

Evaluation of Premarital Screening tests in Babylon Governorate

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Abstract:

Background: Premarital screening program is a primarily preventive approach for premarital couples to improve women's wellness and subsequent pregnancy outcomes. Many young men and women need more information about reproductive health and access to services before having their first child. **Materials and Methods:** A cross-sectional study conducted at ten hospitals in Babylon governorate. These hospitals, selected according to the hospitals that have premarital screening clinic, By using a convenient sample method. Data were collected using a structured questionnaire approved by the Ministry of Health for the period (16th December 2020 – 31 March 2021). **Results:** The results of this study indicated that all hospitals had a full evaluation score (100%) regarding the presence of health, administrative, and service staff according to standards, specific records for premarital counseling, the presence of special site for storage records, result confidentiality, the availability of tests, availability of mobile in the clinic for contact with the couple in case abnormal test results, and sending a monthly statistic of those about to get married is submitted to the public health department. While there are two items that had a weak level (<50%) in all hospitals about "the lab is in the same unit" and "the presence of coordinator for the purpose of sending the result to court. **Conclusions:** We conclude the average percentage for premarital screening programs is 90.0% and this is considered a pass percentage for all the studied hospitals.

Keywords: Evaluation, Premarital Screening, Tests

Introduction:

Premarital screening is one of the most effective methods and plans to prevent inherited disorders and congenital anomalies¹. While premarital tests have importance in places where consanguineous marriages are quite popular, such as in Arab countries²³.

Premarital counseling for a long period of time began in Iraq. It has been carried out in several specialized centers spread across the country. The new Ministry of Health plan is to integrate this service as a regular operation at the primary health care level⁴.

Pre-marital genotype screening offers an opportunity for people to become aware of their genetic predisposition to diseases and for couples to be aware of their unborn children's potential genetic characteristics. Therefore, if one assumes that procreation is one of the reasons for marriage, then thinking about genetic compatibility and preventing significant genetic inheritance is something to be strongly considered. Sickle cell disease, cystic

fibrosis, and Tay-Sach disease, the most common of which is sickle cell disease, are the most common genetic disorders ⁵.

A lot of young male and female go into marriage with deficient knowledge on reproduction health, sexuality and contraceptive methods even among learned individuals. Today, education and care that given society is very in large of developing countries about growth and development of human genetics and their use in welfare and health. Mass media is best way to give information about genetics to people. When improve the peoples' knowledge about STDs will improve their understanding and cooperation which is capable of reducing marriages between carriers ⁶.

Aims of the study:

1. To evaluate the pre-marital screening program in the hospitals have premarital screening clinic in Babylon Governorate.
2. Evaluate services provided, which include clinical services, infection reporting and medical advice.

Materials and Methods:

Study design: This is a cross-sectional study conducted at 10 non-randomly selected (By using a convenient sample method) hospitals in Babylon governorate.

Setting of study: This study was conducted in Babylon governorate. which included hospitals that had a premarital screening clinic in Imam Ali Hospital, general Mahawil Hospital, general Alexandria Hospital, Zahraa Maternity Hospital, Hilla Teaching Hospital, Al Noor Children's Hospital, general Al-Qasim Hospital, general Al Hashimiyah Hospital, general Al-Kifl Hospital, and general Al-Shomali Hospital these Hospitals were located within the geographical location of Babylon governorate.

Sampling Technique: The number of the studied hospitals in Babylon governorate are 10 hospitals, selected according to the hospitals that have premarital screening clinic, By using a convenient sample method.

Data collection technique: Data were collected using a structured questionnaire approved by the Ministry of Health ⁴.

Statistical Analysis: Analysis of data was carried out using the available statistical package of SPSS-27 (Statistical Packages for Social Sciences- version 27).

Results:

Table (1.1) the results of this study indicated that all hospitals had a full evaluation score (100%) regarding the presence of health, administrative, and service staff according to standards, specific records for premarital counseling, the presence of special site for storage records, result confidentiality, the availability of tests, availability of mobile in the clinic for contact with the couple in case abnormal test results, and sending a monthly statistic of those about to get married is submitted to the public health department. While there are two items that had a weak level (<50%) in all hospitals about "the lab is in the same unit" and "the presence of coordinator for the purpose of sending the result to court". As for other items, all clinics were resting on pass level ($\geq 50\%$).

Table 1.1: Observed frequencies, percents, and summary statistics of " administrative indicators " items for the studied hospitals

Administrative indicators	Resp.	No.	%	MS	SD	RS %	Evaluation
Unit official (A doctor specializing in family medicine or in community medicine or in internal medicine or in blood diseases)	Yes	6	60.0	0.60	0.52	60.0	Pass (≥ 50 %)
	No	4	40.0				
	NA	0	0.00				
Trained physician on premarital counseling	Yes	5	50.0	0.50	0.53	50.0	Pass (≥ 50 %)
	No	5	50.0				
	NA	0	0.00				
Health staff (community health technologist or bachelors of science in chemistry or biology and lab health angel and or lab assistant)	Yes	10	100.0	1.00	0.00	100.0	Good (All)
	No	0	0.00				
	NA	0	0.00				
Trained paramedic on premarital counseling	Yes	8	80.0	0.80	0.42	80.0	Pass (≥ 50 %)
	No	2	20.0				
	NA	0	0.00				
Administrative employee	Yes	10	100.0	1.00	0.00	100.0	Good (All)
	No	0	0.00				
	NA	0	0.00				
One Service employee	Yes	10	100.0	1.00	0.00	100.0	Good (All)
	No	0	0.00				
	NA	0	0.00				
Independent Specific place for unit	Yes	5	50.0	0.50	0.53	50.0	Pass (≥ 50 %)
	No	5	50.0				
	NA	0	0.00				
Specific records for Premarital counseling	Yes	10	100.0	1.00	0.00	100.0	Good (All)
	No	0	0.00				
	NA	0	0.00				
Private room for examination	Yes	5	50.0	0.50	0.53	50.0	Pass (≥ 50 %)
	No	5	50.0				
	NA	0	0.00				
Independent room for take blood sample	Yes	5	50.0	0.50	0.53	50.0	Pass (≥ 50 %)
	No	5	50.0				
	NA	0	0.00				

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Administrative indicators	Resp.	No.	%	MS	SD	RS%	Evaluation
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There is special site for storage records	Yes	10	100.0	1.00	0.00	100.0	Good (All)
	No	0	0.00				
	NA	0	0.00				
Result confidentiality	Yes	10	10.00	1.00	0.00	100.0	Good (All)
	No	0	0.00				
	NA	0	0.00				
Index signs for site location	Yes	9	90.0	0.90	0.32	90.0	Pass (≥ 50 %)
	No	1	10.0				
	NA	0	0.00				
Tests are available always	Yes	10	100.0	1.00	0.00	100.0	Good (All)
	No	0	0.00				
	NA	0	0.00				
Availability of mobile in the clinic for contact with couple in case abnormal test results	Yes	10	100.0	1.00	0.00	100.0	Good (All)
	No	0	0.00				
	NA	0	0.00				
The lab is in the same unit	Yes	3	30.0	0.30	0.48	30.0	Weak(<50%)
	No	7	70.0				
	NA	0	0.00				
Coordinator for the purpose of sending the result to court	Yes	4	40.0	0.40	0.52	40.0	Weak(<50%)
	No	6	60.0				
	NA	0	0.00				
A monthly statistic of those about to get married is submitted to the public health department	Yes	10	100.0	1.00	0.00	100.0	Good (All)
	No	0	0.00				
	NA	0	0.00				
MS (Mean of score), SD(Standard Deviation), RS% (Relative Sufficiency)							

Table (1.2) represents the duties and tasks of Paramedical towards the couple. The results illustrate that all hospitals have good evaluation score (100%) regarding welcoming the couple, determine the degree of consanguinity between the couple, obtain the family history for both partners, draw a blood sample from both partners for requested lab investigations, the paramedical reviews the results of laboratory investigations of the couple, and take phone numbers of the couple. While there are two items that had a poor score (None) concerning give a dose of tetanus toxoid to the female partner, and giving premarital educational booklet to each partner which includes information on the following: concept and aim, common hemoglobinopathies in Iraq, STI, and healthy life-style. As regards, the remaining indicators all hospitals had a pass level ($\geq 50\%$).

Table 1.2: Observed frequencies, percents, and summary statistics of " Duties and tasks of the Paramedical towards couple " items for the studied hospitals

Duties and tasks of Paramedical towards couple	Resp.	No.	%	MS	SD	RS%	Evaluation
Welcome the couple	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Explain the plan of action and agree of couple to investigation	Yes	9	90.0	0.90	0.32	90.0	Pass (≥ 50 %)
	No	1	10.0				
	NA	0	0.00				
Determine the degree of consanguinity between the couple	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Obtain the family history for both partners	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Draw blood sample from both partners for requested lab investigations	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Give dose of tetanus toxoid to female partner	Yes	0	0.00	0.00	0.00	0.00	None
	No	0	0.00				
	NA	10	100.0				
The paramedic reviews the results of laboratory investigations of couple	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
The Paramedic discuss abnormal finding with the physician	Yes	9	90.0	0.90	0.32	90.0	Pass (≥ 50 %)
	No	1	10.0				
	NA	0	0.00				
Take phone numbers of couple	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Arrange next appointment for Counseling	Yes	6	60.0	0.60	0.52	60.0	Pass (≥ 50 %)
	No	4	40.0				
	NA	0	0.00				
	Yes	5	50.0				

Rearrange separate appointment for each partner in case of abnormal findings	No	5	50.0	0.50	0.53	50.0	Pass (≥ 50 %)
	NA	0	0.00				
Giving premarital educational booklet to each partner which includes information on the following: concept and aim, common hemoglobinopathies in Iraq, STI, and healthy life-style.	Yes	0	0.00	0.00	0.00	0.00	None
	No	0	0.00				
	NA	10	100.0				

Table (1.3) represents the duties and tasks of physicians towards couples. the study demonstrated that all items had a full evaluation score (100%) in all studied hospitals, except one item had a pass degree (50%) regarding review lab reports referring accordingly to: premarital guidelines for most common hemoglobinopathies in Iraq & premarital guidelines for STIs.

Table 1.3: Observed frequencies, percents, and summary statistics of " Duties and tasks of the physician towards couples " items for the studied hospitals

Duties and tasks of the physician towards couples	Resp.	No.	%	MS	SD	RS%	Evaluation
Welcome the couple	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Explain your plan of action and discuss of results	Yes	10	10.00	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Review lab reports referring accordingly to: premarital guidelines for most common hemoglobinopathies in Iraq & premarital guidelines for STIs	Yes	5	50.0	0.50	0.53	50.0	Pass (≥ 50 %)
	No	5	50.0				
	NA	0	0.00				
Review the PC risk assessment form	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Take the medical history of each partner	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Perform the physical examination for each partner	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Assess the condition of each partner	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				

	NA	0	0.00				
Make the required counseling	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				

Table (1.4) represents the evaluation of premarital tests in studied hospitals. All indicators had a good evaluation score (100%) in all hospitals, except one indicator had a pass degree (90%) regarding tuberculosis screening done.

Table 1.4: Observed frequencies, percents, and summary statistics of " premarital Tests " items for the studied hospitals

Premarital Tests	Resp.	No.	%	MS	SD	RS%	Evaluation
Hepatitis C (HCV) screening done	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Hepatitis B (HBV) screening done	Yes	10	10.00	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
AIDs (HIV) test done	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Thalassemia (MCV. Test) performed	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Tuberculosis screening done	Yes	9	90.0	0.90	0.32	90.0	Pass (≥ 50 %)
	No	1	10.0				
	NA	0	0.00				
Hemoglobin measured (MCH)	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Syphilis (VDRL test) examination performed	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				
Blood group and Rh factor tests performed	Yes	10	100.0	1.00	0.00	100.0	Good(All)
	No	0	0.00				
	NA	0	0.00				

Table (1-5) demonstrates a summary statistics of studied main domains for premarital screening program questionnaire, such as "Percent Grand Mean of Score-PGMS, and

Percent Grand Relative Sufficiency-PGRS%", as well as evaluation grades adopting to indicates the levels of implementation of the system in the studied questionnaire for the hospitals, which included four main domains. The results showed that all the main domains are fall within the pass level of evaluation on the degree of " $\geq 50\%$ ". In addition to that, the global mean of the score for an overall evaluation had the pass level of evaluation on the degree of " $\geq 50\%$ ".

Table 1.5: Summary statistics of premarital screening program Questionnaire concerning Main Domains Evaluation for the studied hospitals

Main Domains	No. Hospitals	Range	Min	Max	PGMS	PGRS%	Ev.
Administrative indicators	10	0.45	0.55	1.00	0.777	77.7%	Pass ($\geq 50\%$)
Duties and tasks of Paramedic towards couple	10	0.40	0.60	1.00	0.890	89.0%	Pass ($\geq 50\%$)
Duties and tasks of physician towards couples	10	0.13	0.87	1.00	0.937	93.7%	Pass ($\geq 50\%$)
Premarital Tests	10	0.13	0.87	1.00	0.987	98.7%	Pass ($\geq 50\%$)
Overall Evaluation	10	0.14	0.83	0.97	0.897	89.8%	Pass ($\geq 50\%$)

Discussion:

The current study showed that 60.0% of the studied hospitals had pass level ($\geq 50\%$) regarding unit official (A doctor specializing in family medicine or in community medicine or in internal medicine or in blood diseases). This result agreed with the finding of a previous study done in Rajasthan state by Sodani and Sharma, 2014⁷ which found that 60.5% of the health facilities had medical staff according to standard. But, these results disagreed with the finding of the study done in Teaching Baghdad Hospital⁸, and the study conducted in Pakistan hospitals by Manzoor *et al.*, 2019⁹, which found that all hospital departments had lacked of medical staff.

The results of this study indicated that (80.0%, and 50.0%) of the studied hospitals had passing scores ($\geq 50\%$) for the trained paramedical, and physicians on premarital counseling respectively. These results are consistent with the finding of the study done in Teaching Baghdad Hospital⁸, which showed that the studied hospital had a fair score regarding the presence of the health staff (trained, and skill).

The present study demonstrated the average percentage of administrative indicators was 77.7%. This percentage inconsistent with the findings of a previous study done in Uganda by Kiran *et al.*, 2018¹⁰ which found that the average percentage of administrative indicators was 90%. A possible explanation for this result is that the average percentage is within the level of the pass while the result of the comparator study is within the good level. this refers to the difference between the two studies.

The results of this study indicated that all the studied hospitals had a good evaluation score (100%) regarding Welcoming the couple. This result is in agreement with the finding of the study done in Teaching Baghdad Hospital ⁸, which showed that Welcoming the patient was present in all the studied hospital departments.

In this study, a high percentage (90.0%) of the studied hospitals had a pass level regarding explain the action plan of paramedic and the agreement of couple to investigation. This result consistent with the published study findings done in Oman by Al-Kindi *et al.*, 2019¹¹, who revealed 87.2% of the participants have agreed an investigation. But, these results disagreed with a previous study findings done in Kuwait by Al-Enezi and Mitra, 2017¹², which found that 56.0% of the health workers did not explain the procedure of the premarital screening program.

A high percentage (90.0%) of the studied hospitals had a pass level concerning the discussion of Paramedic the abnormal finding with the physician. This result consistent with a similar study finding conducted in Egypt by Yousifa *et al.*, 2018¹³, which found that 98.3 % of the participants indicate discuss problems or concerns about health with the provider.

The present study demonstrates that (60.0%, and 50.0%) of the studied hospitals had a pass level ($\geq 50.0\%$) regarding arrange the next appointment for counseling and rearrange a separate appointment for each partner in case of abnormal findings respectively. These results agree with a previous study's findings done in Bahrain by Shaikha *et al.*, 2009¹⁴, which found that 82% of the participants faced no problems in taking an appointment and 89% had no problems during the interview. A possible explanation for these results is that some of the hospitals studied have a huge crowd of auditors, which leads to missed appointments.

The current study reveals only 50.0% of the studied hospitals had a pass level regarding review lab reports referring accordingly to premarital guidelines for most common hemoglobinopathies in Iraq and premarital guidelines for STIs. This result is in agreement with another study's findings conducted in Taiwan by See *et al.*, 2010¹⁵, which found that only 44.3% of Participants indicate an explanation of the lab report was done by a physician in PMS clinic. A possible explanation for this finding is that nearly half of the hospitals studied do not have premarital screening guidelines.

Regarding making the required counseling, the study found that all the studied hospitals had a good evaluation score (100.0%). This result is in agreement with the study findings conducted in Tehran by Abbasi-Moghaddam *et al.*, 2019¹⁶, which found that 78.3% of the studied sample was good for Physician's consultation. But, disagrees with the published study findings done in Taiwan by See *et al.*, 2010¹⁵, which found that only (36.6%) of the participants had genetic counseling by physician.

In this study, all the studied hospitals had a full evaluation score (100%) concerning explanation the plan of action and discussion of results. This result disagreed with the published study findings done in Taiwan by See *et al.*, 2010¹⁵, which found that (42.0%) of participants indicate explain examination results by the physician in PMS clinic.

The present study demonstrates the average percentage of duties and tasks of a physician towards couples was 93.7%. This percentage was consistent with the findings of a previous study done in Iraq by Lafta *et al.*, 2018¹⁷, which revealed that 53.4% of physicians had poor performance due to working conditions in the health institutions.

Conclusions:

- 1- The average percentage for the premarital screening program is resting on a pass level for all the studied hospitals.
- 2- The current study revealed that half of the studied hospitals have no trained physician on premarital counseling, while most hospitals have trained paramedic on premarital counseling.
- 3- There are only two indicators have weak level (<50%) for the absence of the lab in PMS unit, and lack coordinator who send the test results to court.

Recommendations:

- 1- Overall, there is a need to strengthen the quality of the premarital screening service in the studied hospitals reach to good level.
- 2- The cooperation between all branches of the health directorates is important to improve the weak indicators that fall within the level of their duties.
- 3- Designing appropriate strategies for improving the performance of paramedical and physician by continues training courses and creating appropriate working conditions.

Ethical Clearance: None

Source of funding: None

Conflict of Interest: None

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