditary diseases (Figure 3). The majority of participants who got an appropriate answer for both gender 712 (72.6%) both partners are intact, 568 (57.9%) one intact & one carrier, 249 (25.4%) one intact & one affected (Table 7).

Around half of the participants received an appropriate answer for both gender 456 (46.5%) both partners are intact, 153 (15.6%) one carrier & one non-carrier. while 525 (53.5%), 808 (84.4%) respectively, they didn't get an appropriate answer of both partners are intact, and one carrier & one non-carrier (Table 8).

The majority of student attitudes regarding premarital screening program as a preventive measure was 710 (72.4%) Strongly Agree, 11 (1.1%) strongly disagree. Many attitudes to make law for PMS were 322 (32.8%) strongly agree, 50 (5.1%) strongly disagree. Most attitudes of students about premarital screening program to limit hereditary diseases were 558 (56.9%) strongly agree, 16 (1.6%) strongly disagree. Participants students attitude about marriage with incompatible result is wrong decision were 312 (31.8%) strongly agree 48 (4.9%) strongly disagree. The attitude of participants regarding marriage if ''you are affected & your partner is intact'' were 113 (11.5%) strongly agree, 79 (8.1%) strongly disagree.

The attitude of participants regarding marriage if ''you are intact & your partner is affected'' were 127 (12.9%) strongly agree, 81 (8.3%) strongly disagree. Participants attitudes regarding the offspring probability to be affected were 369 (37.6%) strongly agree, 32 (3.3%) strongly disagree. Participants attitude regarding cancelling of marriage with incompatible result were 279 (28.4%) strongly agree, 46 (4.7%) strongly disagree. Participants attitude regarding result of PMS '' should be binding to couples'' were 543 (55.4%) strongly agree, 11 (1.1%) strongly disagree (Table 10).

More than two third of participants didn't attend any educational courses regarding premarital screening program.

Table 2: Knowledge of the Jazan University students under the study towards premarital counseling.

Knowledge	Number N	Percentage %
Have you heard about premarital screening test?		
Yes	980	99.9
No	1	0.1
Why people do premarital screening test because?		
As a part of the routine requirements of marriage in Saudi Arabia	50	5.1
To take the result into consideration	838	85.4
To control and Reduce Hereditary & Infectious Diseases	87	8.9
Other, Specify.	6	0.6
Do you know the importance of premarital screening?		
Yes	933	95.8
No	41	4.2
The source (s) of information you have regarding premarital Screening test: (multi answers)		
Internet	461	47
Media	382	38.9
Family	605	61.7
Friends	443	45.2
Newspaper	129	13.1
Books	129	13.1
Other, specify	25	2.5
Where can you do premarital screening test?		
Governmental Hospital	826	84.2
Non-governmental Hospital	64	6.5
I Don't Know	87	8.9
Other, specify	4	0.4
Do you know the diseases included in the premarital screening examination?		
Yes	795	81.1
No	185	18.9
If your answer is (YES), identify them below : (multi answers)		
Thalassemia	322	32.8
Sickle cell anaemia	724	73.8
AIDS	541	55.1
Hepatitis B	481	49
Hepatitis C	268	37.5
Hepatitis A	257	26.2
Syphilis	254	25.9
Gonorrhoea	237	24.2
Other, specify	8	0.8
Do you know the complication of the diseases that are included in the Premarital examination?		
Yes	809	82.5
No	172	17.5

Table 3: Jazan University students' perception of causes to do premarital screening program.

Causes	Male		Female		Total
To Control & Reduce Hereditary and Infectious Diseases	412	(84.1%)	426	(86.8%)	838
To Take the Result Into Consideration	47	(9.6%)	40	(8.1%)	87
As Routine Requirement	30	(6.1%)	20	(4.1%)	50
Other	1	(0.2%)	5	(1%)	6
Total	490	(100%)	491	(100%)	981

Table 4: Sources of information regarding PMS program among Jazan University Students.

Sources	Male		Female		Total
Family	292	(59.6%)	313	(63.7%)	605
Internet	270	(55.1%)	191	(38.9%)	461
Friends	242	(49.4%)	201	(40.9%)	443
Media	204	(41.6%)	178	(36.3%)	382
News Paper	83	(16.9%)	46	(9.4%)	129
Books	68	(13.9%)	61	(12.4%)	129
Other	13	(2.7%)	12	(2.4%)	25

Table 5: Diseases included in PMS Program according to knowledge of Jazan University student.

Diseases	Male		Female		Total
Sickle Cell Anaemia	362	(73.9%)	362	(73.9%)	724
Acquired Immune Deficiency Syndrome (AIDs)	291	(59.4%)	250	(50.9%)	541
Hepatitis B Virus	239	(48.8%)	242	(49.3%)	481
Thalasemia	190	(38.8%)	132	(26.9%)	322
Hepatitis C Virus	178	(36.3%)	190	(38.7%)	368
Hepatitis A Virus	114	(23.3%)	143	(29.1%)	257
Gonorrhoea	107	(21.8%)	130	(26.5%)	237
Syphilis	105	(21.4%)	149	(30.3%)	254
Other	4	(0.8%)	4	(0.8%)	8

Table 6: Complications of diseases that included in PMS according to knowledge of Jazan University Student.

Complications of Diseases	Male		Female		Total
Hereditary Diseases Transmission	388	(79.2%)	361	(73.5%)	749
Infectious Diseases Transmission	311	(63.5%)	279	(56.8%)	590
Psychological Effect	150	(30.6%)	130	(26.5%)	280
Social Effect	149	(30.4%)	116	(23.6%)	265
Occupational Effect	93	(19%)	71	(14.5%)	164
Other	4	(0.8%)	4	(0.8%)	8

Table 7: Probability of giving compatible certificate for hereditary diseases according to knowledge of Jazan University student.

	Status	Yes		No	
Appropriate Answer	Both Partner are Intact	712	(72.6%)	269	(27.4%)
	One Intact & One Carrier	568	(57.9%)	413	(42.1%)
	One Intact & One Affected	249	(25.4%)	732	(74.6%)
Inappropriate Answer	One Affected & One Carrier	69	(7%)	912	(93%)
	Both Affected or Carrier	64	(6.5%)	917	(93.5%)
Other	I Don't Know	185	(18.9%)	796	(81.1%)

Table 8: Probability of giving compatible certificate for hereditary diseases.

	Status	Yes		No	
Appropriate Answer	Both Partner are Intact	456	(46.5%)	525	(53.5%)
	One carrier & non- carrier	153	(15.6%)	808	(84.4%)
Inappropriate Answer	Both partner are carrier	164	(16.7%)	817	(83.3%)
Other	I Don't Know	355	(36.2%)	626	(63.8%)

Table 9: Attitude of the Jazan university students under the study towards premarital counseling.

Attitude	Number N	Percentage %
Do you think that the PMS test is considered a preventive measure?		
Strongly Agree	710	72.4
Agree	212	21.6
I Do Not Know	29	3
Disagree	19	1.9
Strongly Disagree	11	1.1
Do you think that should we have a law to prevent any marriage with incompatible result?		
Strongly Agree	322	32.8
Agree	291	29.7
I Do Not Know	166	16.9
Disagree	152	15.5
Strongly Disagree	50	5.1
Do you think that the premarital test limits the spread of hereditary diseases?		
Strongly Agree	558	56.9
Agree	33	33.9
I Do Not Know	54	5.5
Disagree	20	2
Strongly Disagree	16	1.6
Do you think that the decision to get marriage with incompatible result is wrong decision?		
Strongly Agree	312	31.8
Agree	352	35.9
I Do Not Know	127	12.9
Disagree	138	14.1
Strongly Disagree	48	4.9
If the test result indicate that you are affected with heredity disease while the another partner is not, you will get marriage?		
Strongly Agree	113	11.5
Agree	349	35.6
I Do Not Know	235	24
Disagree	205	20.9
Strongly Disagree	79	8.1
If Test result indicates that your partner is affected with heredity disease while you are not, you will get marriage?		
Strongly Agree	127	12.9
Agree	317	32.3
I Do Not Know	212	21.6
Disagree	244	24.9
Strongly Disagree	81	8.3

Table 10: Attitude of Jazan University students regarding PMS program as preventive measure.

	Strongly Agree	Agree	I Don't Know	Disagree	Strongly Disagree
PMS as Preventive Measure	710 (72.4%)	212 (21.6%)	29 (3%)	19 (1.9%)	11 (1.1%)
Make law for PMS	322 (32.8%)	291 (29.7%)	166 (16.9%)	152 (15.5%)	50 (5.1%)
PMS Limits hereditary Diseases	558 (56.9%)	333 (33.9%)	54 (5.5%)	20 (2%)	16 (1.6%)
Marriage with incompatible Wrong decision	312 (31.8%)	352 (35.9%)	127 (12.9%)	138 (14.1%)	48 (4.9%)
You are affected & your partner is intact	113 (11.5%)	349 (35.6%)	235 (24%)	205 (20.9%)	79 (8.1%)
You are intact & your partner is affected	127 (12.9%)	317 (32.3%)	212 (21.6%)	244 (24.9%)	81 (8.3%)
Offspring probability to be affected	369 (37.6%)	382 (38.9%)	28 (2.9%)	170 (17.3%)	32 (3.3%)
You will cancel marriage with incompatible result	279 (28.4%)	442 (45.1%)	27 (2.8%)	187 (19.1%)	46 (4.7%)
PMS result should be binding to couples	543 (55.4%)	312 (31.8%)	65 (6.6%)	50 (5.1%)	11 (1.1%)

Table 11: Causes of students' attitude in case of possibility children affection by genetics diseases.

Causes & Attitude	Strongly Agree		Agree		Disagree		Strongly Disagree	
Social Stigma	85	(23%)	78	(20.4%)	14	(8.2%)	2	(6.3%)
Religious Reasons	61	(16.5%)	92	(24.1%)	28	(16.5%)	7	(21.9%)
Family Pressure	25	(6.8%)	63	(16.5%)	28	(16.5%)	6	(18.8%)
Love & emotional Pressure	34	(9.1%)	46	(12%)	79	(46.5%)	10	(31.3%)
Compassion	67	(18.2%)	57	(14.9%)	21	(12.4%)	7	(21.9%)
Scientific Reasons	97	(26.3)	46	(12%)	0	(0.0%)	0	(0.0%)

Most of the participating students 77 (57.9%) male, 60 (41.7%) female mentioned that the source of educational courses was at university. However, (4.5%), (5.6%) was respectively, male and female mentioned non-governmental affairs (Table 13).

Student knowledge regarding PMS programs according to their academic year were higher in third and fourth year students with minimum a percentage for first year and the P value was 0.0608 (Table 16). Results showed that 35.7% of male students had "low knowledge", as well as 45.9% of participants had "moderate knowledge", while 18.4% of participants had "high knowledge". Among the females, it was found that 42.2% of students had "low knowledge", as well as 45.8% of participants had "moderate knowledge", while 12% of participants had "high knowledge".

DISCUSSION

The results of this study research showed that the participants were aware and had knowledge regarding the availability of premarital screening programs in Saudi Arabia but their knowledge was inadequate regarding different aspects of premarital screening programs such as what tests were included and what diseases were involved. According to this finding what we reported there were similar studies done in Egypt, Saudi Arabia, and Syria.[8-11] A lack of knowledge regarding premarital screening program may be due to lack of health education among facilities. School, university, and nongovernmental affairs even families themselves needed health education to raise healthy generations.

When asking participants "why conduct premarital screening programs?" 85% of both genders reported that to control and reduces hereditary disorders and infectious diseases while around 5 % of them reported they do it as a routine requirement to get married. This means that the majorities of participants have a great willing to control and reduce the magnitude of hereditary disorders and infectious diseases among community. This suggests that most of the participants had knowledge regarding PMS programs.[12]

Regarding the sources of information of the participants on premarital screening program family and friends were important sources of information regarding PMS programs. We can improve the knowledge and change the attitude of community by setting various strategies such as including the PMS program in educational lectures as fixed courses on PMS program and its objectives in the school and university as requirement courses for all colleges. Another important source of information mentioned regarding premarital screening program was media. This report is similar to other studies in Pakistan Oman, & Saudi Arabia.[13-16] It is different from another study conducted on Saudi Arabia who mentioned that the TV and newspaper were the most sources among their participants.[17]

According to the site of performing premarital screening program, 84.2% reported that PMS test took place on governmental hospitals for both genders, 8.9% reported private hospital, while 6.9% of participants reported that they didn't know where the PMS test takes place. This reflects that the majority of participants had appropriate knowledge regarding PMS program and its location.

Regarding included diseases in PMS program around, two thirds of participants knew most of the included diseases and around one third of them didn't know the included diseases. This reflects the need to emphasize health education, by targeting students of school and university particularly, and through the community by lectures and advertisement via media to show the importance and consequences of PMS programs. A study reported similar results among participants in Pakistan, Oman, Egypt, Saudi Arabia Syria.[18-21]

Regarding complications of diseases included in PMS programs, revealed the majority of participants reported that they have a great knowledge regarding complications of included diseases in PMS program. Around two thirds of participants focused on hereditary and infectious diseases as a major complication and one third of them focused on psychological effects, social effect, and occupational effect. This suggests that participants focused on the direct effects of PMS included diseases such as hereditary & infectious diseases and minimize the indirect influence of PMS included diseases such as psychological effect, social effect, and occupational effect which play a big role in person's life.

Asking participants if they were carriers or affected with hereditary disorders, the majority of (70.9%) reported that they didn't know, and (10%) reported they had (carrier or affected) with confirmed results, while (19.1%) didn't have hereditary or infectious diseases with confirmed results. This compares to a study conducted in Saudi Arabia (Jeddah) which showed that (6.2%) of all participants reported personally having hereditary diseases. and (34.9%) of participants reported that they were having hereditary diseases in one or more of their family members.[22]

CONCLUSION

Overall, participants had inadequate knowledge about different aspects of PMS program. Knowledge of university students were moderate as general, high among male according to their gender and high in health related colleges according to their college. The general attitude of study participants believed that the PMS is important and considered a preventive measure to limit hereditary disorders.

Recommendations:

The evidence revealed several key recommendations that may employed in a practical manner. Establishing a partnership between preventive medicine in the Jazan region and university to carry out educational campaigns with the help of Ministry of Health in KSA throughout the year would be highly recommended. Secondly, providing lectures for university students annually regarding premarital screening program to improve the awareness of university students would also approach this problem in a useful way. Also, it is suggested that schools and universities include premarital screening programs in the curriculums throughout the KSA. Lastly, by providing brochures, booklets, and posters about premarital screening program in the common students' zone area such as cafeteria and library in university colleges would also be a recommended step towards the issues discussed in this research.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Hejri YMA, Moussa M, Bushran SA, Al-Mutairi KDA, Al-Harbi AS. Evaluating premarital screening knowledge in Saudi students. Int J Community Med Public Health 2015;2:540-51.