

Perception and Satisfaction of Premarital Screening and Genetic Counseling Among Future Couples of Governmental Outpatient Clinics

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Abstract: Premarital Screening and Genetic Counseling program is a universal activity that considered the most effective limitation means of birth affected genetic disorder children, through minimizing the marriage of the carriers of the blood genetic disorder. Aims: To evaluate perception and satisfaction of future couples attending governmental Premarital clinics concerning Premarital Screening and Genetic Counseling. Methodology: A cross-sectional design was conducted from beginning of January 2017 to December 2017. Future couples who participated in the PMSGC program and be present three governmental premarital clinics, Port Said, Al-Nasar and Port Fouad general hospital that offer the PMSGC programs during the days of the interview as well as couples who decided to participate in the research. The researchers followed ethical considerations and data collected by using an interview questionnaire which asked regarding socio-demographic data, information, attitude and pleasure with the program. Results: The sample included 600 participants their knowledge was mostly low. Regarding attitudes, Most of the participants (94%) agreed on the significance of the premarital program. Concerning the satisfaction levels of those who aided from the program, the items related to the providers of the services were considered the most effective on the sample satisfaction 76.91%, and then the items related to the provided services 49.14%. Conclusion: future couples information concerning PMSGC program was inadequate. It is necessity of broadcasting of information about premarital care program through official education and different types of mass media.

Keywords: Premarital, genetic, screening, Satisfaction

Date of Submission: 29-06-2018

Date of acceptance: 17-07-2018

I. Introduction

Premarital Screening and Genetic Counseling (PMSGC) program is unique health prevention and promotion activities. It includes tests that couples intend to get married mandatory done for genetic disorder, sexual conveyed disease avoid transmitting of any hereditary or sexual transmitted disease to their children. It is an important step towards protecting society and allowing people to enjoy life⁽¹⁻³⁾

Moreover genetic disorder testing premarital is considered a vital issue due to accumulative number of kids affected with blood transmitted or genetic disease. In Egypt, hereditary disorders and congenital malformation are rapidly becoming a major health concern. It is estimated 2.8% in urban areas to 8.4% in rural, this is predominantly attributable to consanguineous marriage⁽⁴⁾.

Consanguineous marriage is one of the most crucial issues discussed by PMC. It is marriages between blood relatives or marriages between second cousins or closer. In Egypt 35.3% consanguineous marriage 85% of them first cousins. Several extensive studies have shown that among the consanguineous marriages, there is an increased risk of pediatric disorders including; congenital abnormalities affect an estimated 1 in 33 infants, mental retardation, malformations, blood disease (Hemophilia, Thalassemia) up to 7.65 million, nearly 9% of the population cystic fibrosis, chronic renal failure and neonatal diabetes mellitus.⁽⁵⁻¹¹⁾

In Egypt, PMSGC services were introduced since 1946 as a main component of marital and child health services. Ministry of health started to provide such services free of charge for prospective spouses in either maternal and child health centers or specialized health centers.⁽⁹⁷⁾

Generally PMSGC should include history taking, laboratory investigation, physical examination and immunization. History including socio demographic data as "age, education, occupation & consanguinity", medical & surgical and psychological history, significant systemic illness such as "hypertension, diabetes mellitus & heart diseases", history of mental illness, sexual transmitted diseases and genetic problems "thalassemia & sickle cell" congenital anomalies" mental retardation". Investigations include complete blood calculation (red & white blood cells, hematocrit, platelets & hemoglobin), Venereal Disease Laboratory test,

syphilis, viral hepatitis B (+/-C) and for AIDS. Blood sugar in cases of suspected diabetes. Urine examination for albumin and sugar, as well as bacteriological examination especially for females.⁽¹²⁾

Furthermore physical examination "neck for thyroid, chest, abdomen, vital signs " & body mass index. Moreover the premarital immunization against rubella is given at least three months before marriage. This provides protection against reinfection by rubella during pregnancy with possible development of serious teratogenicity effects and congenital malformation in the fetus. Also, advice couple to be vaccinated against hepatitis.⁽¹³⁾

All couples with marriage plans are required to be tested and to have the appropriate counseling before completing their marriage. However, PMSGC services still very limited and most of the couples get married without any preparation which may increase the maternal and fetal risks^(14,15)

Perception: Are the identification, organization, and interpretation of sensual information to understand the offered information, or is the awareness of elements and interpreted in the light of experience⁽¹⁶⁾

A number of influences factors shape perception as factors can reside in the perceiver, in the object or target being perceived or in the context of the situation in which the perception is made perceiver factors such as motives, attitudes, interests, experience, & expectations) also factors in the circumstances such as period of time and setting. Factors in the target for example background, proximity, & similarity.⁽¹⁷⁾

Up to the present time, no researches done in Port Said to evaluate future couple's knowledge, attitude satisfaction about the PMSGC program. So a study about PMSGC is immediately required.

Aims

To evaluate future couple's knowledge, attitude and to determine their satisfaction about the PMSGC program,

Research Question

- What is the future couples perception regarding PMSGC program?
- Are future couples satisfied with PMSGC program?

II. Methodology

A cross-sectional study was conducted from the beginning of January 2017 till December 2017. Three governmental hospital's chosen in Port Said city were selected in which provide PMSGC and future couples referred for getting marriage licenses, namely El Nasr hospital, Port- Fouad and Port Said general hospital, selected hospitals directors permission and dean of the Faculty of nursing were obtained.

The following equation-used in calculating sample:

$$\frac{Z^2 \times p \times q}{d^2}$$

By way of the prevalence of PMSGC knowledge among the future couples (p) unidentified, it was valued to be 50% = 0.5, q = 1 - p = 0.5, and 0.04 value selected as an appropriate limit of exactness or precision (d). At a 95% confidence limit, the considered size of the study sample is 600 members. Convenient sampling used to select the subjects for the study

The data collected through the days of the week till to reach the estimated number of the sample. All future couples present in outpatient clinics during the day of the interviews asked for taking part in research.

Ethical issues were followed during all phases of the study; the researchers maintained anonymity and confidentiality of the members. The researchers introduced themselves to the participants and briefly explained the nature and objective of the study to every one before participation and obtained an oral consent. Participants were assured that the information obtained during the study was confidential and used for the research purpose only.

Tool validity and reliability had done.

Tools of data collection:

An interview questionnaire asked about subjects socio-demographic characteristics. Respondents asked about relative relation (consanguinity) and family history of hereditary transmissible diseases, its manifestations and complications thalassemia, sickle cell anemia and glucose 6 phosphate dehydrogenase deficiency (G6PD) their knowledge about PMSGC program and its sources, Knowledge of investigations Knowledge regarding hepatitis and AIDS

. Participants' attitude measured by using 5 point Likert' scale according to *Ibrahim, (2010)* used after modification done by the researcher. (10) Items to evaluate future couples' attitude concerning PMSGC.

A- Knowledge was scored as the following:

- Incorrect answer scored as one

- Correct answer scored as two

The total knowledge score from 1 to 30, the knowledge score was considered inadequate <20 and adequate score, ≥ 20

B- Accepting scoring system was calculated as follow:

- Disagree scored as one
- Uncertain scored as two
- Agree scored as three.

The satisfaction was assessed regarding the providers, the program and the service provided.

Pilot Study:

It was done on 10% (60) future couples of total sample size and was excluded from it for testing clarity, arrangement of the items, applicability of the data collection tools and time consuming for each tool. Items were been rearranged and modifications to the tools were done based on the findings of the pilot study. Some questions were excluded, rephrased and then the final form was developed

III. Data Analysis

The collected data were revised, and analyzed by using SPSS version 20. The suitable test was used and statistical significance at $P < 0.05$.

IV. Results

The sum number of 600 future couples registered in the study, with mean age of 30.93 ± 5.47 years. Approximately two fifth of the sample (38.7%) had a college degree or above, 76.7% were from the urban. about (71%) had a monthly income enough. Consanguinity founded in (32.0%) of them.

Fig.1: depicts the participants' source of knowledge regarding the program. The vast majority (90%) of participants had heard about the PMSGC program. Family or friends were cited 56.8%, Approximately 23% obtained their information from television, magazines and newspapers. The Internet was sources of information for approximately one fifth of the participants. Street advertisements and radio were source of information for 5%.

Fig. 2: future couples knowledge about PMSGC program total score was generally low down. 74% inadequate and only 26.0% adequate knowledge score.

Table 1: illustrates that, there were highly significant relations between participants' knowledge scores regarding the PMSGC and the studied variables. It is apparent from the table that participants aged <30 years had a higher proportion (23.7%) of adequate knowledge scores when compared with those aged ≥ 30 years (34.1%) with a statistically significant difference ($p=0.02$). There was no statistically significant difference regarding the level of knowledge between the sexes. Urban had significantly higher knowledge scores than rural. Future couples who had enough monthly income demonstrated significantly higher knowledge scores compared with none enough income.

Table 2: demonstrates that, (93.3%) of studied sample were agreed to utilize PMCEs, PMSGC decreases occurrence of genetic and STDs, Consanguinity is considered the main causes of genetic diseases also PMCEs must be confidential. in the same table (65.0%) were agreed on apply a law that discontinue marriage when future couples carrying inherited disease

Table 3: demonstrates relation between total attitude score and socio-demographic characteristics of the studied sample. As evident from the table, it was found that statistically significant between future couples total attitude and age and level of education ($p < 0.001^*$). No statistically significant differences could be revealed in sample between sex, monthly income and residence.

Distribution of the client satisfaction according to the provided services is illustrated in table (4). The great majority of the clients were satisfied about all items related to the clinic especially in cleanliness of the examination room, availability of the methods at the clinic, a statistically significant difference was found.

Table 5: demonstrates the distribution of the sample according to the future intentions of the sample. It was found the great majority of the sample has intention to revisit the clinic in the future and recommend visit of the clinic to other. A statistically significant difference was found.

Table 6: illustrates the distribution of the future couple's satisfaction according to the providers of the services. The great majority of them were satisfied about all items related to the providers of the services especially in respect of the provider to couples, the confidentiality a statistically significant difference was found. Table (7) describes the factors affecting couple satisfaction in clinics. As the table indicates, the items related to the providers of the services were considered the most effective on the sample satisfaction 76.91%, and then the items related to the provided services 49.14%.

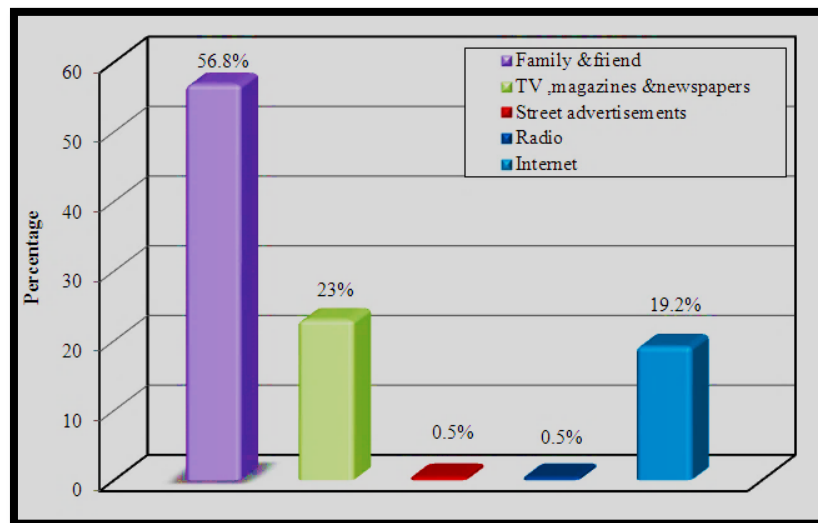


Fig.1 Sources of information among future couples about pre-marital screening

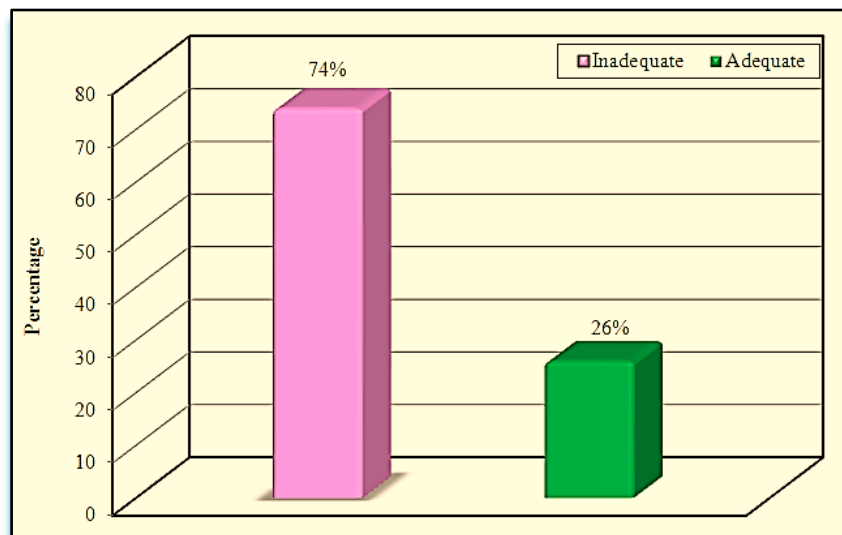


Fig. (1):Frequency distribution of studied sample according to total knowledge score regarding PMSGC (n=600).

Table (1) Relation between general characteristics of studied sample and their total knowledge (n=600).

Variable	Total Knowledge				Total(n=600)	X ² (P)
	Inadequate		Adequate			
	No.444	74 %	No.156	26%		
Age						
<30	295	77.6	85	22.4	380	7.140*(0.008*)
≥30	149	67.7	71	32.3	220	
Sex						
Male	240	80.0	60	20.0	300	11.227*(0.001*)
Female	204	68.0	96	32.0	300	
Residence						
Urban	314	77.3	92	22.7	406	7.280*(0.007*)
Rural	130	67.0	64	33.0	194	
Education						
Less than university	310	84.4	33	16.6	277	83.709*($<0.001^*$)
University or above	134	57.7	98	42.3	232	
Income						
Enough	304	71.4	122	28.6	426	5.315*(0.021*)
Not enough	140	80.5	34	19.5	174	
Parental consanguinity						
Yes	150	75.0	50	25.0	200	0.156(0.693)
No	294	73.5	106	26.5	400	
Genetic diseases of family						
Yes	95	76.7	29	23.3	124	0.693(0.531)
No	377	79.2	99	20.8	476	
Family history of chronic disease						
Yes	212	80.0	53	20.0	265	8.881*(0.003*)
No	232	69.3	103	30.7	335	

□²Chi square test and p values

*: Statistically significant at $p \leq 0.05$

Table (2): Future couples attitude regarding PMCEs (n=600).

Attitude	Disagree		Uncertain		Agree	
	No.	%	No.	%	No.	%
1. Using PMSGC is important for future couples.	37	6.2	3	0.5	560	93.3
2. PMSGC has a significant influence on the future health.	427	71.2	99	16.5	74	12.3
3. PMSGC decrease occurrence of genetic or inherited and STDs	37	6.2	3	0.5	560	93.3
4. Appropriate time of carrying out PMSGC, just before marriage.	427	71.2	99	16.5	74	12.3
5. Consanguinity is considered the main causes of genetic diseases.	3	0.5	37	6.3	560	93.3
6. When future couple carrying inherited disease or-STDs, decision of marriage must be left for them	199	33.3	11	1.7	390	65.0
7. PMSGC essential be obligatory.	48	25.4	21	11.1	120	63.5
8. Religious personnel should adopt the concepts of PMSGC in their talk	108	18.0	48	8.0	444	74.0
9. PMCEs must be confidential.	37	6.2	3	0.5	560	93.3
10. applying law to discontinue marriage if future couples carrying inherited disease is essential	199	33.3	11	1.7	390	65.0

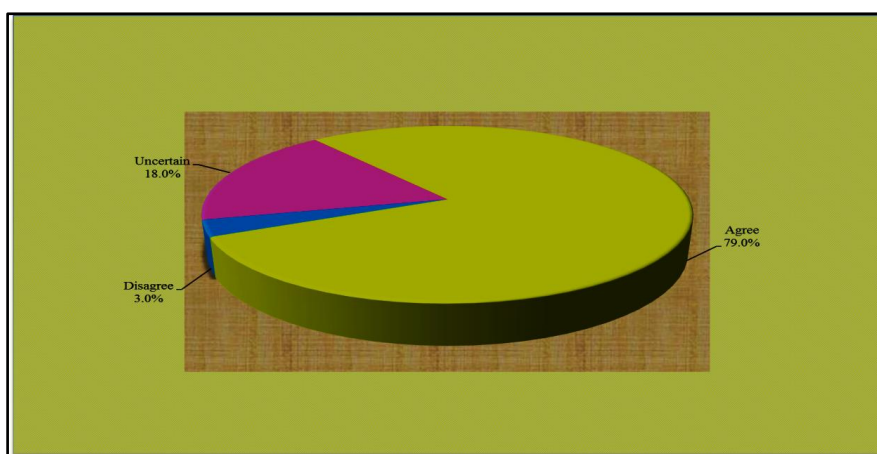


Figure (3): Distribution of total attitude score of the studied sample regarding PMCEs.

Table (3): Relation between total attitude score and socio-demographic characteristics of the studied sample (n = 600)

demographic datasocio-	Total attitude score										χ ²	p
	Strongly agree (n = 133)		Agree (n =341)		No opinion (n =108)		Disagree (n = 3)		Strongly disagree (n = 15)			
	No.	%	No.	%	No.	%	No.	%	No.	%		
Age												
▪ ≤ 30	73	54.9	150	44.0	86	79.6	0	0.0	0	0.0	61.642*	<0.001*
▪ >30	60	45.1	191	56.1	22	20.4	3	100.0	15	22.5		
Level of Education												
▪ Less than University	74	55.7	231	67.8	50	46.4	3	100.0	10	66.6	20.092*	<0.001*
▪ University or above	59	44.4	110	32.3	58	53.7	0	0.0	5	33.3		
Sex												
▪ Male	75	56.4	221	64.8	57	52.8	2	66.7	8	53.3	6.655	0.155
▪ Female	58	43.6	120	35.2	51	47.2	1	33.3	7	46.7		
Monthly income												
▪ Enough	133	100.0	336	98.5	107	99.7	3	100.0	15	100.0	3.801	0.537
▪ Not Enough	0	00.0	5	1.5	1	0.9	0	0.0	0	0.		
Residence												
▪ Rural	23	17.3	90	26.4	17	15.7	1	33.3	9	60.0	18.101*	MC p= 0.001*
▪ Urban	110	82.7	251	73.6	91	84.3	2	66.7	6	40.0		

Table (4) future couples satisfaction of provided services

Items	Satisfied		NotSatisfied		Chi-Square	P-value
	N	%	N	%		
Place of the clinic in the hospital	552	92.5	48	7.5	423.360	0.00*
Waiting place	480	80.0	120	20.0	216.000	0.00*
Privacy in the examination room	480	80.0	120	20.0	216.000	0.00*
Cleanliness of the examination room	480	80.0	120	20.0	216.000	0.00*
Place for counseling	480	80.0	120	20.0	216.000	0.00*
Quality place for taking samples	534	89.6	66	10.4	365.040	0.00*

(*)Statistically significant at p<0.05

Table (5) Client's satisfaction of providers produces services

Items	Satisfied		NotSatisfied		Chi-Square	P-value
	N	%	N	%		
-Ability to discuss problems or concerns about health with the provider	590	98.3	10	1.7	560.667	0.00*
-Health education of the provider	517	86.4	82	13.6	315.902	0.00*
- Dealing of staff responsible for counseling	485	80.99	115	19.10	228.167	0.00*
- The confidentiality	597	99.5	3	0.5	588.060	0.00*
-Time spend with the provider during health education	577	96.2	23	3.8	511.527	0.00*
-Quality of the examination in the examination room	565	94.2	35	5.8	468.167	0.00*
-Privacy during giving health education from the provider	597	99.5	3	0.5	588.060	0.00*
-Way of dealing of &respect of the provider to couples	600	100.00	0	0.00	-	-

Table (6) sample future intentions of clinic utilization

Items	Yes		No		Chi-Square	P-value
	N	%	N	%		
-Intention to utilize the clinic again for family member	577	96.1	23	3.9	511.527	0.00*
-Recommend this clinic to other	582	97.0	18	3.0	530.160	0.00*

Table (7) Factors affecting client satisfaction in premarital clinics

The variables	Total	Items related to the provided services	Items related to the providers of the services	Items related to the future intensions of the clients
Total		.701**	.877**	.355**
Items related to the provided services	49.14%		.283**	.213**
Items related to the providers of the services	76.91%	8.01%		.220**
Items related to the future intensions of the clinic	12.60%	4.53%	4.84%	
	Proportion of shared variance (R²)			

** Correlation is significant at the 0.01 level (2-tailed).

V. Discussion

PMSGC programs are mandatory implemented by future couples to deliberate marriage, learn about their health and to reduce at risk marriages and consequently disease prevalence⁽¹⁸⁾. In the Arabian nations countries high proportions of consanguineous marriages have caused a high occurrence of inherently disorders⁽¹⁵⁾. It ranges from one fourth to two thirds especially first cousin marriage⁽¹⁹⁾. This finding is agree with our results, where the consanguinity rate constitutes one third of the participants. it is slightly greater than that reported in Abdel- Meguid et al. study.⁽²⁰⁾

Our study in accordance to *Ibrahim, (2010)*⁽²¹⁾ who indicated at her study about "Knowledge and Attitude of University Students Regarding Premarital Counseling and Examinations" about more than half of parents' had heredity disease. As the same line with *Abd-Allah, (2016)*⁽²²⁾ who reported that, there was heredity disease of the studied sample .Her study about perception assessment regarding premarital screening among Ain shams University students.

The results of our study evidently showed that the future couples' total knowledge was inadequate in various aspects PMSGC such as what it includes and what diseases it targets. This finding is steady to what was reported in similar studies in Saudi Arabia and Syria⁽²³⁻²⁵⁾. Teaching must be focused towards improving future couple knowledge of these issues.

Previous study was congruent with *Abd-Allah, (2016)*⁽²²⁾ who indicated at her study that more than three quarters of the studied sample had incorrect answer-and *Ibrahim, (2010)*⁽²¹⁾ who said that more than two thirds of study sample had incorrect knowledge about places providing premarital counseling and examination at her study.

Moreover the previous study finding *Ahmed et al., (2012)*⁽²⁶⁾ was on congruent who that, the entire study sample had poor knowledge about genetic disorders, premarital investigations, this study done for secondary school students in rural area in Egypt. additionally it in same line with *Hosny et al., (2010)*⁽²⁷⁾ who reported in a study about the most encountered groups of inherited disorder in Giza Governorate that, the study sample perceptions regarding premarital testing, lack of information that may prevent them for undertaking procedure concerning premarital testing.

The previous study in contrary with *Mohamed, (2015)*⁽²⁸⁾ who said that more than half respectively correct knowledge in relation to having information about premarital care, definition, importance & components at her study "Premarital care: Health promotion program for female Students in Ain Shams University Hostel".

This finding was compatible with *Coonrod et al., (2009)*⁽²⁹⁾ in a study done in Mexico, including knowledge and attitude about preconception care, the study demonstrated high knowledge scores in the pretest which may due to the medical nature of participants.

Concerning members' attitudes were favorable, as the common thought that PMS is important and agreed to carry it. This is similar to what has been reported by *Mohamed, (2015)*.⁽²⁸⁾ The majority of sample will perform tests to avoid transmission of diseases to their children. This reflects that the future couples had a respectable thoughtful of the preventive value of PMS-tests.

Making PMSGC as an obligatory procedure was favored by about one quarter and around one-third of them favored laws that prevent marriage in case of positive results. This is far lower than what was found in Saudi Arabia by *Abd Al Azeem et al., (2011)*⁽³⁰⁾ and *Al Farsi (2011)*⁽³¹⁾ in a study aimed to assess attitudes for premarital counseling among students of Abha Health Sciences College, Saudi Arabia, they discovered that, premarital counseling was accepted by most of study sample, majority agreed on making PMS as a mandatory procedure before marriage and two third agreed on legal interference in case of positive results.

Previous study finding was inverse to *Abd-Allah, (2016)*⁽²²⁾ in her study which aimed to assess perception regarding premarital screening among Ain-shams University students which indicated that, the majority of her studied sample had negative attitude about the reason of arises diseases as the result of consanguinity marriage.

PMS might create some social annoyance and break the autonomous of the family. The participants' response in case of positive PMS results showed that quarter will continue with marriage for various reasons such as not to interfere with God's will, love and family pressure. Therefore, this negative attitude might be improved by intense education especially for those at high risk of transmitting genetic disorders.

The result of present study indicated that more than two thirds of studied sample's knowledge sources had received their knowledge from the family and friends followed by mass media. The previous corresponds with our about premarital counseling among single female university students in Jeddah. Also the previous study finding was corresponded to a study done by *Abd Al Alzeem et al., (2011)*⁽³⁰⁾ who reported that, TV was selected as the chief source of knowledge at his study among medical students in Fayoum University "Promotion of knowledge and Attitude towards Premarital Care. Also the previous study finding was agreed with *Ibrahim, (2011)*⁽³¹⁾ who reported the first main source of knowledge was mass media followed by Academic study.

While The previous study finding was in in opposite to *Mohamed, (2015)*⁽²⁸⁾ who reported that main sources of knowledge, before implementation the intervention program less than one fifth & more than one third were school or university curriculum & television respectively.

Meanwhile the previous study finding on the opposite side of a study done for Omani University students by *Alkinidi et al., (2012)*⁽³³⁾ who stated that, the main sources of information were more than one third for school/college, followed by more than one third for media, one third for family and friends and less than one third for health services at his study " University Students Knowledge and Attitude towards Premarital Screening Program".

The inconsistency in the existing and earlier researches may due to low down number of useful TV programs on the subject of PMSGC or from the additional category of media in previous studies.

Our current study indicated that, there was a highly statistically significant observation between sample' total knowledge, their educational level, their residence and significant difference to their presence of family disorders. Also the current study indicated that there was insignificant difference to their gender.

The previous study was in the same line with *Mohamed, (2015)*⁽²⁸⁾ who revealed a significant difference between students' total knowledge and the educational level in her study "Premarital care: Health promotion program for female students in Ain Shams University Hostel". And in accordance with *Abd EL-Ghany, (2010)*⁽³³⁾ who indicated that, the residence didn't influence on the level knowledge towards premarital counseling and care (PPMC) among Hadhramout University students.

The previous study finding was reversed with *Abd-Allah, (2016)*⁽²²⁾ who stated a highly statistically significant between students' total knowledge, their marital status & residence in her study about "Assessment of perception regarding premarital screening among Ain- shams University students".

The present study revealed that, there was statistical significant between the sample' family medical history with chronic diseases and their total knowledge. This study finding was in opposite with studied conducted by *Ibrahim, (2010)*⁽²¹⁾ who indicated that, there was no statistical significance between the students' family medical history with chronic diseases and their total knowledge.

On arranging and designing any preventive program several attributes should be reflected guarantee of prosperity and achievement. For Premarital screening there is an extraordinary need to concentrate on the target population their satisfaction will affect their choices influence their decisions in life including their decision on spouse. Significance of PMSGC can't exaggerated the same number of nations have demonstrated its value and viability in diminishing the rate of diseases tested or tried for⁽³⁴⁻³⁵⁾

On the topic of future couples satisfaction of the program, the greater part oversample were satisfied for confidentiality, sample taking place, and zones for waiting inside hospitals. In Bahrain, clients informed about service of premarital counseling were generally brilliant.⁽³⁶⁾

VI. Conclusion

Current study findings shown future couple total knowledge about PMSGC program inadequate. However, mostly clear positive attitude regarding premarital counseling and examination. Also, their knowledge found to be affected by socio-dimorphic data (education, age, residence-&income). The future couples were satisfied with certain parts however certain areas of the program need further additional development.

Recommendations

- Increasing awareness of community towards this concept has to be devised with keeping in mind that it should be directed mainly to single inexperienced young persons in collaboration with religious leaders.
- There is a necessity of broadcasting of information about premarital care program through official education and different types of mass media.
- Further researches are needed to assess effect of future couple friend and parents' communication on their perception about premarital health.

- Further researches are needed to evaluate availability, accessibility, and other aspects of health care service quality should be improved to ensure better utilization.

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