SciencePG
Science Publishing Group

Improving Knowledge and Attitude of Medical and Non-Medical Students at El Minia University Regarding Premarital Screening and Counseling

Hoda Abedel-Azim Mohamed[1], Sahar Mansour Lamadah[2, *], Azza Mohamed Hafez[1]

[1]Obstetric and Gynecological Nursing Department, Faculty of Nursing, El Minia University, El Minia, Egypt
[2]Obstetric and Gynecological Nursing Department, Faculty of Nursing, Alexandria University, Alexandria, Egypt

Email address:
dr.saharlamadah@yahoo.com (S. M. Lamadah)

Abstract: Background: Premarital screening is a worldwide activity that aims to diagnose and treat unrecognized disorders and reduce the transmission of diseases to couples and children, it is considered as the primary preventive approach for couples who planned for conception. Premarital counseling is offered to young couples on their way to marriage in order to guide, educate and prepare them for the establishment of a healthy family. Promotion and protection of adolescent females from reproductive health hazards are very essential because they are the future couples. Aim of the study: The aim of this study were to assess knowledge and attitude toward pre-marital screening and counseling among medical and non- medical female students at El Minia University and evaluating the effectiveness of educational program on improving the students' knowledge and attitude toward pre-marital screening and counseling. Subjects and Methods: A quasi-experimental design was used. It was conducted at two medical and two non-medical faculties at El Minia University. A convenient sample of 500 students enrolled in the above mentioned settings was recruited. Results It can be observed that, there was a statistical significant improvement regarding total knowledge and attitude. The total knowledge score increased from 32.3% to 54.0% among medical students and from 21.0% to 41.0% among non-medical students and the difference is statistically significant. In addition, the positive attitude increased from 54.7% to 66.0% among medical students and from 49.0% to 57.5% among non-medical students. The difference was statistically significant. Conclusion: It can be concluded that Although there was an improvement in the level of knowledge for all students in both groups after health education but they still had insufficient knowledge about premarital screening and counseling. While more than one half from each group expressed favorable and positive attitude toward premarital screening and counseling. Recommendations: On the light of these findings, it is recommended to conduct health education services about premarital screening among high schools and university students at El Minia governorate to increase the population awareness and influence their attitudes toward Premarital screening and counseling services.

Keywords: Knowledge, Attitude, Pre-Marital Screening

1. Introduction

Pre-marital screening is defined as conducting examination before marriage in order to identify if there is any genetic blood diseases such as sickle-cell anemia (SCA) and Thalassemia, and some infectious diseases such as hepatitis B, C and HIV "Aids". This is in order to provide medical consultation to the future couples and to give options and alternatives before soon-to-be married with the aim of helping them to plan for a healthy family. Pre-marital screening is a part of every couple's intelligent wedding plan that provides them with opportunity for prevention, management and treatment of diseases. Nowadays, premarital screening and counseling (PMSC) became compulsory by law in many Arab countries including Egypt. [1,2,3] Consanguineous marriage is still high in Egypt (35.3%) especially among first cousins (86%). However, the frequency varies by region. This favored the appearance of complex phenotypes of genetic disorders. [4]

The main objectives of pre-marital screening are limitation of the frequency and spread of inherited genetic disorders. In

addition, decreasing the burden of having newly affected children and raising the awareness and knowledge of the community regarding the pattern of inheritance and genetic disorders and appropriate methods for selection of the equitable services. Moreover, pre-marital screening helps families to avoid psychosocial problems that result from the presence of the affected child in the family. Furthermore, it disseminates awareness regarding the concept of comprehensive and healthy marriage. [5,6,7,8] Components of the premarital package according to integrated standards of practice, settled by Ministry of Health and Population (MOHP), in 2005 are premarital counseling, premarital history taking and examination and premarital investigations [9].

Health education is one of the tools that provide individuals with the knowledge, skills, and motivation to make healthier lifestyle choices. However, there is a big lack in knowledge related to reproductive health even among educated persons [10, 11]. The reproductive health service is lagging behind current attitudes and demands of university students. Although students' attitudes towards sexual matters are liberal, their knowledge about reproductive health and premarital knowledge is still limited [12]. A preliminary step for the design of proper health education strategy is to know how much the target group knows about health problems and what their attitudes towards this important element of health care [13].

2. Significance of the Study

Many young women and men enter marriage with insufficient information on sexuality, reproduction, and family planning. There is also a big lack of knowledge related to reproductive health even among educated persons. Very little attention has been given today to educate society at large in developing countries about development of human genetics and their application in health and wellbeing. Information about genetics usually reaches the public through the sensationalism and distortion by the mass media. [14] Improving the peoples' knowledge will improve their understanding and cooperation which is capable of decreasing the number of marriages among carriers. It is important to assess and improve knowledge and attitude of female students because they are the future mothers in order to ensure safe motherhood. The promotion and protection of their health especially from reproductive health hazards is very essential. Multiple studies were conducted in Egypt and other countries addressing knowledge and attitude of youth towards PMC but fewer studies were designed to assess the impact of health education intervention among youth in Egypt [1, 15, 16].

Aim of the current study: The aims of this study were to

- Assess knowledge and attitude toward pre-marital screening and counseling among medical and non-medical female students at El Minia University.
- Evaluate the effectiveness of educational program on improving knowledge and attitude toward pre-marital

screening and counseling among medical and non-medical female students at El Minia University.

- Research hypotheses: It is hypothesized that:
- There is lack in Knowledge of female students regarding premarital screening and counseling.
- More than 25% of female students will have negative attitude regarding premarital screening and counseling.
- Health education intervention will improve the knowledge and attitude toward pre-marital screening and counseling among medical and non -medical female students at El Minia University.

3. Subjects & Methods

3.1. Research Design

A quasi-experimental design was used.

3.2. Study Setting

The present study was conducted at two medical and two non-medical faculties at El Minia University.

3.3. Subjects

A convenient sample is composed of 500 of female students enrolled in the previous mentioned settings.

The sample was divided as follows:

Two hundred students were recruited from the medical faculties. While three hundred students were recruited from non-medical faculties.

3.4. Tools Used for Data Collection

Tools of data collection used in current study were consisted of:

A - Self-administered questionnaire (pre/post educational program)

It was designed by the researchers after reviewing relevant literatures. It consists of two parts as the following:

Part I: was concerned with' socio demographic characteristics of the students such as age in years, residence, family size and level of father's education and mother's education…etc.

Part II: was concerned with students' knowledge regarding premarital screening and their sources of knowledge. it includes:

- Definition of premarital screening and counseling (PMSC)
- Importance of PMSC
- Components of PM Package
- Suitable time of PMSC
- Providers of premarital screening.
- Places that provide of premarital screening and counseling

3.5. The Scoring System

The students answers related to knowledge were scored and calculated. According to the answers, students responses

were evaluated using the model key answer sheet which was prepared previously by the researchers. Students' scoring of knowledge regarding premarital screening and counseling was classified as follows: two grades for complete correct answers for each question, one grade for incomplete correct answers, while the wrong answer was scored zero. The total items of knowledge were 6 items was given 12 grades for complete correct answers. Total students' score which ranges from 7 to 12 grades (60% and more) were classified as having high level of knowledge, scores from 4-6 grades (from 35% to less than 60%) for complete correct answers were described as an average level of knowledge while score less than 4 grades (< 35%) for complete correct answers were described as low level of knowledge.

B- An attitudinal assessment scale:

A three point Likert- scale (agree, Neutral, disagree) was developed to assess the students' responses to attitude statements toward premarital screening and counseling among medical and non-medical groups. It consisted of (14) statements to which the students were asked to respond to one of the choices. A scoring for students' attitude toward premarital screening and counseling was consisted of given three grades for agree, two grades for neutral and one for disagree. A scoring was given to each question and the total attitude score was 42 grades. Score of equal or more than 25 (60%) conveys a positive attitude toward pre-marital counseling, while a total score of 15 -< 25 (35%-< 60%) conveys neutral attitude and a total score of less than 15 (35%) conveys negative attitude toward pre-marital counseling.

3.6. Validity and Reliability

The current study tools were submitted to three academic nursing experts in the field to test the content validity of the tools, modifications were carried out according to the academic nursing experts' judgment on clarity of sentences and the appropriateness of the content. Tools reliability was tested using Alpha Cronbach test. Its result was 0.88 for tool (A) and 0.85 for tool (B) which indicates an accepted reliability of the tools.

3.7. Administrative Design

After taking the approval from Scientific and Ethical Research Committee which reviewed and approved the study an official letter clarifying the purpose of the current study and accepting the process of data collection was directed from the dean of the faculty of nursing / El Minia University to the deans of medical and non -medical faculties requesting their approval for data collection.

3.8. Pilot Study

A pilot study was carried out on 10% of female students at the previously mentioned settings to assess the current study tools for its clarity, validity and the time required to fill the tools. In addition necessary modifications were done.

3.9. Procedure

I Assessment phase:

First, the researchers divides the students into small groups according to their academic schedule. Then the researchers hold a meeting with each group in their faculty during one of their free classes or between lectures to introduce themselves and briefly explained the nature and the purpose of the study. After obtaining the acceptance from the students to participate in the current study, the researchers provided an overview and clarification about the assessment tools questions to the whole class. Then, The Self –Administered Questionnaire and Attitudinal Assessment Scale were distributed to each student to assess their knowledge and attitude toward pre-marital screening and counseling. The questionnaire took about 20-25 minutes to be completed.

II Implementation phase:

After assessing the students' knowledge and attitude, the total sample was divided into 20 groups. Each group ranged from 20-25. Health education sessions were given to the students in the form of lectures and group discussion by using audio-visual aids, each session of one hour duration. Each week, two or three groups received two lectures, over a total period of eight weeks for the whole groups. The lectures included information about the definition, importance of premarital care, target group, providers of pre-marital care and premarital care package which included counseling, examination, investigations, premarital vaccination, genetic counseling and places that provide pre-marital care. An additional 15 minutes were assigned at the end of the lecture for an open discussion with the students about this topic. Brochures containing brief points about premarital care were distributed to students at the end of session.

III Evaluation Phase:

The researchers used the same questionnaire of assessment phase one month after implementing the educational sessions with the same students that participated previously in order to detect the level of students' knowledge after health education and if there were any changes in their attitude. The data collection lasted over four months starting from the beginning of November 2014 to the end of February 2015.

3.10. Ethical Consideration

Acceptance of the students to participate in the current study was obtained. All students were informed that their participation is voluntary and that the collected data would be only used for the purpose of the current study, as well as for their benefit.

3.11. Statistical Analysis

Data was collected, coded, tabulated and analyzed, by using the SPSS computer program application for statistical analysis. Descriptive statistics was used to calculate percentages and frequencies. Chi square (X2) test was used to estimate the statistical significant differences between variable. A significant P-value was considered when is less than 0.05 and it was considered highly significant when P-value less than or equal 0.01.

4. Results

As shown in table (1), more than three quarters (79.57%) of the medical group's age ranged between 20-25 years as compared to (61.7%) of non-medical group. Moreover, the majority of medical students (96.0) lived in urban area compared to (91.7%) of non-medical students. Less than one half of medical students (49.0%, 44.0%) have parents' education at university level compared to (26.3%, 18.7%) from non-medical students respectively.

As shown in table (2), a statistical significant difference was found pre and post program regarding premarital knowledge related to the definition, importance, components and suitable time of Premarital screening and counseling. The correct and complete answers increased from 30.0% to 60.5%, from 41.0% to 57.0%, from 8.5% to 23.0% and from 34.0% to 47.0% among medical students respectively regarding the previous items. Also, among the non medical students, The correct and complete answers increased from 23.7% to 54.0%, from 13.7% to 36.3%, from 7.3% to 19.7% and from 29.3% to 34.7% respectively.

Table (3) reveals that 47.5%, 32.0% from medical students and 49.6%, 12.3% from non-medical students respectively reported physician and social worker as providers of premarital screening and counseling. In addition (70.0%) from medical group compared to (75.3%) from non-medical group mentioned that the Maternal and Child Health Center MCH is the place that provides premarital screening and counseling.

Table (4) illustrates the students' attitude toward premarital screening and counseling. It can be observed that there is a significant improvement in the students' attitude from pretest to post test. This improvement were in attitude statements such as acceptance of premarital screening and counseling (from 51.0% to 67.5%) respectively among medical students and (from 36.0% to 56.0%) respectively among non-medical students. Also, carrying out premarital screening if her future husband asks her to do it (from 34.0% to 51.0%) respectively among medical students and (from 32.7% to 55.0%) respectively among non-medical students. In addition to obligation to carry out premarital screening (from 37.0% to 51.5%) respectively among medical students and (from 38.0%to 50.7%) respectively among non-medical students. Agreement on regulations which prevent marriage in case of positive screening (from 31.0% to 40.5%) respectively among medical students and (from 25.7% to 43.7%) respectively among non-medical students. Regarding, the importance of including premarital screening in university education, it was (from 42.5% to 52.5%) respectively among medical students and (from 32.7% to 52.7%) respectively among non-medical students. As regards to the intention to notify the future husband in case of presence of chronic diseases and genetic diseases in the family, it was (from 43.5% to 62.0% and from 44.5% to 68.0%) respectively among medical students and (from 42.7% to 61.7% and from 38.3% to 66.0%) respectively among non-medical students. A minority from both groups

agreed about the completion of marriage if the future husband is infected with genetic diseases (from 5.5% to 15.0%) respectively among medical students and (from 10.7% to 17.3%) respectively among non-medical students. In addition, students attitude also increased regarding items related to acceptance to perform premarital screening in case of consanguineous marriage only and termination of marriage in case of asking for premarital screening from the future husband (from 52.0% to 71.0% and from 12.5% to 15.0%) respectively among medical students compared to (from 60.0% to 62.3% and from 17.3% to 20.7%) respectively among non-medical students.

Table (5), illustrates the total knowledge and attitudinal score among the two groups. It can be observed that, there was a statistical significant improvement regarding total knowledge and attitude scores from pre to posttest among the two groups. The high knowledge score increased from 32.3% to 54.0% among medical students and from 21.0% to 41.0% among non-medical students and the difference is statistically significant. In addition, the positive attitude increased from 54.7% to 66.0% among medical students and from 49.0% to 57.5% among non-medical students. The difference was statistically significant.

As shown in (table 6), 57.6% of students who aged less than 20 years had high level of knowledge scores about premarital screening and counseling compared to (44.8%) of the student's age ranged between 20-25 years. The difference was statistically significant (P = 0.012). In addition, large percent of students (80.1% and 54.7%) from different age group respectively expressed positive attitude toward premarital screening and counseling. The difference was statistically significant (P = 0.002).

Table (7) indicated that (51.0%) of students who lived in urban areas had high level of knowledge score about premarital screening and counseling compared to (18.2%) of the students who lived in rural areas, the difference was statistically significant (P = 0.002). In addition, 61.0% of students who lived in urban areas expressed positive attitude toward premarital screening and counseling compared to 18.2% of students lived in rural areas, the difference was statistically significant (P = 0.01).

Table (1). *Distribution of the students' by their socio- demographic characteristics.*

Item	Categories	Medical (n=200)		Non-Medical (n=300)	
		N	%	N	%
Age (years)	< 20 year	41	20.5	115	38.3
	20 - 25	159	79.5	185	61.7
Place of residence	Urban	192	96.0	275	91.7
	Rural	8	4.0	25	8.3
Father's education	Read and write	8	4.0	28	9.3
	Intermediate	47	23.5	120	40.0
	Secondary	47	23.5	73	24.3
	University	98	49.0	79	26.3
Mother's education	Read and write	10	5.0	60	20.0
	Intermediate	48	24.0	141	47.0
	Secondary	54	27.0	43	14.3
	University	88	44.0	56	18.7

Table (2). *Distribution of the study groups according to premarital knowledge.*

Item	Pre test				Post test				Medical	Non-Medical
	Medical (n=200)		Non-Medical (n=300)		Medical (n=200)		Non-Medical (n=300)		X^2	X^2
	N	%	N	%	N	%	N	%	P	P
Definition of Premarital screening and counseling										
Complete correct answers.	60	30.0	71	23.7	121	60.5	162	54.0	15.3	17.102
Incomplete correct answers.	68	34.0	106	35.3	75	37.5	112	37.3	0.002*	0.001*
Wrong or don't know	72	36.0	123	41.0	4	2	26	8.7		
Importance of PMSC										
Complete correct answer	82	41.0	41	13.7	114	57	109	36.3	12.58	10.52
Incomplete correct answer	71	35.5	81	27.0	63	31.5	160	53.3	0.001*	0.0047*
Wrong or don't know	47	23.5	178	59.3	23	11.5	31	10.3		
Components of PM Package										
Complete correct answer	17	8.5	22	7.3	46	23	59	19.7	18.25	19.25
Incomplete correct answer	85	42.5	98	32.7	91	45.5	138	46	0.001*	0.001*
Wrong or don't know	98	49.0	180	60.0	63	31.5	103	34.3		
Suitable time of PMSC										
During educational years at college	68	34.0	88	29.3	94	47.0	104	34.7	6.89	5.68
Immediately before marriage	77	38.5	98	32.7	88	44.0	155	51.7	0.024*	0.038*
I Don't know	55	27.5	114	38.0	18	9.0	41	13.6		

Table (3). *Distribution of the students by their knowledge regarding to the providers of premarital Counseling and places that provide premarital screening and counseling.*

Item #	Medical n=200		Non-Medical n=300	
	N	%	N	%
Providers of premarital screening.				
Physician.	95	47.5	149	49.6
Nurses.	55	27.5	37	12.3
Social worker.	64	32.0	37	12.3
Audio visual media.	44	22.0	28	12.6
Don't know	30	15.0	64	18.0
Places that provide of premarital screening and counseling.				
MCH	140	70.0	226	75.3
Hospitals	35	17.5	30	10.0
Private Clinic	50	25	14	4.7
Clubs	9	4.5	10	3.3
Academic education	28	14.0	28	9.3
I Don't know	1	0.5	0	0

Multiple responses questions

Table (4). *Percent distribution of the students by their attitude toward premarital screening and counseling.*

Item	Pre test		Post test		Medical	Non-Medical
	Medical (n=200)	Non-Medical (n=300)	Medical (n=200)	Non-Medical (n=300)	X^2	X^2
	%	%	%	%	P	P
Acceptance of premarital screening and counseling						
Agree	51.0	36.0	67.5	56.0		
Neutral	26.0	32.7	21.0	20.7	.66	11.23
Disagree	23.0	31.3	11.5	23.3	0.0121*	0.011*
carrying out premarital screening if your future husband asks you to do it						
Agree	34.0	32.7	51.0	55.0		
Neutral	46.0	41.7	30.5	28.3	7.11	8.11
Disagree	20.0	25.6	18.5	16.7	0.0102*	0.003*
Agreement that premarital screening is an obligatory procedure before marriage						
Agree	37.0	38.0	51.5	50.7		
Neutral	34.0	28.7	32.5	16.0	6.98	6.25
Disagree	29.0	33.3	16.0	33.3	0.0119*	0.027
Agreement on regulations that prevent marriage in case of positive premarital screening						
Agree	31.0	25.7	40.5	43.7		
Neutral	24.5	28.7	27.5	27.7	6.92	5.98

Item	Pre test		Post test		Medical X^2	Non-Medical X^2
	Medical (n=200)	Non-Medical (n=300)	Medical (n=200)	Non-Medical (n=300)		
	%	%	%	%	P	P
Disagree	44.5	45.6	32.0	28.6	0.0309*	0.038*
Acceptance to attend lectures about premarital screening and care						
Agree	46.5	39.0	57.0	51.7		
Neutral	29.0	32.7	26.0	31.7	7.01	7.25
Disagree	24.5	28.3	17.0	16.6	0.011*	0.058
Importance of including reproductive health in secondary education						
Agree	39.5	38.7	54.0	50.7		
Neutral	34.0	34.7	27.5	28.3	1.25	6.01
Disagree	26.5	26.6	18.5	21.0	0.36	0.031*
Importance of including premarital counseling and care (PMCC) in university education						
Agree	42.5	32.7	52.5	52.7		
Neutral	34.0	39.0	27.5	27.3	6.20	7.09
Disagree	23.5	28.3	20.0	20.0	0.025*	0.014*
Intention to notify the future husband in case of presence of chronic diseases in the family						
Agree	43.5	42.7	62.0	61.7		
Neutral	35.5	32.0	22.5	21.7	6.98	7.98
Disagree	21.0	25.3	15.5	16.6	0.025*	0.008*
Intention to notify the future husband in case of presence of genetic diseases in the family						
Agree	44.5	38.3	68.0	66.0		
Neutral	37.0	40.7	20.5	19.3	12.03	10.23
Disagree	18.5	21.0	11.5	14.7	0.001*	0.003*
Acceptance to continue relation with future husband after infected with genetic diseases						
Agree	5.5	10.7	15.0	17.3		
Neutral	26.0	28.3	42.5	40.0	14.42	12.52
Disagree	68.5	61.0	42.5	42.7	0.001*	0.002*
Acceptance to go through management in case of some hereditary diseases						
Agree	52.5	70.3	77.0	81.7		
Neutral	41.0	15.0	8.5	10.7	10.23	6.98
Disagree	6.5	14.7	14.5	7.6	0.001*	0.021*
In case of consanguineous marriage only I will attend genetic screening						
Agree	52.0	60.0	71.0	62.3		
Neutral	21.0	20.7	21.0	25.0	6.98	7.110
Disagree	27.0	19.3	8.0	12.7	0.0319*	0.011*
Willing to change decision about marriage based on premarital screening results						
Agree	42.0	48.3	57.5	66.0		
Neutral	38.5	28.3	33.0	24.3	7.01	6.89
Disagree	19.5	23.4	9.5	9.7	0.002*	0.017*
Termination of marriage in the case of asking for premarital screening from the future husband						
Agree	12.5	17.3	15.0	20.7		
Neutral	32.5	24.7	36.0	27.3	2.32	3.10
Disagree	55.0	58.0	49.0	52.0	0.125	0.098

Table (5). *Distribution of the student's by their total level of knowledge and attitude toward premarital screening and counseling.*

Knowledge & attitude	Pre test		Post test		Medical X^2	No Medical X^2
	Medical	Non-Medical	Medical	Non-Medical		
	n= 200	n= 300	n=200)	n= 300	P	P
	%	%	%	%		
Total level of knowledge						
High	32.3	21.0	54.0	41.0	9.98	8.98
Average	34.3	45.0	34.0	42.5	0.001*	0.002*
Low	33.4	34.0	12.0	16.5		
Total level of attitude						
Positive	54.7	49.0	66.0	57.5	6.98	7.21
Neutral	22.7	32.5	21.7	22.5	0.012*	0.003*
Negative	22.6	18.5	12.3	20.0		

Table (6). The relationship between students' age and total level of knowledge and attitude toward premarital screening and counseling after program.

Age	<20 (n= 156)		20-25 (n= 344)		Total (n=500)		X2	p. value
	No	%	No	%	No	%		
Total level of knowledge								
High	90	57.6	154	44.8	244	48.8		
Average	55	35.3	132	38.4	187	37.4	6.01	0.012*
Low	11	7.1	58	16.8	69	13.8		
Total level of attitude								
Positive	125	80.1	188	54.7	313	62.6		
Neutral	20	12.8	90	26.1	110	22.0	8.25	0.002*
Negative	11	7.1	66	19.2	77	15.4		

Table (7). The relationship between students' residence and total level of knowledge and attitude toward premarital screening and counseling after program.

Students' residence	Rural (n= 33)		Urban (n= 467)		Total (n= 500)		X2	p. value
	No	%	No	%	No	%		
Total level of knowledge								
High	6	18.2	238	51.0	244	48.8		
Average	8	24.2	179	38.3	187	37.4	8.98	0.002*
Low	19	57.6	50	10.7	69	13.8		
Total level of attitude								
Positive	6	18.2	285	61.0	313	62.6		
Indifferent	12	36.4	98	21.0	110	22.0	6.58	0.01*
Negative	15	45.5	84	18.0	77	15.4		

5. Discussion

Premarital screening and counseling is one of the important strategies for prevention of genetic disorders, congenital anomalies, and common medical psychosocial marital problems [16]. The aim of the current study was to assess knowledge and attitude toward pre-marital screening and counseling among medical and non- medical female students at El Minia University and evaluating the effectiveness of educational program on improving the students' knowledge and attitude toward pre-marital screening and counseling. Results of the current study indicated that the age of more than three quarters from medical and more than one half of non-medical students ranged between 20-25, during this age we can encourage and teach the students the preventive health behavior for improving knowledge and attitude regarding premarital screening. At the same time, medical students will be the future health care providers who will provide such services to the public through primary health care centers. These results is consistent with Farahat, et al. (2014) who reported that the age of the studied students ranged from 18 to 24 years [17].

In relation to the pre-test student's knowledge regarding premarital screening and counseling, the results of the current study revealed that less than one third of the students in both groups reported complete correct answers regarding definition of premarital screening and counseling. Moreover, more than two fifth of medical students compared to less than one fifth of non-medical group reported complete correct answers as regards to importance of premarital screening and counseling. A minority from both groups know components of pre marital package. These results are in line with a study conducted in king Abdul-Aziz university, Jeddah which

found that university students had inadequate knowledge about the national PMS program and less than one-third from the students knowledgeable about disorders tested by the PMS [18]. The results of the present study were incongruent with Coonrod et al (2009), Gharaibeh and Mater (2009) and a cross-sectional survey conducted among university students in Nigeria (2006) who found that less than two thirds of respondents (63.%) knew the benefits of genetic counseling [19,20,21].

Regarding suitable time of PMSC, about one third or less from both groups mentioned that, it should be performed either during educational years at college or immediately before marriage. These results are contradicted with the results of a study done by Al Kindi. Et al (2012) who reported that the majority of the participants preferred to do it just before marriage. This may illustrate that PMS is actually considered as an accessory to complete the process of marriage preparation and not as an essential step [22]. There is a statistical significant difference between student's knowledge pre test and post test among the two groups. This indicated that the health education intervention applied in the current study succeeded in improving the knowledge of students significantly. These results are in agreement with different studies conducted by Abd Al Azeem S et al (2011), Mevsim et al(2009), Elsinga et al (2008) and Roa et al (2008) [1,23,24,25].

Regarding the total student's knowledge score, the present study revealed that small percent of medical and non-medical groups had a high level of knowledge score about PMSC in the pretest phase. This lack of knowledge may be attributed to insufficient basic information obtained during their formal education in relation to this specific area of knowledge. This result agrees with Abd El-Ghany et al (2010), who mentioned that few numbers of non-medical and medical groups had a

good level of knowledge score about premarital counseling. It is also in line with the study done by Ibrahim et al (2011), who reported that students' knowledge about PMS program was low in the pre-test [16, 26].

As regards to the student's attitude toward premarital screening and counseling, the results of the present study showed significant improvement in most items of attitudinal scale among studied groups of students was detected during the post test. Favorable attitude were observed as regards to acceptance of PMSC and intention to carry out it and to notify the future husband in case of presence of chronic and genetic diseases in their family". A minority from both groups accept to continue relation with future husband if he is infected with genetic diseases. Also more than one half from both groups were willing to change decision about marriage based on premarital screening results. These results reflect that the students had a good understanding of the preventive value of PMS. The current results are in accordance with the results of a study done by Farahat et al. (2014) who mentioned that participants attitudes toward PMC were favorable (53.9%) and bout 74% believed that PMC is useful [17]. Also, Al-Aama. (2010) studied women's attitude toward mandatory national premarital screening for hereditary hemolytic disorders, he reported that women had stronger attitude toward the implementation of premarital screening (73.6%) [27].

The results of current study are also in line with a study done by Ibrahim et al. (2011) who reported that 64.6% of students agreed on that, in case of discovering presence or carrying inherited disease, marriage decision must be left for freedom of the couple, and about two-thirds of students (67.1%) agreed that when test results show presence of genetic diseases, the marriage decision should be changed [16]. Moreover Al Kindi et al (2012) reported that, almost half of the participants will decide depending on the probabilities of transmitting the disease to their children and quarter of them will continue with marriage for different reasons such as not to interfere with God's will, love and family pressure while only 16% will terminate engagement and also 16% did not know what to do [22].

In the post test results, making PMSC as an obligatory procedure before marriage was favored by about one half from each group and more than one-third of them favored putting laws and regulations in place to prevent marriage in case of positive results. These results are in accordance by Al Kindi et al (2012) who reported the same results. [22] In the current study, more than one half of the students in both groups agreed on the importance of including premarital counseling and care (PMCC) in secondary and university education. This implies that they are eager to know more about the subject. These results are consistent with Abd El-Ghany et al (2010) who reported that, 73.0% of students agreed about the inclusions of family life education in schools and university [26].

As regarding to the overall posttest student's attitude towards premarital screening, the results of the current study indicated that about two thirds of the medical students had

expressed positive attitude toward premarital screening. This may be related to the nature of their study as health professionals. These results agree with results of many other studies as the study done by Ibrahim et al. (2011), they reported that there is an overall positive attitude towards the program; 99% of female students either strongly agreed or agreed on the importance of PMS [16]. In addition an educational program conducted among female students in King Saud University, Riyadh, found that students' attitude was positive (81.8% of students in the Pre-test and 85.9% in the Post-test approved the importance of PMS) [28].

Regarding the relationship between students' age and total level of knowledge and attitude toward premarital screening and counseling, the results of present study showed that, more than one half of students aged less than 20 years had high level of knowledge scores and most of them had positive attitude towards premarital screening and counseling compared to 44.8% and 54.7% respectively of students aged from 20-25 years. This is disappointing, since the older students are supposed to be well informed and had positive attitude towards this issue that directly influence the nature of their present as well as future life. This indicates the importance of introducing such information in secondary schools and university curricula to provide young people with important health message. Some studies have already noted that certain demographic factors have an effect on whether or not premarital couples participate in premarital screening. These factors include gender, age, ethnicity, residence, profession, education, and monthly income, but these factors only explain a limited part of variation in decisions to participate [29-32].

In the present study, it seems that, residence influenced on the level of knowledge and attitude of students toward PMSC, as about one half of students who lived in urban areas had high level of knowledge score about premarital screening and counseling compared to (18.2%) of them who lived in rural areas. In addition, 61.0% of students who lived in urban areas expressed positive attitude toward premarital screening and counseling compared to less than one fifth of students who lived in rural areas. These results may be due to in many rural societies, there is a lack of access to information and limited opportunities to increase and improve one's own knowledge level. These results are in line with Wang et al. (2013) who strongly confirmed that residence play an important role on the attitude and decision to participate in premarital screening [33]. The results of the present study are contradicted by Abd El-Ghany et al (2010) who reported that the residence did not influence on level of knowledge or attitude toward premarital counseling and care among students in his study [26].

6. Conclusion

It can be concluded that Although there was an improvement in the level of knowledge for all students in both groups after health education intervention but they are still had insufficient knowledge about premarital screening

and counseling. While more than one half from each group expressed favorable and positive attitude toward premarital screening and counseling. Younger students and those who lived in urban had high knowledge and positive attitude toward premarital screening and counseling.

Recommendations:

1) Based on the findings of the current study, the following recommendations are suggested:

2) Conducting health education services about premarital screening and counseling among students in high schools and universities to improve their knowledge and influence their attitude toward PMSC.

3) Using all available mass media to provide accurate information and health guidance about different aspects of premarital screening and counseling.

4) Specific recommendation for future research to replicate this study in other faculties with different students to increase the ability to generalize the findings.

References

[1] Abd-Al-Azeem S, Elsayed E, El-Sherbiny N, Ahmed L: Promotion of knowledge and attitude towards premarital care: An interventional study among medical student in Fayoum University. Journal of Public Health and Epidemiology 2011; 3(3):121-128.

[2] Al Sulaiman A, Al Mishari M, Al Sawadi A, Owaidah M.: Knowledge and attitude toward the hemoglobinopathies premarital screening program in Saudi Arabia: population-based survey. Hemoglobin 2008; 32(6):531—8.

[3] Ministry of Health and Population [MOHP]. Standards of Practice for Integrated MCH/RH Services 1st ed. Available at http://www.drguide.mohp.gov.eg/newsite/E-Learning. 201.

[4] Shawky R, Elsayed N, Ibrahim D, Seifeldin N. Profile of genetic disorders prevalent in northeast region of Cairo, Egypt. The Egyptian Journal of Medical Human Genetics 2012; 13: 45-62.

[5] Al-Farsi O, Al-Farsi Y, Gupta I, Ouhtit A, Al-Farsi K, 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 2014; 14-380.

[6] Alenazi S, Ali H, Alharbi M, Alenizi A, Wazir F. Prevalence of thalassemia and sickle cell disease in northern border region of Saudi Arabia. Kashmir J Med Sci 2015; 1(1):3-6.

[7] Alswaidi FM, O'Brien SJ. Premarital screening programmes for haemoglobinopathies, HIV and hepatitis viruses: review and factors affecting their success. J Med Screen 2009; 16:22–8.

[8] Teebi A, Farag T. Genetic Disorders Among Arab Populations. 2nd. Berlin: Springer. 2010.

[9] Ministry of Health and Population [MOHP] (2005). Standards of Practice for Integrated MCH/RH Services: First Edition. Available at http://www.drguide.mohp.gov.eg/newsite/E-Learning.

[10] Nazli A, Umit A. Pilot project to develop and assess health education program for type 2 diabetes mellitus patients. Health Education Journal 2005; 64(3): 39-46.

[11] Mahaini R. Improving maternal health to achieve the Millennium Development Goals in the Eastern Mediterranean Region: a youth lens. East Mediterranean Health Journal 2009; 14: 97-105.

[12] Chen B, Lu YN, Wang HX, Ma QL, Zhao XM, Guo JH, Hu K, Wang YX, Huang YR, Chen P. Sexual and reproductive health service needs of university/college students: updates from a survey in Shanghai, China. Asian. J. Androl.2008; 4: 607-615.

[13] Alnaif M, Alghanim S. Knowledge and attitudes towards health education: implications for primary health care services in Saudi Arabia. J. Fam. Commun. Med.2009; 16(1): 27-32.

[14] Bastani F, Hashemi S, Bastani N, Haghani H. Impact of preconception health education on health locus of control and self-efficacy in women. East Mediterranean Health Journal, 2010; 16(4), 11-17.

[15] Odelola, J. Adisa O, Akintaro A, knowledge of pre-marital genetic screening among students of osun state polytechnics in Nigeria. journal of research in education and society 2011; 2(3):108-115.

[16] Ibrahim N, Al-Bar H, Al-Fakeeh A, Al Ahmadi J, Qadi M, Al-Bar A, Milaat W: An educational program about premarital screening for unmarried female students in King Abdul-Aziz University, Jeddah. J Infect Public Health 2011, 4:30-40.

[17] Farahat T, Shaheen H, Mohamed H, Mohaseb M. Knowledge and attitude of students in Menoufia University, Shebin Elkom city toward premarital care in 2012. Menoufia Medical Journal 2014, 27:347–352.

[18] Al-Aama J, Al-Nabulsi B, Alyousef A, Asiri N, Al-Blewi S. Knowledge regarding the national premarital screening program among university students in western Saudi Arabia. Saudi Med J. 2008 Nov; 29(11):1649-53.

[19] Coonrod D, Bruce N, Malcolm T, Drachman D, Frey K. Knowledge and attitudes regarding preconception care in a predominantly low-income Mexican American population. American Journal of Obstetrics and Gynecology 2009; 200 (6): 686.e1–686.e7.

[20] Gharaibeh H, Mater FK.: Young, Syrian adults' knowledge, perceptions and attitude to premarital testing. Journal Int Nurse Rev 2009; 56(4):450-5.

[21] Moronkola O, Fadairo R. University students in Nigeria: Knowledge and attitude toward sickle cell disease, and genetic counseling before marriage. Int Q Common Health Edu., 2006-2007; 26(1): 85-93.

[22] Al-Kindi R, Al-Rujaibi S, Al-Kendi M. Knowledge and attitude of university students towards premarital screening program. Oman Med Journal 2012; 7(4):291-296.

[23] Mevsim V, Guldal D, Gunvar T, Saygin O, Kuruoglu E. Young people benefit from comprehensive education on reproductive health, Eur. J Contracept. Reprod. Health Care 2009, 14(2): 144-152.

[24] Elsinga J, Jong-Potjer C, Pal-de Bruin M, Cessie S, Assendelft J, Buitendijk S. The effect of preconception counseling on life style and on the behaviour before and during pregnancy. Women's Health Issue 2008; 18: 117–S125.

[25] Rao R, Lena A, Nair S, Kamath V, Kama A. The effectiveness of reproductive health education among adolescent girls: A school based intervention study in Udupi Taluk, Karnataka. Indian. J. Med. Sci.2008, 62(11): 439-443.

[26] Abd El-Ghany G, Gad A, Al - Haddad A. Knowledge and Attitude about Pre-Marital Counseling among Hadhramout University Students. Zagazig Nursing Journal 2010; 6 (11):46-65.

[27] Al-Aama J: Attitude towards mandatory national premarital screening for hereditary hemolytic disorders. Health Policy 2010; 97(1):32-7.

[28] Alam A. Perception of female students of king saud university towards premarital screening.Journal of Family and Community Medicine 2006; 13(2):83-8.

[29] Alswaidi F, Brien S. Premarital screening programmes for haemoglobinopathies, HIV and hepatitis viruses: review and factors affecting their success. J Med Screen. 2009; 16:22–28.

[30] Yuan P, Zhao Y. Research on the factors and countermeasures of premarital screening in Xicheng region in Beijing. Chin. J Family Planning 2009; 6:343–346.

[31] Wang Q, Yin W, Gao W, Meng M, Li D. Analysis on awareness and factors of premarital screening. Chin J Public Health. 2010; 26:495–496.

[32] Yu Q, Su B, Zhang J, Liu G, Sun K, Zhang C. Analysis on the condition after the implementation of voluntary premarital screening. Chin J Public Health. 2009; 25:871–872.

[33] Wang P, Wang X, Fang M, Weele T. Factors influencing the decision to participate in medical premarital examinations in Hubei Province, Mid-China, BMC Public Health 2013; 13:217.