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KNOWLEDGE, ATTITUDES AND PRACTICES OF PREMARITAL SCREENING PROGRAM AMONG COUPLES IN MOSUL CITY

***Dr. Asmaa Raad Ahmad, Dr. Sahar Salim Al-Taie**

M.B.Ch.B F., M.B.Ch.B\F.I.C.M.S(FM).

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***Corresponding Author: Dr. Asmaa Raad Ahmad**

M.B.Ch.B F., M.B.Ch.B\F.I.C.M.S(FM).

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ABSTRACT

Background: Premarital screening programs are essential public health measures aimed at identifying couples at risk of transmitting genetic diseases or sexually transmitted infections. In Mosul, limited data exist regarding couples' knowledge, attitudes, and practices toward these programs. **Methods:** A cross-sectional study was conducted during the first half of 2025 among 600 individuals attending premarital screening clinics in two major hospitals in Mosul. Data were collected through direct interviews and analyzed using SPSS version 27. **Results:** Only 52% of participants had heard about the program, and 24.7% understood its meaning, with significant differences across socioeconomic and residential groups ($p<0.001$). About 40.5% correctly identified its focus on hereditary diseases. Overall knowledge was poor. However, attitudes were positive, with 97.7% supporting the program and 95.5% recommending it to others. Consanguineous marriage preference was reported by 33.8% ($p<0.001$). Most participants demonstrated good practices, with 97.3% completing required tests and 96.3% reporting accessibility and ease of procedures. Additionally, 91.8% were willing to seek treatment if abnormalities were detected. **Conclusions:** Despite poor knowledge, participants showed generally positive attitudes and good practices toward premarital screening programs in Mosul.

KEYWORD: Premarital screening, knowledge, attitude, practice, socioeconomic classes.

1. INTRODUCTION

Premarital screening (PMS) is defined as testing couples who are planning to marry for common genetic blood disorders, mainly hemoglobinopathies such as thalassemia and sickle cell anemia, as well as infectious diseases, including hepatitis B, hepatitis C, and HIV/AIDS. Premarital screening combined with genetic counseling aims to identify couples at risk and reduce the transmission of hereditary and sexually transmitted diseases.[1]

PMS programs are considered essential public health tools that provide early detection and counseling for couples at risk of transmitting genetic diseases to their offspring or acquiring infectious diseases. These programs offer couples the opportunity to make informed decisions regarding marriage and family planning, including understanding the likelihood of disease transmission. Consequently, PMS contributes to reducing the prevalence of genetic and infectious diseases, lowering healthcare costs, and decreasing the burden on healthcare systems such as hospitals and blood banks.[2]

Over the past two decades, increasing attention has been directed toward premarital genetic screening programs worldwide due to their significant role in preventing birth defects and reducing the incidence of inherited disorders. PMS identifies carriers of genetic diseases who are often asymptomatic but may transmit these conditions to their children if both partners are carriers. In cases of incompatible results, couples are usually offered counseling sessions to help them make informed decisions, which may include reconsideration of marriage.[3]

In Iraq, the main goals of the PMS program are to improve the health and well-being of families and reduce morbidity and mortality associated with inherited blood

disorders and infectious diseases. The program includes screening for hemoglobinopathies and selected communicable diseases.[4]

Hemoglobinopathies are among the most common monogenic disorders worldwide and represent a major public health concern. They result from genetic mutations affecting hemoglobin synthesis, leading to conditions such as thalassemia and sickle cell disease. Thalassemia is one of the most prevalent hereditary blood disorders globally and constitutes a significant proportion of inherited anemia cases in Iraq. Severe forms, such as beta-thalassemia major, require lifelong blood transfusions and may lead to serious complications. Similarly, sickle cell disease is a genetic disorder characterized by abnormal hemoglobin that causes[5] red blood cells to become rigid and sickle-shaped, resulting in anemia, pain crises, and increased susceptibility to infections.[6]

In addition to genetic disorders, PMS in Iraq also targets communicable diseases such as hepatitis B, hepatitis C, and HIV. These infections are major global health concerns due to their chronic nature and potential for severe complications, including liver cirrhosis, cancer, and immune system failure. Early detection through screening plays a crucial role in preventing transmission and improving health outcomes.[7][8]
Overall, PMS represents an effective preventive strategy aimed at reducing the burden of both genetic and infectious diseases, ultimately contributing to improved public health and healthier future generations.[9]

1.1 Burden of the problem

Hemoglobinopathies are the most common single-gene disorders worldwide, with more than 330,000 affected infants born annually. Approximately 90% of these cases occur in low- and middle-income countries, contributing significantly to the global health burden and accounting for about 3.4% of deaths among children under five years. Additionally, more than 1% of couples are at risk of having at least one affected child. Sexually transmitted infections (STIs) are among the most widespread infections globally and are associated with serious health complications. Congenital syphilis alone accounts for the loss of millions of life-years, while infections such as syphilis, trichomoniasis, and herpes increase the risk of HIV transmission. Other STIs, including chlamydia and gonorrhea, are linked to infertility, ectopic pregnancy, pelvic inflammatory disease, and chronic pelvic pain. Globally, more than one million new STI cases occur daily, with over 370 million new cases annually of the four major curable STIs among individuals aged 15–49 years.[12]

1.2 Knowledge, Attitude, and Practice Study

The Knowledge, Attitudes, and Practices (KAP) model is a widely used approach in public health research to assess health-related behaviors within a population. It helps evaluate what individuals know (knowledge), believe (attitudes), and do (practices) regarding specific health issues. KAP surveys are essential for identifying baseline knowledge, misconceptions, beliefs, and behaviors, which are crucial for designing effective and targeted health education interventions. In addition to assessing knowledge, KAP studies identify risky behaviors and barriers to healthy practices, enabling the development of appropriate public health strategies. They also provide baseline data to measure changes over time and evaluate the effectiveness of interventions. This information supports policymakers in efficient resource allocation and program planning. KAP surveys are typically conducted using structured questionnaires and may include both qualitative and quantitative data. They are simple, cost-effective, and easily interpretable, making them a valuable tool in primary health care research. Overall, KAP studies play a key role in understanding community health needs and improving public health outcomes.[10][11]

1.3 Rationale of the Study

The choice of this research was based on the importance of the premarital screening program, in addition to the limited research that covers this important subject in our locality.

1.4 Aim of the Study

To assess the knowledge levels, attitudes, and practices associated with the premarital screening program in Mosul City among attender premarital screening clinic and their possible involvement in an at-risk marriage.

1.5 Specific Objectives

1. To describe the socio-demographic characteristics of participants.
2. To assess the knowledge of participants regarding the premarital screening program.
3. To evaluate the attitudes of participants regarding the premarital screening program.
4. To assess the practice of participants regarding the premarital screening program.
5. To demonstrate the effect of residence on the knowledge, attitude, and practice of the participants.
6. To illustrate the knowledge, attitude, and practice in different social classes.

2. Study Setting and Design

This cross-sectional study was performed in Mosul City, the center of Nineveh governorate in the North of Iraq. The study sample was taken from premarital screening clinics in Ibn Al-Atheer teaching hospital and Al- Mosul General hospital. All the couples had been informed about all aspects of the study, emphasizing that the information would be used for research purposes only and that their personal information would be confidential before they agreed to participate in this study.

2.1 Study Period

The study was conducted between January 2025 and June 2025, whereas data collection lasted 4 months from

February 2025.

2.2 Study Sample and Sampling Technique

A study sample size of 600 individuals was included in the study. In the present study, 300 couples were collected using a nonprobability convenience sampling technique from premarital screening clinics in Ibn Al-Atheer teaching hospital and Al- Mosul General hospital. Data collection was on two days per week (Sunday and Tuesday) from 9 am to 1 pm. Direct interview with the participant after explanation of the study objectives.

2.3 Data Collection Tool

A structured questionnaire was specially designed, and data were collected through direct interviews between the researcher and participants. The questionnaire consisted of four sections:

- Part 1 included socio-demographic characteristics such as age, gender, marital status, education, occupation, residence, socioeconomic indicators, and family history of hereditary diseases and consanguinity.
- Part 2 assessed participants' knowledge about the premarital screening program, including awareness, understanding of its purpose, and knowledge of diseases covered.
- Part 3 evaluated attitudes toward the program, including acceptance, views on consanguineous marriage, recommendations to others, and opinions on enforcement of screening outcomes.
- Part 4 examined practices related to the program, such as undergoing required tests, accessibility of services, willingness to seek treatment, decisions regarding marriage continuation, and perceived benefits of the program.

3. Statistical Analysis

Following data collection, the information was arranged, coded, and tabulated using Microsoft Office Excel, and the data were analyzed by the Statistical Package of the Social Sciences (SPSS) software version 27. The socioeconomic status was calculated using the following final equation to calculate SES[13][14]:

$$SES = (Education + Occupation + House\_ownership \times 0.5 + Car\_ownership \times 0.1 + (age - 20)/100 - Retired/unemployed/deceased \quad (1)$$

The variables were converted into numbers by using a scoring system in which education is divided into eight levels, starting from zero, being illiterate, to the highest score, seven, belonging to the highest (PhD) or equivalent. Occupation has a score for most job titles in Iraq, divided into eight main categories, and the two variables of wealth are ownership of a house and a car. It also had a score between zero and one. The minimum score would be zero for an unemployed, illiterate, young manual worker with no house and no car. The maximum score would be 14.05 for medical doctors aged 65 years who own a house and a car.

The calculated SES score can be divided into equal parts (high, middle, and low socioeconomic levels).

Table 1: classification of the SES score.[11]

Low SES	0-4.7
Middle SES	4.8-9.4
High SES	9.5-14.05

The descriptive statistics of knowledge, attitude, and practice, represented by tables and figures, and the number and percentage of participants answering each question were calculated. The analysis of each module was done on the basis of a scalar scoring method. There are given one point for a correct response and zero for wrong responses. The total KAP score is used to rank the level of knowledge, attitude, and practice. A total score of less than 50% of the total scores considered poor, 50%-75% was fair, while more than 75% was good for the knowledge, attitude, and practice of couples attending premarital screening clinics.

3.1 Analytic statistics

- Chi-square test was used to test the significance of the association between qualitative variables.
- Fisher's exact test was used to test a significant association between two variables when the expected value is less than 5 in more than 20% of cells, so we could not use the chi-square test.
- Fischer- Freeman- Halton (FFH) exact test was used to assess the statistical significance between more than two study group and it is an extension of Fisher's exact test.

Level of significance

For all the above-mentioned statistical test level of significance was at 5% level (p-value).

- p-value >0.05 indicates a non-significant result.
- p-value $\leq$ 0.05 indicates a significant result.
- p-value $\leq$ 0.01 indicates a highly significant result.
- p-value $\leq$ 0.001 indicates a very highly significant result.

4. RESULTS

Knowledge of participants regarding the premarital screening program, as shown in Table 2, among the 600 participants, 52% had heard about the premarital screening program. Knowledge about diseases covered by the program was generally low; only 11.2% identified thalassemia, 7% anemia, 5.3% hepatitis B and C, and 4.3% HIV. Additionally, 21% recognized blood group and Rh testing, while only 2.5% were aware of VDRL testing. Overall, 24.7% of participants understood the meaning of the premarital screening program. About 40.5% believed the program focuses on hereditary diseases, whereas 23.3% thought it targets infectious diseases. Only 10.3% reported that physical examination is included in the program, indicating generally poor knowledge among participants.

Table 3 demonstrates significant differences in knowledge of the premarital screening program across socioeconomic groups. Awareness of the program increased with socioeconomic status, from 35% in the low group to 66.7% in the high group (p<0.001). Similarly, understanding of the program's meaning and its focus on hereditary and infectious diseases was significantly higher among participants with higher socioeconomic status (p<0.001). Recognition of thalassemia as a screened disease was also significantly associated with socioeconomic level (p=0.008), whereas knowledge of other diseases showed no significant differences. Perception of physical examination as part of the program did not differ significantly between groups.

Table 4 shows that knowledge of the premarital screening program differed significantly by place of residence. Urban participants demonstrated higher awareness compared to rural participants (58% vs. 38.8%, p<0.001). Understanding of the program's meaning and its focus on hereditary and infectious diseases was also significantly greater among urban residents (p<0.001).

Recognition of thalassemia and blood group/Rh testing was significantly higher in urban participants (p=0.002 and p=0.013, respectively), while no significant differences were observed for other diseases. Additionally, a higher proportion of urban participants identified physical examination as part of the program (p=0.032).

Table 2: Knowledge of participants regarding premarital screening program (n=600).

Knowledge of participants regarding the premarital screening program		**No.**	**%**
Heard about the premarital screening program		**312**	**52**
Know about the diseases covered by the premarital medical examination	Anemia	42	7
	Thalassemia	67	11.2
	Hepatitis B and C	32	5.3
	HIV	26	4.3
	Blood group and Rh	126	21
	VDRL	15	2.5
Know the meanings of the premarital screening program		148	24.7
Think that the premarital screening program focuses on infectious diseases		140	23.3
Think that the premarital screening program focuses on hereditary diseases		243	40.5
Think that physical examination is included in the premarital screening program		62	10.3

Table 3: Comparison between different socioeconomic statuses regarding knowledge of participants about the premarital screening program.

Knowledge of participants regarding the premarital screening program		**Low socioeconomic status(n=103)**		**middle socioeconomic status (n=443)**		**high socioeconomic status (n=54)**		**p-value**
		No.	**%**	**No.**	**%**	**No.**	**%**	
Heard about the premarital screening program		36	35	240	54.2	36	66.7	<0.001*
Know about the diseases covered by the premarital medical examination	Anemia	9	8.7	29	6.5	5	9.3	0.608*
	Thalassemia	6	5.8	49	11.1	12	22.2	0.008*
	Hepatitis B and C	2	1.9	24	5.4	6	11.1	0.052*
	HIV	4	3.9	20	4.5	2	3.7	0.999**
	Blood group and Rh	18	17.5	93	21	15	27.8	0.322*
	VDRL	4	3.9	10	2.3	1	1.9	0.499**
Know the meanings of the premarital screening program		5	4.9	126	28.4	17	31.5	<0.001*
Think that the premarital screening program focuses on infectious diseases		9	8.7	111	25.1	20	37	<0.001*
Think that the premarital screening program focuses on hereditary diseases		20	19.4	187	42.2	36	66.7	<0.001*
Think that physical examination is included in the premarital screening program		7	6.8	47	10.6	8	14.8	0.273*

Table 4: Effect of residence regarding knowledge about premarital screening program (n=600).

Knowledge of participants regarding the premarital screening program		Urban (n=412)		Rural (n=188)		P-value
		No.	%	No.	%	
Heard about the premarital screening program		239	58	73	38.8	<0.001*
Know about the diseases covered by the premarital medical examination	Anemia	33	8	10	5.3	0.236*
	Thalassemia	57	13.8	10	5.3	0.002*
	Hepatitis B and C	24	5.8	8	4.3	0.427*
	HIV	16	3.9	10	5.3	0.423*
	Blood group and Rh	98	23.8	28	14.9	0.13*
	VDRL	12	2.9	3	1.6	0.411**
Know the meanings of the premarital screening program		133	32.3	15	8	<0.001*
Think that the premarital screening program focuses on infectious diseases		117	28.4	23	12.2	<0.001*
Think that the premarital screening program focuses on hereditary diseases		206	50	37	19.7	<0.001*
Think that physical examination is included in the premarital screening program		50	12.1	12	6.4	0.032*
*chi square test ** Fisher's exact test						

Figure 1 demonstrates the level of knowledge of participants regarding the premarital screening program and shows that there is, in general, poor knowledge among participant 99.5% of the sample size. There are (11) questions about the knowledge of the participants. Each question has one score, so the participants who answered more than 8 question considered to have good knowledge, 5-8 questions as fair knowledge, and those who answered fewer than 5 questions correctly as poor knowledge.

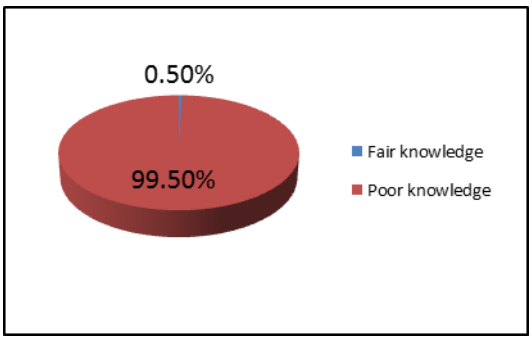

Figure 1: Levels of knowledge of participants regarding the premarital screening program.

The attitude of participants regarding the premarital screening program is demonstrated in Table 5 and shows that 97.7% of the study sample agree with the premarital screening program, and 33.8% of them prefer consanguineous marriage. Meanwhile, 95.5% of them advise future couples to attend the screening program, and 65.5% of the participants think that the government should enforce individual to stop marriage if there is diseases are detected in the premarital screening program.

Table 6 shows that attitudes toward the premarital screening program were generally positive across all socioeconomic groups, with no significant difference in overall agreement (p=0.113). Preference for consanguineous marriage was significantly higher among participants with lower socioeconomic status (p<0.001). Most participants across all groups recommended the program to future couples, with no significant variation (p=0.857). However, support for enforcing marriage cancellation in case of positive results increased with socioeconomic status and showed a statistically significant difference (p=0.048).

Table 7 indicates that attitudes toward the premarital screening program were generally positive in both urban and rural groups, with no significant difference in overall agreement or recommendation to others (p>0.05).

Preference for consanguineous marriage was significantly higher among rural participants (p<0.001). Additionally, support for enforcing marriage cancellation in case of positive screening results showed a statistically significant difference between urban and rural groups (p=0.032).

Figure 2 shows that the majority of participants across all socioeconomic groups demonstrated a good attitude toward the premarital screening program (82.5% low, 77.9% middle, and 79.6% high SES).

Attitude was assessed using four questions; participants scoring more than three were classified as having a good attitude, those scoring 2–3 as fair, and less than two as poor.

Table 5: Attitude of participants regarding premarital screening program (n=600).

Attitude of participants regarding the premarital screening program	Disagree		Neutral		Agree	
	No	%	No	%	No	%
Agree about the premarital screening program	4	0.7	10	1.7	586	97.7
Prefer consanguineous marriage	299	49.8	98	16.3	203	33.8
Advise future couples for the premarital screening program	15	2.5	12	2	573	95.5
Agree that the government should enforce individual to stop marriage if diseases are detected in the premarital screening program	146	24.3	62	10.3	392	65.3

Table 6: Comparison between different socioeconomic statuses regarding the attitude of participants about the premarital screening program.

Attitude of participants regarding the premarital screening program	Low socioeconomic status (n=103)		middle socioeconomic status (n=443)		high socioeconomic status(n=54)		P-value
	No.	%	No.	%	No.	%	
Agree about the premarital screening program	102	99	434	98	50	92.6	0.113**
Prefer consanguineous marriage	53	51.5	141	31.8	9	16.7	<0.001*
Advise future couples for the premarital screening program	99	96.1	421	95	53	98.1	0.857**
Agree that the government should enforce individual to stop marriage if there is diseases are detected in the premarital screening program	62	62.2	291	65.7	39	72.2	0.048*

Table 7: Effect of residence on the attitude of participants about the premarital screening program (n=600).

Attitude of participants regarding the premarital screening program	Urban (n=412)		Rural (n=188)		P-value
	No.	%	No.	%	
Agree about the premarital screening program	400	97.1	186	98.9	0.245**
Prefer consanguineous marriage	99	24	104	55.3	< 0.001*
Advise future couples for the premarital screening program	394	95.6	179	95.2	0.819*
Agree that the government should enforce individual to stop marriage if diseases are detected in the premarital screening program	271	65.8	121	64.4	0.032*

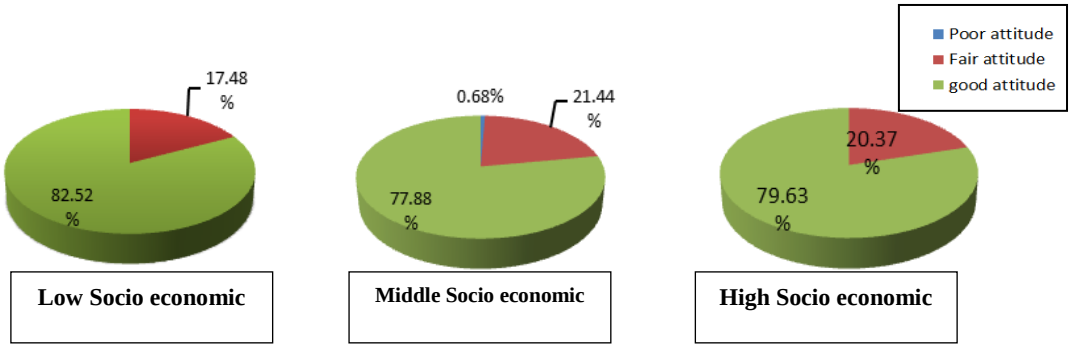

Figure 2: Attitude of participants regarding the premarital screening program.

Table 8 shows that most participants demonstrated good practices regarding the premarital screening program. The majority underwent all required tests (97.3%), found the procedures easy and accessible (96.3%), and were willing to receive treatment if results were abnormal (91.8%).

However, only 54% reported willingness to cancel marriage in case of genetic risk, and 34% believed the program could reduce family breakdown and psychosocial problems.

Table 9 shows that most participants across all socioeconomic groups demonstrated good practices, with no significant difference in undertaking required tests (p=0.276). Perceived accessibility and ease of testing were significantly higher among lower socioeconomic groups (p=0.002). Willingness to receive treatment did not differ significantly between groups (p=0.06). Although a higher proportion of low socioeconomic participants reported willingness to cancel marriage in case of genetic risk, this difference was not statistically significant (p=0.056). In contrast, the belief that the program can reduce family breakdown and psychosocial problems increased significantly with socioeconomic status (p<0.001).

Table 10 shows that practices regarding the premarital screening program were generally similar between urban and rural participants, with no significant differences in undertaking tests, willingness to receive treatment, or decision to cancel marriage (p>0.05).

However, rural participants reported significantly better access and ease of testing (p=0.022), while urban participants were more likely to believe that the program can reduce family breakdown and psychosocial problems (p<0.001).

Table 8: Practice of participants regarding premarital screening program (n=600).

Practice of participants regarding the premarital screening program	No.	%
Undertake all the required tests	584	97.3
Find the test procedure easy and available in health facilities	578	96.3
Willing to receive treatment in case of abnormal test results	551	91.8
Stop marriage if you were told (after premarital screening)that there would be a chance of having a child affected by genetic diseases	324	54
Think that the premarital screening program can decrease family breakdown and future psychosocial problems	204	34

Table 9: Comparison between different socioeconomic statuses regarding the practice of participants in the premarital screening program.

Practice of participants regarding the premarital screening program	Low socioeconomic status (n=103)		Middle socioeconomic status (n=443)		high socioeconomic status (n=54)		P-value
	No.	%	No.	%	No.	%	
Undertake all the required tests	100	97.1	433	97.7	51	94.4	0.276**
Find the test procedure easy and available in health facilities	102	99	429	96.8	47	87	0.002**
Willing to receive treatment in case of abnormal test results	90	87.4	408	92.1	53	98.1	0.06*
Stop marriage if you were told (after premarital screening) that there would be a chance of having a child affected by genetic diseases	45	93.7	251	56.7	28	51.9	0.056*
Think that the premarital screening program can decrease family breakdown and future psychosocial problems	17	16.5	157	35.4	30	55.6	<0.001*

Table 10: Effect of residence on the practice of participants regarding the premarital screening program (n=600).

Practice of participants regarding the premarital screening program	Urban (n=412)		Rural (n=188)		P-value
	No.	%	No.	%	
Undertake all the required tests	400	97.1	184	97.9	0.58*
Find the test procedure easy and available in health facilities	392	95.1	186	98.9	0.022*
Willing to receive treatment in case of abnormal test results	383	93	168	84.9	0.135*
Stop marriage if you were told (after premarital screening)that there would be	225	54.6	99	52.7	0.656*

a chance of having a child affected by genetic diseases					
Think that the premarital screening program can decrease family break down and future psychosocial problems	170	41.3	34	18.1	< 0.001*
*Chi-square test					

5. DISCUSSION

Premarital screening (PMS) is an important preventive strategy, particularly in regions with high rates of consanguineous marriage, such as Mosul. This study revealed poor knowledge of PMS among participants, despite generally positive attitudes and good practices. Higher knowledge levels were associated with a greater likelihood of avoiding at-risk marriages.

Only about half of the participants had heard of PMS, and awareness of diseases included in the program was limited. These findings are lower than those reported in studies from Qatar, Oman, and the Kurdistan region of Iraq, possibly due to differences in study populations, as previous research often targeted university students. The overall low level of knowledge highlights the need for improved health education and public awareness programs.

In contrast, attitudes toward PMS were highly positive, with most participants supporting the program and recommending it to others. However, a considerable proportion still preferred consanguineous marriage. These findings are generally consistent with studies from other regional countries, which also reported favorable attitudes toward PMS.

Regarding practices, most participants complied with screening requirements, reported easy access to services, and expressed willingness to receive treatment if needed. However, only about half were willing to cancel marriage in case of genetic risk, and fewer recognized the broader psychosocial benefits of PMS.

Overall, the findings demonstrate a gap between knowledge and practice, suggesting that while acceptance and utilization of PMS are high, awareness remains insufficient. Strengthening educational interventions is essential to improve informed decision-making and maximize the public health impact of PMS programs.

6. CONCLUSION AND RECOMMENDATIONS

Premarital screening (PMS) is an essential public health strategy for reducing the burden of genetic and infectious diseases. This study among 600 participants in Mosul demonstrated that knowledge of PMS was generally poor, with only about half of the participants aware of the program and a minority understanding its purpose, despite significant variations across socioeconomic and residential groups. In contrast, attitudes were largely positive, with most participants supporting and recommending the program, although consanguineous marriage remained relatively common. Practices were generally good, as the majority completed required tests, reported easy access to services, and were willing to receive treatment when needed; however, fewer participants recognized the broader social benefits of PMS.

Based on these findings, strengthening health education and community awareness is strongly recommended to improve knowledge of PMS, including its importance and components. Efforts should also focus on discouraging consanguineous marriage, particularly among rural and lower socioeconomic groups, and promoting informed decision-making. Additionally, continued encouragement of compliance with screening and appropriate follow-up care is essential to maximize the effectiveness of PMS programs.

REFERENCES

1. Alhosain A. Premarital Screening Programs in the Middle East, from a Human Rights Perspective. *Divers Equal Health Care,* 2018; 15. doi: 10.21767/2049-5471.1000154 [DOI] [Google Scholar].
2. Al-Shroby WA, Sulimani SM, Alhurishi SA, Bin Dayel ME, Alsanie NA *etal.* Awareness of Premarital Screening and Genetic Counseling among Saudis and its Association with Sociodemographic Factors: a National Study. *J Multidiscip Healthc,* Feb. 17, 2021; 14: 389-399. doi: 10.2147/JMDH.S296221. PMID: 33628031; PMCID: PMC7898212.
3. Mahmood KA, Sadraldeen GS, Othman SM, Shabila NP, Saleh AM, *et al*. Knowledge, perception, and attitude toward premarital screening among university students in Kurdistan region-Iraq. *PLOS Glob Public Health,* Nov. 18, 2024; 4(11): e0003515. doi: 10.1371/journal.pgph.0003515. PMID: 39556602; PMCID: PMC11573136
4. Altaany Z, Khabour OF, Alzoubi KH, Alkaraki AK, Al-Taani G. The Perception of Premarital Genetic Screening within Young Jordanian Individuals. *Public Health Genomics,* 2021; 24: 182–188. doi: 10.1159/000517162 [DOI] [PMC free article] [PubMed] [Google Scholar]
5. Al-Shafai M, Al-Romaihi A, Al-Hajri N, Islam N, 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,* Apr. 6., 2022; 19(7): 4418. doi: 10.3390/ijerph19074418. PMID: 35410099; PMCID: PMC8998822.

6. Lim M.K., Franceschi S., Vaccarella S., Ju Y.-H., Oh J.-K. *et al*. Sexual activity and hepatitis B and C virus infection among young adults after introduction of a vaccination program in an area of high endemicity. *J. Epidemiol*, 2009; 19: 213–218. doi: 10.2188/jea.JE20081010. [DOI] [PMC free article] [PubMed] [Google Scholar]
7. Premarital screening and counseling guideline. Iraqi national guideline, 2023.
8. Attiyah.M and Al-Najafi, W. Premarital Screening Program for Hemoglobinopathies in Karbala, Iraq. Karbala J. Med., June, 2020; 13: 1.
9. Raina S. Assessment of knowledge, attitude, and practice in health care delivery. N Am J Med Sci., Mar. 2013; 5(3): 249-50. doi: 10.4103/1947-2714.109226. PMID: 23626968; PMCID: PMC3632036.
10. Harteveld CL, Achour A, Arkesteijn SJG, Ter Huurne J, Verschuren M, etal. The hemoglobinopathies, molecular disease mechanisms and diagnostics. Int J Lab Hematol, Sep. 2022; 44, 1(1): 28-36. doi: 10.1111/ijlh.13885. PMID: 36074711; PMCID: PMC9542123.
11. Angastiniotis M, Petrou M, Loukopoulos D, Modell B, Farmakis D, etal. The Prevention of Thalassemia Revisited: A Historical and Ethical Perspective by the Thalassemia International Federation. Hemoglobin, Jan. 2021; 45(1): 5-12. doi: 10.1080/03630269.2021.1872612. Epub 2021 Jan 18. PMID: 33461349.
12. Omer W. and Al-Hadithi T. Developing a socioeconomic index for health research in Iraq. EMHJ., 2017; 23: 10. https://applications.emro.who.int/EMHJ/v23/10/EMHJ_2017_23_10_670_677.pdf.
13. Al-Farsi OA, Al-Farsi YM, Gupta I, Ouhtit A, Al-Farsi KS, Al-Adawi S. A study on knowledge, attitude, and practice towards premarital carrier screening among adults attending primary healthcare centers in a region in Oman. BMC Public Health, Apr. 17, 2014; 14: 380. doi: 10.1186/1471-2458-14-380. PMID: 24742222; PMCID: PMC4004421.
14. Al-Enezi, K. and Mitra, A.K. Knowledge, Attitude, and Satisfaction of University Students Regarding Premarital Screening Programs in Kuwait. European Journal of Environment and Public Health, 2017; 1(2): 07. https://doi.org/10.20897/ejeph/78075.