

ORIGINAL RESEARCH ARTICLE

Premarital screening programme in Saudi Arabia: Insights into men's awareness and perceptions

DOI: 10.29063/ajrh2024/v28i3.7

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Abstract

This study investigates the knowledge and attitudes of Saudi men on premarital screening, 19 years after its implementation. A cohort of 133 males was examined. Out of the 133 male screening participants, a significant majority of 126 individuals (94.7%) were found to be aware of the premarital screening program. A smaller number of individuals (88, 66.2%) were aware of the conditions detected by the screening. A disagreement developed on the legality of marriage in the event of an adverse test result. Many participants stated that the primary purpose of the premarital screening program was to lessen the social and familial burdens associated with incompatible marriages. Many respondents preferred that the program include mental illness and drug testing. Even if compatibility existed, a sizeable proportion of respondents declined to proceed with the marital procedure if one companion was a carrier. The participants had a clear understanding of the importance of premarital screening. However, this assertion contradicts the current evidence regarding the prevalence of hereditary diseases. To reduce disease burden, the significance of the program and the value of making informed decisions following examinations must be emphasized. (*Afr J Reprod Health* 2024; 28 [3]: 63-73).

Keywords: Premarital screening, men, awareness, attitudes, diseases

Résumé

Cette étude examine les connaissances et les attitudes des hommes saoudiens en matière de dépistage prénuptial, 19 ans après sa mise en œuvre. Une cohorte de 133 hommes a été examinée. Sur les 133 hommes participants au dépistage, une majorité significative de 126 personnes (94,7 %) connaissaient le programme de dépistage prénuptial. Un plus petit nombre de personnes (88, 66,2 %) étaient au courant des conditions détectées lors du dépistage. Un désaccord s'est développé sur la légalité du mariage en cas de résultat négatif au test. De nombreux participants ont déclaré que l'objectif principal du programme de dépistage prénuptial était d'alléger les fardeaux sociaux et familiaux associés aux mariages incompatibles. De nombreux répondants préféraient que le programme inclue les tests de dépistage des maladies mentales et des drogues. Même si la compatibilité existait, une proportion importante de personnes interrogées refusaient de procéder à la procédure de mariage si l'un des compagnons était porteur. Les participants comprenaient clairement l'importance du dépistage prénuptial. Cependant, cette affirmation contredit les preuves actuelles concernant la prévalence des maladies héréditaires. Pour réduire le fardeau de la maladie, il faut souligner l'importance du programme et l'importance de prendre des décisions éclairées à la suite des examens. (*Afr J Reprod Health* 2024; 28 [3]: 63-73).

Mots-clés: Dépistage prénuptial, hommes, sensibilisation, attitudes, maladies

Introduction

Marriage is a significant milestone in the human experience. While this milestone is crucial for nearly all couples, the stakes are even higher when it comes to having offspring who may inherit genetic or non-genetic illnesses. Administration of premarital screening (PMS) to engaged couples has the potential to help prevent disease transmission to their offspring¹. In addition to sexually transmitted infections (STIs), namely hepatitis B and C and the

human immunodeficiency virus (HIV)¹⁻³, the screening protocol encompasses the mitigation of hereditary disorders¹⁻³. It is imperative for engaged couples to undergo screening tests for genetic conditions such as hemoglobinopathies, as carriers of these conditions may remain asymptomatic⁴. This measure is crucial in preventing the transmission of these diseases to their offspring^{5,6}. Hemoglobinopathies are inherited diseases that occur due to either a quantitative or qualitative defect in the hemoglobin. Sick cell and

thalassemia are the predominant types and have demonstrated prevalence in Saudi Arabia⁷. The high prevalence of hemoglobinopathies in Saudi Arabia may be linked to the high incidence of consanguineous marriages^{1, 8}, which constitute an estimated 56% of marriages in the country. Notably, rural areas exhibit the highest rates of consanguinity¹.

Pre-marital screening and genetic counseling programs have been instituted and executed in eight Middle Eastern nations, including Saudi Arabia. The program was initially implemented in the Kingdom of Saudi Arabia in the year 2001 and subsequently made compulsory by 2004. This screening program includes the identification of inherited disorders such as thalassemia and sickle cell anemia, as well as sexually transmitted or infectious diseases such as hepatitis C and B and HIV/AIDS¹. Upon program initiation, a significant decrease in marriages at risk was demonstrated, and a substantial reduction in the burden of genetic disease is anticipated in the foreseeable future^{7,9}. Sufficient knowledge regarding PMS is associated with decreased incidence of genetic disorders. Research conducted in Saudi Arabia has revealed regional discrepancies in the prevalence of hemoglobinopathies, as well as in awareness of and attitudes towards PMS. Two distinct research studies have been carried out to investigate awareness and attitudes towards PMS and the prevalence of common types of hemoglobinopathies^{2,7}; these revealed that Saudi citizens in the western region hold a favorable view towards PMS, whereas the southern region harbors a high incidence of hemoglobinopathies. This regional discrepancy may be attributed to disparities in awareness and attitude, along with variation in the prevalence of hemoglobinopathies. However, a recent report indicates that the PMS program in the southern region, most notably in the Jazan region, has not effectively raised awareness of inherited blood disorders. This lack of effect may be attributed to the significant cultural influence in the area¹⁰. Notably, a recent study conducted in the Jazan region revealed that young adults had a favorable attitude toward and awareness of PMS¹¹. However, it is necessary to implement further programs led by various authorities, including medical providers, rulers, and Islamic leaders, in

order to promote marriage protection¹¹. A recent study has further documented the presence of a knowledge gap, as well as misconceptions and behavioral patterns, regarding PMS in different regions of Saudi Arabia. This finding highlights the necessity for educational initiatives to continue addressing these issues, despite the availability of advanced healthcare measures¹.

In this vein, a recent study conducted on unmarried individuals residing in the western region of Saudi Arabia revealed that despite exhibiting favorable attitudes towards PMS, respondents lacked knowledge regarding it³. Another study conducted in the same region but in a different city indicated that regardless of marital status, students have positive attitudes towards PMS¹². These findings indicate that attitudes towards screening tests in the western region have not changed, but awareness remains low, highlighting the need to increase awareness of PMS procedures in Saudi Arabia. A third study reported on the establishment of an educational program targeting unmarried individuals. Prior to the program, there was a general lack of knowledge about PMS; following the program, a significant improvement in knowledge was observed. Therefore, it is recommended to more widely incorporate PMS courses or topics into the curricula of secondary schools and universities¹³.

The objective of the present research is to assess the awareness and perspectives of male respondents, irrespective of marital status, concerning PMS through a diverse set of inquiries that concentrate on various facets of the subject matter.

Methods

Study design and participants

A series of questionnaires was developed and evaluated by a member of medical academics and researchers affiliated with the Department of Medical Laboratory Sciences at King Khalid University. The cohort that received this questionnaire included a total of 132 participants. The inclusion criteria were restricted to male participants who were either married or single and from all geographical regions of Saudi Arabia.

Exclusion criteria included female participants and non-Saudi citizens. For the purpose of enhancing comprehension and assessment, a set of survey questions was distributed among participants in the Arabic language and afterwards translated into English. A genuine and straightforward form was produced utilizing Google Forms, a software tool designed for the administration of surveys, and disseminated to the intended participants. The form commenced with a concise overview of the study, encompassing the subject matter and goals. Initial questions covered socio-demographic variables, including nationality, age, region, marital status, level of education, and job history. The survey further incorporated 14 questions aimed at gauging their knowledge regarding PMS and another 5 at analyzing their attitudes, for 19 questions in total. The researchers aimed to entice as many men as possible to participate in the study.

The sample size was determined using Calculator.net, an online tool available at [<https://www.calculator.net/sample-size-calculator.html>]. Al-Shroby et al. previously evaluated the degree of information regarding PMS among Saudis¹, and revealed only 9.2% of the participants in that study to possess a satisfactory level of knowledge. Based on a prevalence of 9.2%, a confidence level of 95%, and a margin of error of 5%, the anticipated sample size required for this study was 129 participants.

Ethical considerations

Ethical permission for this project (HAPO-06-B-001-ECM#2023-2201) was acquired from the Ethical Committee of Scientific Research at King Khalid University. Participants were provided with the assurance that their information would be utilized solely for research purposes. They were duly informed that their participation was not required and that they maintained the right to withdraw from the study at any given moment.

Data analysis

The use of Google Forms, a web-based platform for gathering and organizing data, facilitated the swift and precise acquisition and administration of data. The data was initially evaluated using the website,

described with summary statistics (frequencies and percentages).

Results

In order to assess the awareness and attitudes among Saudi males regarding PMS tests, a set of questionnaires was developed and distributed to individuals selected at random. Table 1 presents a comprehensive overview of the respondents' demographic characteristics, encompassing age, region (district), marital status, educational level, and professional background, namely whether they are employed in the medical field. A total of 132 responses from Saudi males were collected (Table 1). Respondents were diverse in age, ranging from individuals under the age of 20 to those above the age of 40. Several regions of Saudi Arabia were represented, increasing the reliability and validity of the findings. One hundred participants are married, accounting for 75.8% of the total sample, while the other 32 participants (24.2%) are unmarried. As with age, participants were diverse in educational attainment. Specifically, one participant (0.8%) possessed a primary school certificate, four (3.0%) held intermediate certificates, 30 (22.7%) held secondary certificates, and the majority (83, 62.9%) had earned undergraduate degrees. Another 14 (10.6%) possessed postgraduate degrees. Regarding professional background, 32 individuals (24.2%) were employed in the medical field, whereas 100 (75.8%) were not associated with that sector.

A high level of knowledge is associated with more positive and fewer negative attitudes. Accordingly, participants were asked questions in order to assess their level of knowledge and attitudes concerning the outcomes of PMS; the list of questions is presented in Table 2 and 3. A significant proportion of the participants (125, 94.7%) possessed knowledge regarding the PMS program. That knowledge was obtained from a diverse range of sources, including relatives and friends, the Internet, television, and social media. The response rates and corresponding percentages of participants making use of each information source are also shown in Table 2. Relatives and friends constituted the major source, referenced by 77 respondents (58.3%).

Table 1: Sociodemographic characteristics of the study participants (n=133)

Variable	n (%)
Age (years)	
< 20	12 (9.1)
20-30	18 (13.6)
31-40	38 (28.8)
> 40	64 (48.5)
Region	
Northern	1 (0.8)
Western	36 (27.3)
Eastern	9 (6.8)
Southern	76 (57.6)
Central	10 (7.6)
Marital status	
Married	100 (75.8)
Unmarried	32 (24.2)
Level of education	
Primary	1 (0.8)
Intermediate	4 (3.0)
Secondary	30 (22.7)
Undergraduate	83 (62.9)
Postgraduate	14 (10.6)
Medical field	
Yes	32 (24.2)
No	100 (75.8)

A significant majority of participants (90.2%, as indicated in Table 2) were aware of the compulsory nature of the screening program. Further questions concerned the examinations covered under the PMS program, with the aim of assessing participant understanding of the government's efforts to target diseases that impose burdens on the whole country. A total of 87 participants, accounting for 65.9% of the sample, exhibited awareness regarding the disorders encompassed by the screening process.

Participants expressed agreement regarding the favorable consequences associated with the introduction of a PMS program and the reduction of consanguineous marriages, with the ultimate aim of diminishing the prevalence of particular diseases (Table 2). Participants differed on the authorization of a marriage in light of incompatible results. A set of 53 individuals, constituting 40.2% of the surveyed population,

stated that the government allows marriages to take place even in cases where the partners are not considered compatible. In contrast, a total of 46 participants, accounting for 34.8% of the sample, contended that marriage is not permissible in such cases. Finally, another 33 participants, representing 25.0% of the overall sample, displayed a degree of uncertainty on this point (Table 2). The majority of participants expressed consensus with the primary objectives of the PMS program, which is to mitigate the burden that incompatible marriages impose on government and families.

The survey additionally posed two questions pertaining to the specific spouse and sample involved in the PMS process. Nearly all respondents (128, 97.0%) knew which partner should take the test, and a substantial majority (107, 81.1%) knew the sample type used (Table 2). Participants were also queried as to their knowledge of the specific diseases and infections encompassed under the screening protocol and justification for their inclusion. Most participants demonstrated a considerable degree of knowledge and awareness in these respects (Table 2).

Participants' attitudes were also queried regarding their decision in the event of incompatible test findings and potential screening tests that could be added to the program. Table 3 lists the questions that were presented to the participants to determine their attitudes, including their views on integrating screening for psychological diseases and drug use into the PMS program to enhance marital life. The majority of participants expressed agreement with the inclusion of these additional tests. Meanwhile, a significant proportion of participants exhibited a refusal to continue with the marriage process if one partner is a carrier, even when compatibility is present, and indicated that pursuing a marriage despite the presence of incompatibility is an erroneous decision (Table 3). Finally, participants concluded that the growing awareness of the importance of PMS contributes to the development of healthy families and the birth of healthy children (Table 3).

Table 2: Knowledge of the PMS program among the study population (n=133)

Variable	Total		Marital status (married)				Education level				Work in medical field			
	n	%	Yes		No		General		Higher		Yes		No	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Total participant	132		100		32		35		97		32		100	
Have you ever heard of the premarital screening program?														
Yes	125	94.7	98	74.2	27	20.5	31	23.5	94	71.2	31	23.5	94	71.2
No	7	5.3	2	1.5	5	3.8	4	3.0	3	2.3	1	0.8	6	4.5
From which source did you acquire information regarding the premarital screening program?														
Relatives and friends	77	58.3	55	41.7	22	16.7	19	14.4	58	43.9	19	14.4	58	43.9
Internet	9	6.8	8	6.1	1	0.8	3	2.3	6	4.5	3	2.3	6	4.5
Television	16	12.1	15	11.4	1	0.8	3	2.3	13	9.8	2	1.5	14	10.6
Never heard of PMS	6	4.5	1	0.8	5	3.8	3	2.3	3	2.3	0	0.0	6	4.5
Social media	24	18.2	21	15.9	3	2.3	7	5.3	17	12.9	8	6.1	16	12.1
Is the premarital screening program mandatory?														
Yes	119	90.2	94	71.2	25	18.9	28	21.2	91	68.9	30	22.7	89	67.4
No	1	0.8	1	0.8	0	0.0	0	0.0	1	0.8	0	0.0	1	0.8
I don't know	12	9.1	5	3.8	7	5.3	7	5.3	5	3.8	2	1.5	10	7.6
The premarital screening program encompasses?														
Sexually transmitted diseases	3	2.3	1	0.8	2	1.5	1	0.8	2	1.5	1	0.8	2	1.5
Hereditary diseases	26	19.7	25	18.9	1	0.8	7	5.3	19	14.4	2	1.5	24	18.2
Both	87	65.9	68	51.5	19	14.4	19	14.4	68	51.5	29	22.0	58	43.9
I don't know	16	12.1	6	4.5	10	7.6	8	6.1	8	6.1	0	0.0	16	12.1
The objective of the premarital screening program is to reduce the transmission of certain diseases between spouses, form a healthy family, and produce healthy children?														

Yes	129	97.7	98	74.2	31	23.5	34	25.8	95	72.0	32	24.2	97	73.5
No	2	1.5	2	1.5	0	0.0	0	0.0	2	1.5	0	0.0	2	1.5
I don't know	1	0.8	0	0.0	1	0.8	1	0.8	0	0.0	0	0.0	1	0.8
The practice of consanguineous marriage elevates the likelihood of genetic disorders in progeny?														
Yes	110	83.3	88	66.7	22	16.7	25	18.9	85	64.4	31	23.5	79	59.8
No	6	4.5	5	3.8	1	0.8	3	2.3	3	2.3	1	0.8	5	3.8
I don't know	16	12.1	7	5.3	9	6.8	7	5.3	9	6.8	0	0.0	16	12.1
In Saudi Arabia, marriage is permitted even if the results of the premarital screening program are not compatible?														
Yes	53	40.2	40	30.3	13	9.8	9	6.8	44	33.3	15	11.4	38	28.8
No	46	34.8	37	28.0	9	6.8	9	6.8	37	28.0	11	8.3	35	26.5
I don't know	33	25.0	23	17.4	10	7.6	17	12.9	16	12.1	6	4.5	27	20.5
One of the goals of the premarital screening program is to alleviate the strain that incompatible marriages place on health institutions and blood banks?														
Yes	88	66.7	72	54.5	16	12.1	18	13.6	70	53.0	24	18.2	64	48.5
No	7	5.3	7	5.3	0	0.0	0	0.0	7	5.3	3	2.3	4	3.0
I don't know	37	28.0	21	15.9	16	12.1	17	12.9	20	15.2	5	3.8	32	24.2
One of the primary aims of the premarital screening program is to mitigate the occurrence of social and psychological issues within families that may arise when a child acquires diseases transferred by parents as a consequence of incompatible marriages?														
Yes	116	87.9	93	70.5	23	17.4	27	20.5	89	67.4	31	23.5	85	64.4
No	1	0.8	0	0.0	1	0.8	0	0.0	1	0.8	0	0.0	1	0.8
I don't know	15	11.4	7	5.3	8	6.1	8	6.1	7	5.3	1	0.8	14	10.6
One of the goals of the premarital screening program is to lessen the financial burden of treating patients with diseases caused by incompatible marriages on families and society?														
Yes	109	82.6	87	65.9	22	16.7	24	18.2	85	64.4	31	23.5	78	59.1
No	2	1.5	1	0.8	1	0.8	0	0.0	2	1.5	0	0.0	2	1.5
I don't know	21	15.9	12	9.1	9	6.8	11	8.3	10	7.6	1	0.8	20	15.2
The sample employed by the premarital screening program is?														
Blood	107	81.1	89	67.4	18	13.6	1	0.8	84	63.6	32	24.2	75	56.8
Urine	1	0.8	1	0.8	0	0.0	23	17.4	0	0.0	0	0.0	1	0.8

I don't know	24	18.2	10	7.6	14	10.6	11	8.3	13	9.8	0	0.0	24	18.2
The premarital screening program is applicable to?														
Male only	3	2.3	0	0.0	3	2.3	1	0.8	2	1.5	0	0.0	3	2.3
Female only	1	0.8	0	0.0	1	0.8	1	0.8	0	0.0	0	0.0	1	0.8
Both	128	97.0	100	75.8	28	21.2	33	25.0	95	72.0	32	24.2	96	72.7
The transmission of genetic diseases through heredity results in the formation of unhealthy families and the birth of unhealthy children?														
Yes	118	89.4	91	68.9	27	20.5	30	22.7	88	66.7	28	21.2	90	68.2
No	1	0.8	1	0.8	0	0.0	0	0.0	1	0.8	1	0.8	0	0.0
I don't know	13	9.8	8	6.1	5	3.8	5	3.8	8	6.1	3	2.3	10	7.6
The medical screening program prior to marriage determines the presence or absence of inherited blood diseases such as sickle cell anemia and thalassemia?														
Yes	105	79.5	80	60.6	25	18.9	25	18.9	80	60.6	28	21.2	77	58.3
No	1	0.8	0	0.0	1	0.8	1	0.8	0	0.0	0	0.0	1	0.8
I don't know	26	19.7	20	15.2	6	4.5	9	6.8	17	12.9	4	3.0	22	16.7
The premarital screening program involves?														
Hepatitis B virus	1	0.8	1	0.8	0	0.0	0	0.0	1	0.8	0	0.0	1	0.8
Hepatitis C virus	1	0.8	1	0.8	0	0.0	0	0.0	1	0.8	0	0.0	1	0.8
Hepatitis B and C virus	94	71.2	72	54.5	22	16.7	23	17.4	71	53.8	30	22.7	64	48.5
I don't know	36	27.3	26	19.7	10	7.6	12	9.1	24	18.2	2	1.5	34	25.8

Table 3: Attitudes toward the PMS program among the study population

Variable	Total		Marital status (married)				Education level				Work in medical field			
	132		Yes 100		No 32		General 35		Higher 97		Yes 32		No 100	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Do you think that the premarital medical examination program should include screening for psychological diseases?														
Yes	102	77.3	83	62.9	19	14.4	26	19.7	76	57.6	23	17.4	79	59.8
No	13	9.8	8	6.1	5	3.8	3	2.3	10	7.6	3	2.3	10	7.6
I do not know	17	12.9	9	6.8	8	6.1	6	4.5	11	8.3	6	4.5	11	8.3
Do you think that a PMS program should include drug screening?														
Yes	107	81.1	86	65.2	21	15.9	29	22.0	78	59.1	27	20.5	80	60.6
No	11	8.3	8	6.1	3	2.3	1	0.8	10	7.6	4	3.0	7	5.3
I do not know	14	10.6	6	4.5	8	6.1	5	3.8	9	6.8	1	0.8	13	9.8
If your results in the PMS program are intact, will you accept marriage to the other spouse if he is a carrier of sickle cell anemia or Mediterranean anemia (thalassemia)?														
Yes	19	14.4	15	11.4	4	3.0	4	3.0	15	11.4	6	4.5	13	9.8
No	82	62.1	67	50.8	15	11.4	21	15.9	61	46.2	19	14.4	63	47.7
I don't know	31	23.5	18	13.6	13	9.8	10	7.6	21	15.9	7	5.3	24	18.2
Do you think that the decision to get married if the result of the PMS is incompatible is a wrong decision?														
Yes	90	68.2	73	55.3	17	12.9	20	15.2	70	53.0	26	19.7	64	48.5
No	27	20.5	21	15.9	6	4.5	9	6.8	18	13.6	4	3.0	23	17.4
I do not know	15	11.4	6	4.5	9	6.8	6	4.5	9	6.8	2	1.5	13	9.8
Do you think that spreading awareness of the importance of the PMS contributes to forming a healthy family and giving birth to healthy children?														
Yes	128	97.0	99	75.0	29	22.0	33	25.0	95	72.0	32	24.2	96	72.7
No	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
I don't know	4	3.0	1	0.8	3	2.3	2	1.5	2	1.5	0	0.0	4	3.0

Discussion

The PMS program is a crucial initiative that has been implemented in Saudi Arabia with the aim of mitigating the transmission of hereditary illnesses and dangerous infections within families, thereby fostering a healthier community¹. Saudi Arabia is situated in an area where certain genetic disorders, such as sickle cell disease and thalassemia, are prevalent¹⁴; the PMS program is one measure for addressing these diseases. The program requires individuals intending to marry to undergo compatibility testing in order to identify any potential genetic risks. As a considerable period of time has passed since the implementation of compulsory screening, it is now opportune to ascertain the knowledge and attitudes of Saudi nationals and residents in Saudi Arabia towards the program.

This survey was constructed in a unique manner with the specific objective of assessing the awareness and attitude of male participants, as it is believed that men primarily influence the decision-making process in marriage. The participants constitute a diverse group, representing various age groups, areas within Saudi Arabia, and educational backgrounds. Additionally, this study encompasses males of varying marital circumstances and occupational backgrounds, including those employed in the medical profession and those outside of it. The incorporation of diverse demographic variables has the potential to enhance the validity of the study and facilitate comprehensive analysis.

The findings of the research demonstrated a satisfactory degree of understanding and awareness regarding the PMS program and its mandatory nature, which aligns with the results of previous investigations^{12, 15, 16}. In addition, responses indicated an adequate level of comprehension regarding the tests and the program objectives. Participants obtained information about the program through various sources, with relatives and friends being the primary source of information; this also aligns with prior research findings^{15, 17}. As is not advisable to depend on word of mouth as a primary source of information regarding the program, it is imperative for the government to prioritize the efficient distribution of

information through effective communication channels, with a particular emphasis on social media. As social media platforms have demonstrated significant impact, particularly among young adults and youth, they constitute a crucial medium for governments to effectively convey information.

Consanguineous marriage is a significant factor contributing to the spread of hereditary diseases in Saudi Arabia^{1,18}. Accordingly, participants were questioned regarding consanguineous marriage and its potential impact on both the family and the community. A significant proportion expressed knowledge regarding the correlation between this specific form of marriage and the propagation of genetic disorders.

It is important to note that in Saudi Arabia, marriage is not prohibited when PMS testing reveals incompatibility between potential couples⁷. We asked the participants whether they were aware of this aspect of the country's policy; the responses indicated a limited understanding of whether the Saudi Arabian government endorses or prohibits marriages between incompatible individuals. Therefore, government media must inform the public of the government's position on such marriages and the significance of the spouses' decision. The issue at hand is whether or not it is appropriate to allow individuals to marry if PMS tests reveal that they are not compatible. Notably, when disparities are identified, research indicates that sending engaged couples to PMS clinics has little impact on whether the marriage proceeds¹. Thus, some individuals still have children with genetic diseases that affect their health for the rest of their lives.

Children who grow up with illnesses could place a significant load on both institutions and families, resulting in financial and psychological challenges^{5,19}. The participants exhibited a satisfactory comprehension of the potential consequences and difficulties linked to pursuing an unsuitable marriage, which coincided with reported perceptions towards the PMS program in a nearby country⁵. In the present study, respondents also demonstrated a fair level of knowledge of the samples used for testing and the spouse to be tested. They further demonstrated a fair level of

understanding regarding the potential transmission of diseases to offspring through incompatible marriages, and this aligns with a previous report in which most participants stated the purpose of PMS was to minimize risk of hereditary and infectious diseases²⁰. Regarding attitudes towards the inclusion of further tests, specifically mental health and drug use screening, participants showed a favorable disposition towards the inclusion of both and thereby maintaining a healthy marriage for the couple and offspring. This attitude towards mental health screening aligns with the findings of a recently published article²¹. To the best of our understanding, there is no prior study that has investigated the incorporation of drug use screening into PMS programs in Saudi Arabia. Numerous couples end up divorcing as a result of drug abuse²². As some individuals may conceal their use of drugs from their partner, it is necessary to conduct a drug test to determine whether or not spouses use drugs. Furthermore, the issue extends beyond individual consumption; while individuals on the cusp of marriage may have chosen to refrain from drug abuse, there remains a propensity for relapse, which has the potential to result in a distressing divorce.

Finally, respondents expressed belief that entering a marriage with a partner who is incompatible is not a prudent choice¹. They further stated that even in the event of compatibility, they would refrain from marrying someone who carries a disease. Despite these positive findings, there is a need for further research and educational initiatives in Saudi Arabia to explore the perspectives of the general community on the decision-making process individuals go through when they discover that their spouse carries a hereditary disease. Such exploration would contribute to better preventive measures. The current study considered several factors that may have contributed to its findings, including marital status, the level of education, and whether or not participants work in the medical field, and observed no obvious effects. Although a fair level of knowledge and good attitudes toward PMS were observed, there was some variance in both respects on certain topics, such as whether marriage is a viable option when couples are provided incompatible results, the utilization of samples for screening, and proceeding with a carrier partner despite compatibility. However,

additional research using a more extensive sample size is necessary in order to ascertain the impact of these variables on PMS.

Conclusion

In brief, the male participants of this study exhibited a comprehensive understanding of the significance of the PMS program. Many people are knowledgeable of the substantial impact exerted by the PMS program, not only on social structures but also on government matters. However, despite the participants' extensive knowledge, the prevalence of genetic conditions in Saudi Arabia has remained high, unaffected by the long-term implementation of PMS. One potential strategy for mitigating transmission of genetic illnesses is to avoid interracial marriages that exhibit genetic incompatibility. While this investigation into understanding of and attitudes toward PMS programs is notable for focusing on a specific gender, it is important to acknowledge the presence of several limitations, such as the limited number of participants. Hence, it is imperative to undertake further study employing a larger sample size to substantiate our findings.

Acknowledgment

The authors extend their appreciation to the Deanship of Scientific Research at King Khalid University for funding this work through the Small Group Research Project under grant number RGP1/222/44. We also would like to thank SERVICESCAPE (www.servicescape.com) for the English language editing.

Conflict of interest

The author declares no conflicts of interest.

References

1. Al-Shroby WA, Sulimani SM, Alhurishi SA, Bin Dayel ME, Alsanie NA and Alhraiwil NJ. Awareness of Premarital Screening and Genetic Counseling among Saudis and its Association with Sociodemographic Factors: a National Study. *J Multidiscip Healthc.* 2021;14:389-399.
2. Almasmoum HA, Tabassum A, Iqbal MS, Abo-Alshamat R and Aqeeli W. Knowledge and Attitude toward

- Hemoglobinopathies in Premarital Screening Program among the General Population in the Western Region of Saudi Arabia. *Hemoglobin*. 2022;46(5):277-284.
3. Binshihon SM, Alsulami MO, Alogaibi WM, et al. Knowledge and attitude toward hemoglobinopathies premarital screening program among unmarried population in western Saudi Arabia. *Saudi Med J*. 2018;39(12):1226-1231.
 4. Harteveld CL, Achour A, Arkesteijn SJG, et al. The hemoglobinopathies, molecular disease mechanisms and diagnostics. *Int J Lab Hematol*. 2022;44 Suppl 1(Suppl 1):28-36.
 5. Al-Shafai M, Al-Romaihi A, Al-Hajri N, Islam N and Adawi K. Knowledge and Perception of and Attitude toward a Premarital Screening Program in Qatar: A Cross-Sectional Study. *Int J Environ Res Public Health*. 2022;19(7):4418.
 6. Natarajan J and Joseph MA. Premarital screening for genetic blood disorders — an integrated review on the knowledge and attitudes of Middle Eastern university students. *Middle East Fertil Soc J*. 2021;26(1):1-7.
 7. Makkawi M, Alasmari S, Hawan AA, Shahrani MMA and Dera AA. Hemoglobinopathies: An update on the prevalence trends in Southern Saudi Arabia. *Saudi Med J*. 2021;42(7):784-789.
 8. Alkalbani A, Alharrasi M, Achura S, et al. Factors Affecting the Willingness to Undertake Premarital Screening Test Among Prospective Marital Individuals. *SAGE open nursing*. 2022;8:23779608221078156.
 9. Saffi M and Howard N. Exploring the Effectiveness of Mandatory Premarital Screening and Genetic Counselling Programmes for β -Thalassaemia in the Middle East: A Scoping Review. *Public Health Genomics*. 2015;18(4): 193-203.
 10. Gosadi IM, Gohal GA, Dalak AE, Alnami AA, Aljabri NA, Zurayyir AJ. Assessment of Factors Associated with the Effectiveness of Premarital Screening for Hemoglobinopathies in the South of Saudi Arabia. *International journal of general medicine*. 2021;14:3079-3086.
 11. Hamali HA. Public awareness and attitude toward premarital screening program in Jazan region, Saudi Arabia, an endemic area for hemoglobinopathies: A cross-sectional study. *African journal of reproductive health*. 2023;27(8):65-75.
 12. Melaibari M, Shilbayeh S and Kabli A. University Students' knowledge, attitudes, and practices towards the National Premarital Screening Program of Saudi Arabia. *J Egypt Public Health Assoc*. 2017;92(1):36-43.
 13. Ibrahim NKR, Al-Bar H, Al-Fakeeh A, et al. An educational program about premarital screening for unmarried female students in King Abdul-Aziz University, Jeddah. *Journal of Infection and Public Health*. 2011;4(1):30-40.
 14. Alsaeed ES, Farhat GN, Assiri AM, et al. Distribution of hemoglobinopathy disorders in Saudi Arabia based on data from the premarital screening and genetic counseling program, 2011–2015. *Journal of Epidemiology and Global Health*. 2018;7(S1):S41-S47.
 15. Aljulifi MZ, Almutairi MAS, Ahmad MS, et al. Awareness and Acceptance of Premarital Screening Test and Genetic Counseling Program in Riyadh area, Saudi Arabia. *Pakistan Journal of Medical and Health Sciences*. 2022;16(2):875-881.
 16. Al-Qahtani F, Alfahad M, Alshahrani A, et al. Perception of premarital counseling among King Khalid University students. *Journal of family medicine and primary care*. 2019;8(8):2607-2611.
 17. Al-Qattan HM, Amlih DF, Sirajuddin FS, et al. Quantifying the Levels of Knowledge, Attitude, and Practice Associated with Sickle Cell Disease and Premarital Genetic Counseling in 350 Saudi Adults. *Advances in Hematology*. 2019;2019:3961201-7.
 18. Albanghali MA. Prevalence of Consanguineous Marriage among Saudi Citizens of Albaha, a Cross-Sectional Study. *International journal of environmental research and public health*. 2023;20(4):3767.
 19. Bin Zuair A, Aldossari S, Alhumaidi R, Alrabiah M and Alshabanat A. The Burden of Sickle Cell Disease in Saudi Arabia: A Single-Institution Large Retrospective Study. *Int J Gen Med*. 2023;16:161-171.
 20. AlOtaiby S, Alqahtani A, Saleh R, Mazyad A, Albohigan A and Kutbi E. Comprehension of premarital screening and genetic disorders among the population of Riyadh. *Journal of Taibah University Medical Sciences*. 2023;18(4):822-830.
 21. Alhusseini N, Farhan H, Yaseen L, Abid S, Imad SS and Ramadan M. Premarital mental health screening among the Saudi population. *Journal of Taibah University Medical Sciences*. 2023;18(1):154-161.
 22. Scott SB, Rhoades GK, Stanley SM, Allen ES and Markman HJ. Reasons for Divorce and Recollections of Premarital Intervention. *Couple and family psychology*. 2013;2(2):131-145.