

Investigating The Knowledge, Attitudes And Practices Of Nursing Students Regarding A Pre-Marital Program In Jeddah.

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Abstract: Premarital program (PMP) is a worldwide activity aiming to diagnose, treat unrecognized disorders, and reduce transmission of diseases to couples which may affect the quality of marriage and the health of future generations. It worth mentioned that none of the reviewed literature has addressed the knowledge ,attitude and practice of premarital program among nursing students in KSA.Nursing students as a future health care providers may encourage regular checkups or testing for people with a medical condition that runs in their family. The aim of our study is to investigate the Knowledge, Attitude and Practice of Nursing Students Regarding a Pre-marital Program in Jeddah.

A quantitative cross-sectional design was used .The study sample accounted 160 nursing students. Non probability, convenient sampling technique was used .The study tool was devoleped by the researchers. The study questionnaire consists of six parts: sociodemographic data of the students and their families, student's knowledge and attitude about the PMP, intention of engaged students toward PMP, experience toward PMP among married students. The mean age of the students was 21.34 years,majority of them in stream 1, However, about one quarter of them had family history of hereditary diseases,and about three quarter of them Knew about PMP and its availability in KSA. In additionthe total knowledge score of the partecipants regarding PMPshow that less than three quarter of the partecipants(70%) have good knowledge while the rest of the studied sample (30%) have poor knowledge,the total attitude score regarding PMP shows that the majority (90%) of the studied sample have positive attitude while only (9%) of the studied sample have negative attitude, and those who have neutral attitude represent only (1%) of the sapmle.while most of engaged students had an intention to do PMPand all of married sutudents conduct PMP.Based on the result of the study we conclude that , Most of the participant had a good knowledge, attitude as well as good practice concerning PMP.Significant relation was observed between the knowledge and attitude of the students.No significant relation was observed between the educational level and occupation of the participant's parents and their attitude

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I. Introduction

Having Healthy mothers and children are valued hopes and dreams of families and the main concern of every society. Evidence reveals that promotion of the women and Men`s health before pregnancy can promote the health of their offspring ⁽¹⁾. Premarital program (PMP) is a worldwide activity aiming to diagnose, treat unrecognized disorders, and reduce transmission of diseases to couples which may affect the quality of marriage and the health of future generations ⁽¹⁾. PMP is one component of preconception care, which is apreventive primary approach applied to address different health issues and current national challenges ⁽²⁾.

Rahman, MM defined Pre-marital program (as a panel of test in which couple that are going to get married are tested for genetics, infectious and blood transmitted diseases to prevent any risk of transmitting any diseases to their children) ⁽³⁾.While Whitehead Defined PMP as conducting examination for new future couples in order to identify the risk of having genetic blood diseases such as sickle-cell anemia (SCA) and Thalassemia, as well as some infectious diseases such as hepatitis B, C and HIV "AIDS". This is for the purpose of providing medical counselling on the odds of transmitting these diseases to the other marriage partner or the children in the future, and providing options and alternatives before soon-to-be married with the aim of helping them to build a healthy sound family ^(4,5). PMP contains different items in different regions. In general PMP includes the testing for serious hereditary diseases, infectious diseases, and psychiatric disorders ⁽⁶⁾.The components of pre-marital screening program include vaccination, counseling ,nutrition, genetic counseling, advice regarding contraception ,modification of chronic disease , treatment of infection and medication to decrease teratogenic

risk⁽⁷⁾. Pre-marital program is one of the most important strategies for preventing of genetic disorders, congenital abnormalities and several medical, psychosocial marital problems. It can provide an opportunity to intervene according to the identified risk⁽⁷⁾. WHO reported that Approximately, 240 million people are heterozygous for inherited hemoglobinopathies including sickle cell disease and thalassemia⁽⁸⁻¹¹⁾. However, the importance of pre-marital screening among Arabic countries is to reduce the genetic disorders and multifunctional health problems such as diabetes and obesity and their impact on the social, emotional psychological and cost dimensions that occurs in consanguinity marriage⁽¹²⁾. Several studies among the Arabs have indicated that postnatal mortality is higher among offspring of consanguineous parents than among nonrelated parents⁽¹³⁻¹⁴⁾. Several screening programs in the Gulf region and Mediterranean countries have been very effective where some genetic disorders and multifactorial health problems such as diabetes, obesity, and bronchial asthma are common⁽¹⁵⁻²⁰⁾. With specific reference to a country such as Kingdom of Saudi Arabia (KSA), where the consanguineous marriage rate is high which may lead to increase the occurrence of recessive genetic disorders⁽²¹⁾. Evidences by different studies revealed that in KSA, genetic disorders are highly prevalent and very common in the general population^(9,22). To overcome these problems and to reduce their impact on the social, emotional, psychological, and cost dimensions of the family and the health system in KSA, Saudi government offered PMP to young couples on their way to marriage to guide, educate, and prepare them for the development of a healthy family⁽²³⁾. As regard to the application of PMP in KSA, On the 1st of Muharram 1425, the pre-marital examination program started in KSA officially. It was established as a health preventive measure for all Saudis, and the two prospective couples (both male and female) are committed to do the PMP before the wedding to implement the pre-marital examination and display a certificate of pre-marital examination results. However, the prospective couples are not committed to respond to the laboratory results if they want⁽¹⁵⁾. In 2004, this program began as screening program for hemoglobinopathies particularly thalassemias and sickle cell anemia. In 2008 Viral pathogens screening including Hepatitis B and C virus and HIV were added as a prerequisite for producing marriage certificate⁽²⁴⁾. In general premarital screening program in KSA was provided as a national, social, awareness and preventative program with the following objectives: Prevent the spreading of certain genetic blood diseases (thalassaemia gene and sickle-cell anemia) and some contagious diseases (hepatitis B, C and AIDS), reduce financial burdens resulting from treatment costs on families and society, and therefore reduce pressure on health settings and blood banks. As well as raise awareness of healthy marriage concept⁽²⁵⁾.

However, many prospective couples enter marriage with inadequate information on sexuality, reproductive health, contraception and inherited genetic and infectious diseases. There is also a big lack of knowledge related to reproductive health even among educated persons. Improving the peoples' knowledge regarding these issues and particularly regarding PMP will positively effect their understanding and cooperation which is able to decrease the number of marriages among carriers as well as it allows a person to take steps to reduce his or her risk. It is important to assess and improve knowledge and attitude of university students in general as the majority of marriages take place after graduation from university and particularly among female students because they are the future mothers in order to ensure safe motherhood^(12,26-28).

In this regard, multiple studies were conducted globally as well as in Arabic countries addressing knowledge and attitude of youth towards PMP. For example, In Oman a study conducted by AlKindi who studied the Knowledge and Attitude of University Students Towards Premarital Screening Program., the study results revealed that most of the participants (79%) were aware about the availability of premarital screening program in Oman. The main sources of information were: school/college media family and friends. In addition the study revealed that the vast majority of the participants (92%) thought it is important to carry out premarital screening and agreed to do it. Around half of the participants favored having premarital screening as an obligatory procedure before marriage⁽²⁹⁾. Other study was conducted in Tishreen University, Syrian by H. Gharaibeh. The study titled " Young Syrian adults' knowledge, perceptions and attitudes to premarital testing" the study found that the participants had high knowledge about the importance of premarital testing, but they had a limited knowledge about certain aspects such as knowledge related to genetic disease. Also, they found that the participants had a positive attitudes toward a certain aspects of premarital testing, and they had a negative attitude about other aspects⁽²⁶⁾. Other study was conducted in Egypt by Farahata who studied Knowledge and attitude of students in Menoufia University, toward premarital care in 2012. The main result of the study revealed that Students from practical faculties showed more proper knowledge about items of PMP services, examination, and investigation components than students from theoretical faculties, with statistically significant difference. Students from practical faculties showed more positive attitude toward the usefulness and necessity of the service than students from theoretical faculties, with statistically significant difference between the two groups⁽³⁰⁾. On the other hand, only few studies address this issue among medical students as compare to nonmedical students. For example study which addressed the " Knowledge and Attitude about Pre-Marital Counseling among Hadhramout University Students" which was conducted at Hadhramout University Colleges by Mustafa. The study show only 5.5% & 22.5% of non-medical and medical groups of students respectively had high level of knowledge about premarital counseling. Also the study showed that 68.5% & 59.5% of

medical and non-medical students respectively had a positive attitude toward premarital counseling, and the study present that females had high level of knowledge (23.8%) about premarital counseling than males (9.3%). At the end, the study presents that there are statistically significant difference between medical and non-medical students in knowledge and attitude toward premarital counseling .

From the previously illustrated studies we can conclude that the predictors of high knowledge scores and positive attitude were being a health science and female students⁽³¹⁾.

In KSA some studies were conducted to assess the knowledge and attitude of university students toward pre-marital program such as the study that was conducted to explore the attitude to premarital counseling among students of Abha Health Science College at 2002. The result of the study showed that Seventy percent of students showed acceptance of premarital counseling while 13% rejected it. Legalization of premarital counseling was agreed on by 19% compared to 41% who refused it⁽¹²⁾.

other study was conducted to assess the impact of an educational program about premarital screening for unmarried female students in King Abdul-Aziz University, Jeddah. The result of the study showed that Students' knowledge about the program was generally low before the educational campaign. The predictors of high knowledge scores were being a health science student family history of hereditary diseases and income. Regarding attitude, almost all students (99.0%) agreed on the importance of PMP. After the educational program students' knowledge about PMP was markedly improved⁽⁷⁾.

In addition there are other two studies were conducted by Al-Aama to explore the knowledge and attitude regarding the national screening program among university students in western Saudi Arabia. The results of the studies showed that 84% of the responders believed that consanguinity can increases the risk of genetic disease. 56% were aware that hereditary disease could affect any body system as well as the study showed that most of the participants preferred PMP but have some problems and doubts about making the test mandatory and making the results of the test interfere with the individual decision making⁽³²⁻³³⁾.

It worth mentioned that none of the reviewed literature has addressed the knowledge ,attitude and practice of premarital program among nursing students in KSA. However, Students of Health Sciences Colleges especially nursing students who will graduate within few years are in a good position to play a major role as a role model for their families , friends, colleagues in other colleges as well as they can play a crucial role in disseminating the importance of pre-marital screening and educating their families regarding its practical application .In addition, nursing students as a future health care providers may encourage regular checkups or testing for people with a medical condition that runs in their family^(12,27-28). Therefore , the resresearchers decided upon conducting this study to investigate the knowledge, attitude and practice of premarital program among nursing students .

II . Material And Methods

The study was conducted in King Saud bin Abdulaziz university for health sciences in the Westren region, specifically in college of nursing and the college of basic sciences, Jeddah, KSA.

Study design: A quantitative cross-sectional study design was utilized to conduct the study. Data was collected only once and multiple outcomes was studied .

Study Location: College of nursing and the college of basic sciences King Saud bin Abdulaziz university for health sciences in the Westren region Jeddah, KSA.

Sample size: 160 students

Sample size calculation: All nursing students who are registered in student information system (SIS) was invited to participate in the current study. Those who agreed to voluntary participate were accounted a total 160 students out of approximately 260 students as a total population, who were representative of all 8 academic levels.

Sampling technique: Non probability, convenient sampling technique was used to recruit the students in this study. This method is recommended by researchers for using readily accessible subjects who volunteer to participate in the study (LoBiondo-Wood & Haber, 2010)⁽³⁵⁾.

Subjects & Selection Method: All of nursing students affiliated to King Saud bin Abdulaziz university for health sciences were invited to participate in the study. The student is eligible for participation if she is in nursing college, registered during the semester where data was collected and had the willingness to participate.

Procedure methodology

The study subjects were approached after obtaining the list of academic levels and courses from the department of students admission and registration .Arrangement was made with the courses coordinators to set appropriate time to distribute the study questionnar . Students in professional Nursing programs were approached at college of Nursing while the students in the pre-professional years were approached in the college of basic science.

Once the students are recruited and sign the consent form they were asked to fill the study questionnaire after receiving the essential instructions from the researchers. After completing the questionnaire the researchers collected the questionnaires from the students, then data was coded and prepared for statistical analysis.

Moreover the study questionnaire was developed by the researchers after extensive review of Litretures (3,7,36,37).

The tool consist of six parts:

Part 1: Sociodemographic data of the students such as age, residence, marital status, level of education of the students and history of hereditary diseases.

Part 2: Sociodemographic data of the students families such as age, level of education and occupation of both parents, family income, number of family members, and degree of contiguence of parents, as well as having hereditary diseases in the family.

Part 3: Student's knowledge about the PMP which include Know about PMP, availability of PMP in KSA, Suitable time for PMP screening, the investigation done in the PMP, the infectious and hereditary diseases screened in PMP, transmitted hereditary diseases to the offspring's, Carrier parents can have an infected child, PMP reduce the risk of hereditary disease and the cost of treating child with hereditary diseases.

Part 4: Assessing the attitude of the students toward PMP which include 13 statement that explore the attitude of the nursing students toward PMP by using five point likert scale such as PMP is important, PMP is against Islamic roles, PMP will contribute to reduction of prevalence of some genetic disorder and STDs, religious leaders should adopt the idea of PMP in their discussion...ect.

Part 5: Assessing the intention of engaged students toward PMP which include the intention to conduct a PMP and specify the causes if the answer is yes or no.

Part 6: Data about the experience toward PMP among married students which include duration of marriage, Consanguineous marriage, Having children with genetic or infectious diseases, Conducting pre-marital screening, Place of conducted pre-marital screening, satisfaction of the PMP services provided, Did the results of the pre-marital investigation interfere with the marriage decision, the intention to advice others to do pre-marital screening and reasons for not conducting PMP.

Ethical considerations:

The research proposal and questionnaire was submitted to the CON-L research ethics committee for review and give permission to carry out the study. The participants was informed about the purpose of the research and the main instructions was given by the researcher. The informed consent was secured from each participant with complete assurance of their right to withdraw from the study at any time. In addition, the anonymity was assured where a code number was used to label questionnaires. After data collection the questionnaire was handled by the researchers only and kept in secured place.

Statistical analysis

Statistical Package for the Social Sciences (SPSS) program is software to collect and analyze research data as well as present finding in clear and compelling fashion. Descriptive as well as inferential statistics were carried out using SPSS version 20. Descriptive statistics included (mean, SD, frequencies). Person's Product Moment Correlation coefficient was used to test the relationship between the main outcomes (knowledge & attitude) subjects characteristics. For the attitude scale, five likert scale was used giving the following score; 1= strongly disagree, 2= disagree, 3= neutral, 4= agree, 5= strongly agree the highest score means positive attitude. For categorical variables the chi-square test was used. However, for continuous variables, the T-test was used for independent samples.

III. Results

The table no1 shows that more than three quarter of the studied sample were single while only 7.5% of them were married. Regarding the academic stream, the table shows that majority of the studied student were in stream one.

Concerning the educational level of the participant, the table reveals that about half of the participant were junior students while 41.9% of them were senior student and those who were intern students represent 8.8% of the sample.

As regard to residency, the table shows that most of participants live in Jeddah. Concerning the history of hereditary diseases, result reveals that the majority of participants don't have any history of hereditary diseases.

Table no1: shows the sociodemographic data of the participants.

variables	Frequency	Percent
age	Mean : 21.34	Std. deviation: 2.392
Marital status:		
Single	122	76.3
Married	12	7.5
Engaged	26	16.3
Stream:		
1	148	92.5
2	12	7.5
Level:		
Junior	79	49.4
Senior	67	41.9
Intern	14	8.8
Residency:		
Jeddah	133	83.1
Other	27	16.9
Personal history of hereditary disease:		
Yes	12	7.5
No	148	92.5

Sociodemographic data of the participant's family.

Regarding the educational level of the participant's father, the table shows that about two third (65.0%) have secondary education, while (31.9%) of them have tertiary education. Concerning the father's occupation, the result shows that half of them were working, while the other have were not working, either retired (33.8) or not working (16.3%). Regarding the educational level of the participant's mother, the result reveals that (57.5%) have secondary education, while (36.3%) of the have tertiary education. However, about the mother's occupation, slightly more than two third of them (67.5%) were a housewife, whereas, the quarter were working, and the rest (7.5%) were not working. As regard to participant's family income, the table reveals that most of them (81.3%) had enough income, whereas more than one tenth (15.6%) had enough income and they can save.

Regarding the family history of heredity diseases, approximately three quarter of them (73.1%) they don't have any history of heredity diseases.

Table no2: shows the sociodemographic data of the participant's family.

variables	Frequency	Percent
Father's age	Mean :55.47	Std. deviation: 7.564
Educational level of the father:		
Primary	4	2.5
Secondary	105	65.0
Tertiary	51	31.9
Father's occupation:		
Working	80	50.0
Retired	54	33.8
Not working	26	16.3
Mother's age	Mean: 46.94	Std. deviation: 6.099
Educational level of the mother:		
Primary	10	6.3
Secondary	92	57.5
Tertiary	58	36.3
Mother's occupation:		
Working	40	25.0
Not working	12	7.5
Housewife	108	67.5
Family income:		
Enough	130	81.3
Enough and saved	25	15.6

Not enough	5	3.1
Family history of heredity disease:		
Yes		
No	43	26.9
	117	73.1

Student's knowledge about premarital program.

The table no3 reveals that about three quarter (74.4%) of the studied sample were aware about the premarital program, however, (25.6%) of them know about the availability of premarital program in KSA.

The result reveals that more than half (52.5%) of participant don't know about availability regional premarital program clinics in Jeddah.

Approximately all the studied subjects (99.4%) knows about the suitable time for conducting the premarital program.

Regarding knowledge of the students about the services provided in the premarital program the table shows that about one third (31.9%) of participant don't know about the services, however, (49.4%) of them aware about the genetic counseling while (38.1%) of them know about the counseling regarding behaviors, followed by vaccination, treatment of infection and chronic diseases, advice regarding contraception, and nutrition.

Concerning the knowledge about the infectious diseases screened in premarital program, the result reveals that (20.6%) of the studied sample don't know about the infectious diseases screened in premarital program, while about three quarter (70.0%) of the subject report that HIV/AIDS was screened in the program, followed by Hepatitis B virus, sexually transmitted disease and Hepatitis C virus.

As regard to knowledge about heredity diseases screened in the premarital program, the table shows that approximately one third (32.5%) of the participant don't have knowledge about heredity diseases screened in the premarital program, while about two third (63.1%) of them aware about sickle cell anemia, followed by thalassemia and hemophilia.

Moreover, most of the studied sample (81.9%) have knowledge about transmission of heredity diseases to the children, while more than one tenth (15.6%) of them don't have knowledge.

However, less than half of the studied subject (48.8%) report that heredity diseases are incurable.

Also, the result shows that slightly more than three quarter of the studied students (76.9%) aware about that carrier parents can have an infected child, while (16.3%) were not aware.

On the other hand, the table reveals that (74.4%) of the participant report that premarital program reduce the risk of heredity diseases, whereas (60.6%) of them don't know that premarital program reduce the risk of heredity diseases. However, (63.8%) of subjects report that managing a child with heredity diseases has a high psychological effect as well as high cost.

Table no 3: shows the student's knowledge about premarital program.

variables	Frequency	Percent
Aware about premarital program		
o Yes	119	74.4
o No	41	25.6
Availability of premarital program in KSA		
o Yes	114	71.3
o No	46	28.8
Availability regional premarital program clinics in Jeddah?		
o Yes	76	47.5
o No	84	52.5
Suitable time for premarital program		
o Before marriage	159	99.4
o After marriage	1	0.6

❖ knowledge about the services provided in the premarital program		
○ Vaccination	51	31.9
○ counseling	61	38.1
○ Nutrition	19	11.9
○ Genetic counseling	79	49.4
○ contraception	23	14.4
○ Treatment of infection and chronic diseases.	45	28.1
○ I don't know	51	31.9

❖ Knowledge about the infectious diseases screened in PMP		
○ HIV/AIDS		
○ Hepatitis B virus	112	70.0
○ Sexually transmitted disease	97	60.6
○ Hepatitis C virus	97	60.6
○ I don't know	70	43.8
	33	20.6
❖ Knowledge about the heredity diseases screened in the premarital program		
○ Sickle cell anemia		
○ Thalassemia	101	63.1
○ Hemophilia	53	33.1
○ I don't know	47	29.4
	52	32.5
Heredity diseases can be transmitted to the children		
○ Yes	131	81.9
○ No	4	2.5
○ I don't know	25	15.6
Heredity disease are incurable		
○ Yes		
○ No	78	48.8
○ I don't know	22	13.8
	60	37.5
Carrier parents can have an infected child		
○ Yes		
○ No	123	76.9
○ I don't know	11	6.9
	26	16.3
Premarital program reduces the risk of heredity diseases		
○ Yes		
○ No	119	74.4
○ I don't know	8	5.0
	33	60.6

Managing a child with heredity disease has a high psychological effect as well as high cost	<input type="radio"/> Yes		
	<input type="radio"/> No	102	63.8
	<input type="radio"/> I don't know	9	5.6
		49	30.6

Attitude of the students toward premarital program.

The table no 4 reveals that most of the studied sample (85.6%) were strongly agree about the importance of PMP, while the minority of them (2.5%) have a neutral attitude.

Moreover, the result shows that two third of the participant (66.3%) were strongly agree that PMP is not against Islamic roles, whereas small percentage (6.3%) have a neutral attitude.

On the other hand, the result shows that (39.4%) of the sample were agreed that the consanguinity marriage can increase the risk of hereditary diseases, while (29.4%) were strongly agreed, and only (5.6%) were strongly disagreed.

In addition, the table shows that (43.8%) of the participant were strongly agree that PMP will contribute to reduction of prevalence of some genetic and sexually transmitted diseases, whereas slightly more than one third (35.0%) of them were agreed, followed by neutral (12.5%), disagree and strongly disagree (4.4%).

Also, the table shows that about two third (61.9%) of the studied sample were strongly agree that it is important to raise awareness about PMP before marriage to reduce genetic and sexually transmitted disease, whereas the minority (3.1%) of them were disagreed.

Moreover, the result shows that (40.0%) of participant were strongly agreed that religious leader should adopt the ideas of PMP in their discussions, while approximately (31.3%) of them were agreed, and only (3.1%) of them were disagreed.

On the other hand, the table reveals that (35.0%) of studied sample were strongly agreed that Ma 'zoon should has the right to accept conducting marriage contract only if future couple did PMP, while about one third (31.9%) of them have neutral attitude, (23.8%) of them were agreed, and only (3.8%) of them were strongly disagreed.

In addition, the result report that more than half of sample (53.1%) were strongly agreed that it's important to have a law that obligate all future couples to do PMP, whereas only (1.9%) were disagreed.

Although, the result shows that slightly more than quarter (27.5%) of sample were strongly disagreed that no one should obligate any person to conduct genetic testing but only encourage to do, while (21.9%) of them have neutral attitude, and (20.6%) of them were disagreed.

Even more, the table reveals that less than one third (30.6%) of studied sample were agreed that in a case of discovery having or carrying sexually transmitted disease marriage decision must be left for freedom of the couple, while (19.4%) of them have neutral attitude, (17.5%) of them were strongly agreed also (17.5%) of them were strongly disagreed.

In addition, the table shows that (30.0%) of subjects were agreed about test results that shows presence of genetic diseases should change marriage decision, whereas (28.1%) of them were strongly disagreed, and (27.5%) of them have neutral attitude.

Although, the result report that slightly more than quarter (26.9%) of studied students were agreed about the importance to apply a law that stop marriage upon discovery presence of a genetic disease, while (25.6%) of them were strongly agreed, and the quarter (25.0%) of them have neutral attitude.

However, the table reveals that half of studied sample (50.6%) were strongly agreed that PMP doesn't breaks personal privacy, while the minority (4.4%) of them were disagree.

Table no 4: shows attitude of the students toward premarital program.

Variables	Strongly agree		agree		neutral		disagree		Strongly disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
PMP is important	137	85.6	13	8.1	4	2.5	0	0	6	3.8
PMP is not against Islamic roles	106	66.3	22	13.8	10	6.3	8	5.0	10	8.8
related marriage can	47	29.4	63	39.4	33	20.6	8	5.0	9	5.6

increase the risk of hereditary diseases										
PMP will reduce the prevalence of some genetic and STDs	70	43.8	56	35.0	20	12.5	7	4.4	7	4.4
It is important to raise awareness about PMP before marriage	99	61.9	33	20.6	14	8.8	5	3.1	9	5.6
	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Religious leaders should include PMP in their discussions	64	40.0	50	31.3	34	21.3	5	3.1	7	4.4
Ma'zoon should conduct marriage contract only for couples who did PMP	56	35.0	38	23.8	51	31.9	9	5.6	6	3.8
The law that obligate all future couples to do PMP is important	85	53.1	47	29.4	20	12.5	3	1.9	5	3.1
	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
PMP should be obligatory	20	12.5	28	17.5	35	21.9	33	20.6	44	27.5
In case of negative PMP test results the decision of marriage should left for the couple	28	17.5	49	30.6	31	19.4	24	15.0	28	17.5
Test results that shows presence of genetic diseases should change marriage decision	45	28.1	48	30.0	44	27.5	17	10.6	6	3.8
	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
It is important to apply a law that stop marriage upon discovery presence of genetic disease	41	25.6	43	26.9	40	25.0	32	20.0	4	2.5
PMP does not breaks personal privacy	81	50.6	33	20.6	24	15.0	7	4.4	15	9.4

The intention of engaged students towered PMP.

The table no 5 shows that most of engaged studied students (88.5%) have an intention to conduct PMP before marriage, while only (11.5%) of engaged participant don't have an intention to conduct PMP before marriage.

Concerning the cause of conducting PMP before marriage for engaged participant, the table shows that (21.7%) of them said PMP is obligatory, while (82.6%) of them believed in the benefits of PMP.

Regarding to engaged participant who don't have an intention to conduct PMP before marriage, the result reveals that (66.6%) they don't believed in the benefits of PMP.

Table no 5: shows the intention of engaged students towered PMP.

variables	Frequency (No. 26)	Percent
Intention to conduct the PMP before marriage		

○ Yes	23	88.5
○ No	3	11.5
❖ If yes, specify the cause	(No. 23)	
○ PMP is obligatory	5	21.7
○ Believe in the benefits of PMP	19	82.6
❖ If no, specify the cause	(No. 3)	
○ Don't believe in the benefits of PMP	2	66.6

Experience of PMP among married students

The table no 6 explains the duration of marriage for the subjects, (58.3%) of participant were married for less than one year, (25%) of them were married from one to three years, and (16.6%) were married for more than three years. Concerning the consanguineous marriage, the result shows that (75%) of married studied sample were married to their relative.

In addition, the table reveals that (75%) of married participant don't have children.

Although, the result shows that (100%) of married sample don't have infected children by genetic or infectious diseases. Regarding the conduction of PMP, the table shows that all the married sample (100%) was conduct the PMP. As regard the reason for conducting PMP, the table shows that (91.6%) of participant said they conduct PMP because it's mandatory examination before marriage, while (66.6%) of them believed on the importance of PMP in early case finding, followed by to medical examination and investigation, having history of genetic disease in the family, it was husband desire, it was family desire, and to receive the needed vaccination.

Moreover, the table shows that all the married participant (100%) they conduct the PMP in governmental hospitals or clinics. Regarding the satisfaction of PMP services that the married participants received, the result reveals that (50%) of them were highly satisfied, while (25%) of them have mild satisfaction,(16.6%) of them have moderate satisfaction, and (8.3%) of them were not satisfied.

Although, the table shows if the PMP interfere with the marriage decision, half of the married sample (50%) report that the PMP interfere with their marriage decision, while the other half report that PMP didn't interfere with their marriage decision. However, the result shows that (58.3%) of married sample have an intention to advice others to do PMP, whereas, (41.6%) of them don't have an intention to advice others to do PMP.

Table no 6: shows the experience of PMP among married students.

variables	Frequency (no. 12)	Percent
Duration of marriage:		
○ less than one year	7	58.3
○ one to three years	3	25
○ > 3 years	2	16.6
Consanguineous marriage:		
○ Yes	9	75
○ No	3	25
Having children:		
○ Yes	3	25
○ No	9	75
Having Children with genetic or infectious diseases:		
○ No	12	100
Conducting pre-marital program:		
○ Yes	12	100
❖ If yes:		
○ mandatory	11	91.6
○ having history	4	33.3
○ husband desire	4	33.3
○ family desire	3	25
○ believe on the importance of PMP	8	66.6
○ to receive counseling and education	3	25
○ to do medical examination	5	41.6

and investigation ○ to receive the needed vaccination	2	16.6
Place where you conducted pre-marital program: ○ governmental hospital or clinic	12	100
Satisfaction about PMP results ○ highly satisfied ○ moderate satisfied ○ mild satisfied ○ not satisfied	6 2 3 1	50 16.6 25 8.3
Result of the PMP interferes with the marriage decision? ○ yes ○ no	6 6	50 50
Intention to advice others to do PMP ○ Yes ○ No	7 5	58.3 41.7

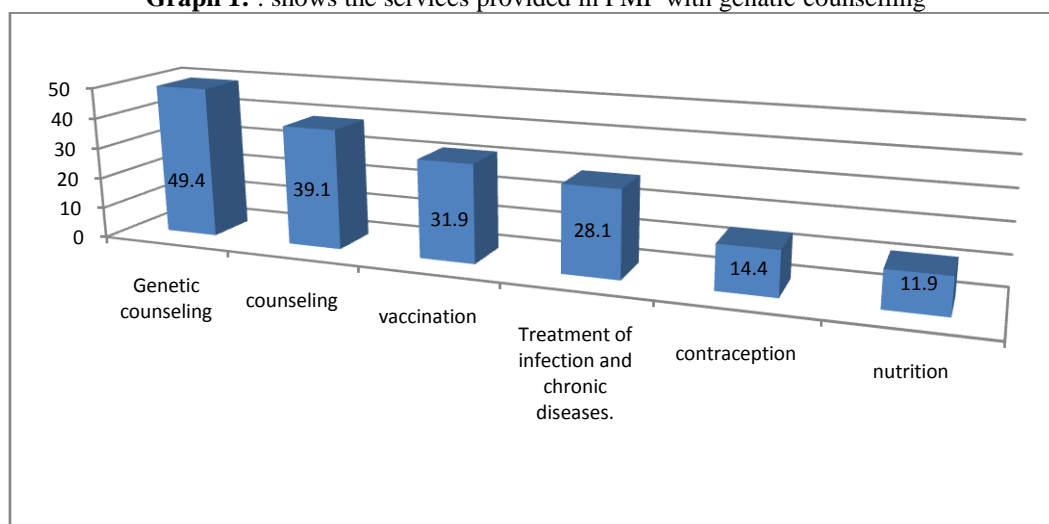
Table no 7: shows the relationship between total attitude score and knowledge score, significant relation was found between total attitude score and knowledge score.

Table no 7: shows the relationship between total attitude score and knowledge score.

Variables	Mean	T.test
Attitude	3.5245	0.001
Knowledge	3.8688	

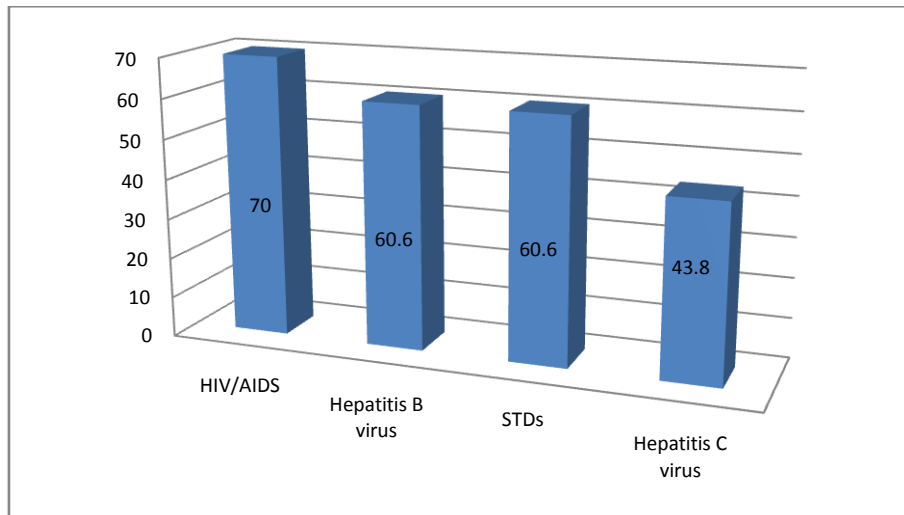
Graph no 1: shows the services provided in PMP with genatic counselling being the first ranked service followed by counslling regarding behavieus, vaccination, treatment of infection and chronic disease, advice regarding contraception and lastly nutrnion.

Graph 1: : shows the services provided in PMP with genatic counselling



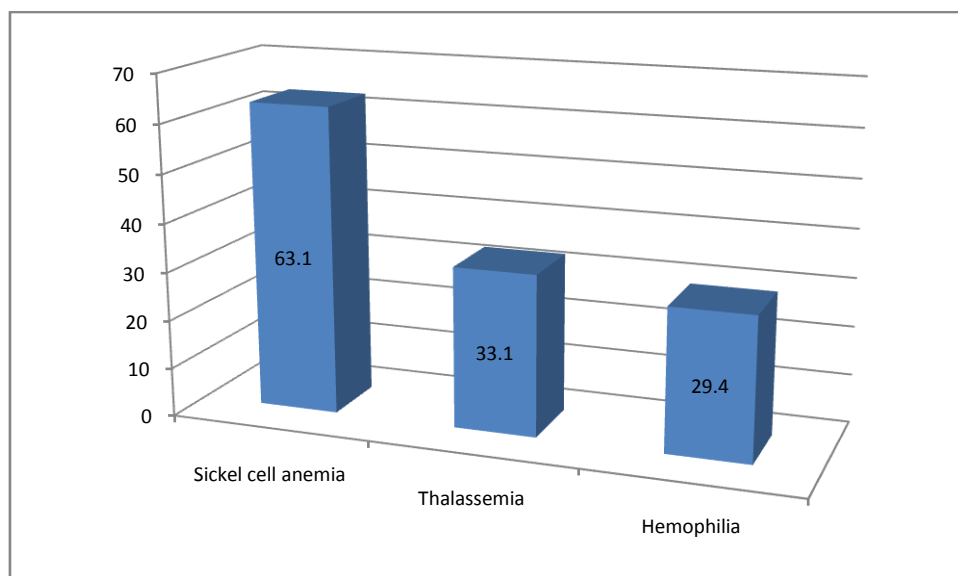
Graph on 2: shows the knowledge of the students about infectious disease screened in PMPwith HIV/AIDS being the fist ranked disease followed by hepatitis B virus, STDs and lastly hepatitis C virus.

Graph no 2: shows the knowledge of the students about infectious disease screened in PMP

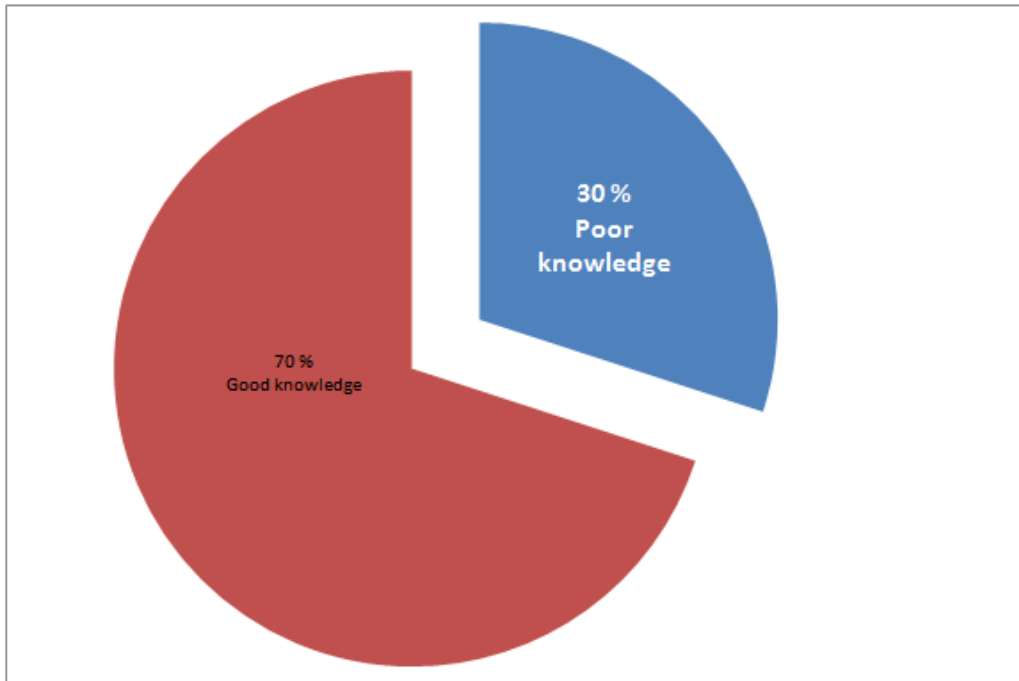


Graph no 3: shows the heredity disease screened in PMP with sickle cell anemia being the first ranked disease followed by thalassemia and lastly hemophilia.

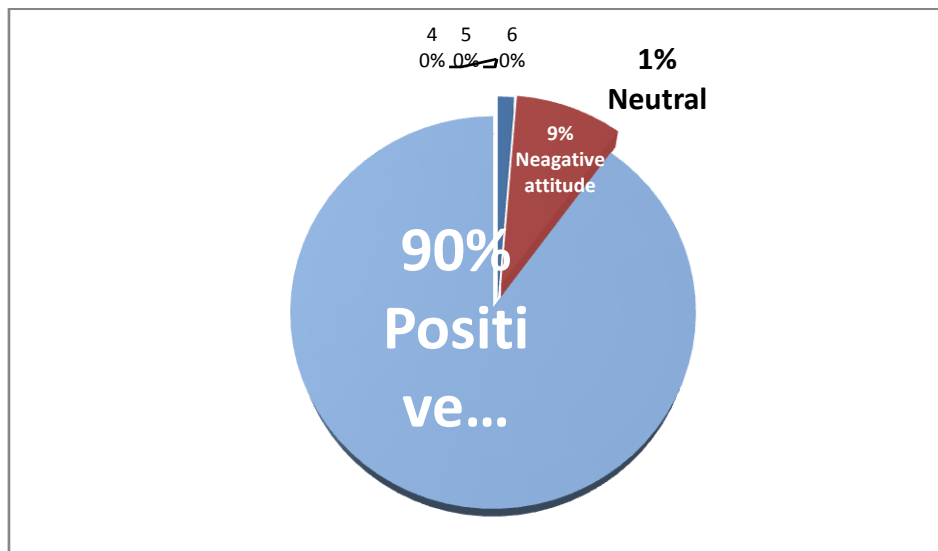
Graph no 3: shows the heredity disease screened in PMP



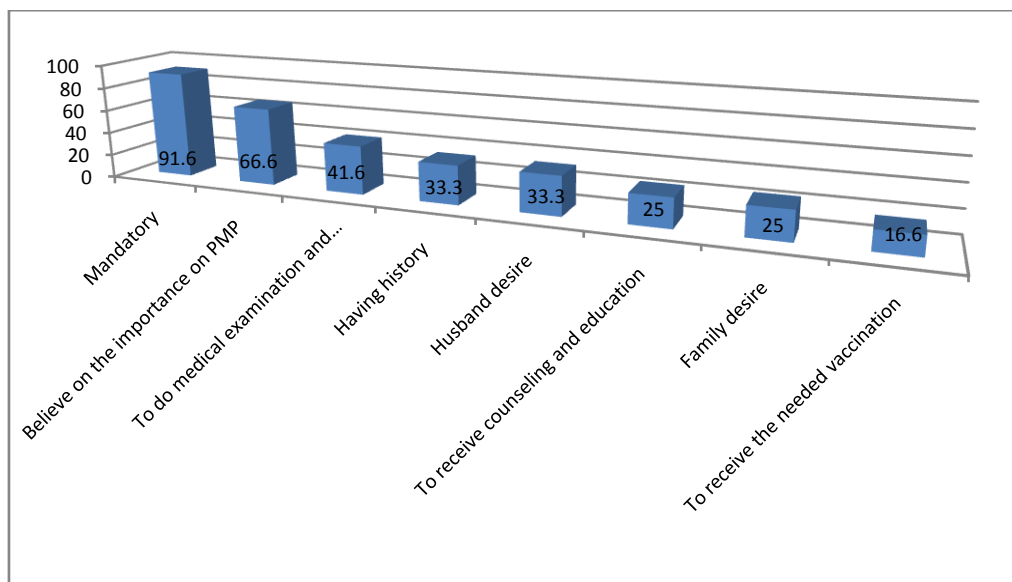
Graph no 4: shows the total knowledge score of the participants regarding PMP, less than three quarter of the participants(70%) have good knowledge while the rest of the studied sample (30%) have poor knowledge.



Graph no 5: shows the total attitude score regarding PMP, majority (90%) of the studied sample have positive attitude while only (9%) of the studied sample have negative attitude, and those who have neutral attitude represent only (1%) of the sample.



Graph no 6: shows the reasons for conducting PMP with mandatory examination being the first ranked reason followed by believe on the importance of PMP, to do medical examination and investigation ...ect.



IV. Discussion

Premarital program is the promotion of the health and well-being of a couple before pregnancy, it's considered as the primary preventive measure for couples planning for conception . Premarital program (PMP) is a worldwide activity aiming to diagnose, treat unrecognized disorders, and reduce transmission of diseases to couples which may affect the quality of marriage and the health of future generations.

The study aimed to investigate the Knowledge, Attitude and Practice of Nursing Students Regarding a Pre-marital Program in Jeddah. In the current study about three quarters of the participant were aware about the availability of PMP in KSA , which come in agreement with Al.Aama (2008)⁽³²⁾ and by Al.Kindi (2012)⁽²⁹⁾ study, which revealed mainly similar results. However, more higher percentage was reported by Ebrahim (2013)⁽³⁸⁾ who studied Knowledge, attitude and satisfaction of attendees of governmental out patients clinics in Jeddah since 93.7% of the participants had heard about PMP ,this can be explained by the fact that Ebrahim study's subjects were older with mean age of 30-63 year & they were both male & female as well less than half of them had university education. Regarding the attitude toward PMP, most of the students were either agreed or strongly agreed that PMP does not violate Islamic roles. and that come with agreement with Al-Khaldi (2002)⁽¹²⁾ study that shows that only few of the participants refuse PMP because of their misunderstanding of the Islamic roles. In addition, Ebrahim `s study (2013)⁽³⁸⁾ reported that 71% of the participants agree that PMP does not violate Islamic roles. Moreover, 13% of the participants in the current study believed that PMP against Islamic roles, which come in line with Ebrahim study who revealed that 11% of the participants agree that PMP against Islamic roles. In addition, in a study conducted in Al-Fayoum, Egypt, the majority of participants who reject PMS believed that it interferes with the god will ⁽¹⁾ This results indicate that regardless of the age, gender, even the educational level concept of PMP is against Islamic roles still exist among people, which put a great role of religious leaders to increase the awareness and correct the misconception regarding this issue.

Regarding the three statements reflect the importance of PMP, in the current study, majority of the participants either agree or strongly agree about the three statements (PMP is important, PMP will reduce the prevalence of some genetic & STDs as well that the importance of increasing the awareness about PMP before marriage) . Higher percentages were reported by Ebrahim study (2013)⁽³⁸⁾, which may be explained by the fact that three quarters of current study subjects were single and about half of them were junior students with more younger age and experiences.

Less than one third of the participants in the current study either agree or strongly agree that PMP should be obligatory before marriage while less than half of them disagree with the statement, which come in accordance with Al.Kindi (2012)⁽²⁹⁾ study with higher percentage. However, Oglil `s study (2013)⁽³⁷⁾ reported more higher percentages since more than half of the participants agreed to have PMP as obligatory process before marriage while only 16% disagree. This can be explained by the difference in the culture in the three studies.

In the present study less than half of the studied sample (48.80%) were either agreed or strongly agreed that in case of negative PMP results the decision of the marriage should be left to the freedom of the couple, and this is similar to the Ibrahim study (2011) who showed the majority of the participants agreed that in case of

discovery of the presence or carrier status of an inherent disease, the marriage decision must be left to the future couple. In addition, this finding comes in line with the results of other studies.^(39,40,41)

On the other hand, more than half of the studied sample either strongly agree or agree with the statement (test results that show the presence of genetic diseases should change marriage decision), this result came in line with many studies with more higher percentages as Ebrahim study (2011)⁽³⁹⁾ & Al Sulaiman study (2008)⁽⁴²⁾ who reported that more than 60% of all participants from Riyadh were in favor of canceling at risk marriage.

Regarding the total attitude score, in the current study majority of the participants have positive attitude toward PMP, which comes in agreement with Oglil (2013)⁽³⁷⁾ study who revealed slightly lower percentage as well as the Al-Khalidi study (2002)⁽¹²⁾ who reported lower percentages since 70% of the participants had positive attitude toward PMP. Many other studies found the participants' attitude was positive.^(1,16,43,44,40)

All these previous studies reflect the fact that medical students including nursing students had more positive attitude toward PMP than the general population which may be expected because of the nature of their academic study & speciality.

Concerning the total Knowledge score of PMP, the present study revealed that more than two thirds (70%) of the participants had good knowledge score while the rest of them had poor Knowledge score, which disagrees with Oglil (2013)⁽³⁷⁾ study who revealed more higher percentage. On the other hand, Ebrahim study (2011)⁽³⁹⁾ showed that participants' Knowledge about PMP was generally low since only 14% & 5.5% of them had fair and satisfactory score, this can be explained by the difference in the study subjects since the current study subjects were only nursing students while Ebrahim study subjects were public consumers from all specialties.

The current study also disagrees with Al Amaa study (2008)⁽³²⁾ who reported that King Abdulaziz University students had inadequate knowledge about PMP.

The difference in the knowledge score between the current study and other studies may be attributed to the difference in the study population since the current study was conducted only among nursing students rather than non-medical students and general population.

On the other hand, the result of the current study came in line with many studies such as Syrian study conducted by Gharaibeh (2009)⁽²⁶⁾ who reported that university students had considerable knowledge about premarital testing, as well as Gabriel study (2013)⁽³⁷⁾ who found that 63.6% of the participants knew the benefits of genetic counseling.

In the Arabian Peninsula, it is well documented that the high proportion of relative marriages and tribal nature of marriage had resulted in an increase in the incidence of genetically based disorders⁽⁴⁵⁾. In this regard the consanguineous marriage rate ranged from 25% to reach 60% in the region with high incidence of 1st relative marriage.^(39,32,33)

In the present study the prevalence of consanguineous marriage was 75% among married students, lower percentage was reported by Ebrahim (2013)⁽³⁸⁾ who reported 44.5% of relative marriage.

Concerning the practice of PMP among married nursing students, the current study revealed that all of the married participants had conducted PM screening before marriage, which can be explained by the recommended obligatory nature of PMP in KSA as well as may be attributed to current study results that most of the participants had good knowledge and positive attitude toward the program.

However, the current study revealed that most of the married students were satisfied with the services provided in PMP while only 8.3% were not satisfied.

This result came in agreement with Ebrahim study (2013) & Al Arayed study (2009).^(38,46)

V. Conclusion

The study concluded that most of the participants had a good knowledge, attitude as well as good practice concerning PMP. Even though, the majority of the participants thought that it's important to carry out PMP, less than one third of them preferred making it obligatory before marriage. Significant relation was observed between the knowledge and attitude of the students. No significant relation was observed between the educational level and occupation of the participant's parents and their attitude. These results reflect the importance of health education as a key stone in improving knowledge and attitude toward PMP. Stakeholders such as media, NGOs, religious leaders, hospitals, schools, community leaders should continue their efforts that support and interfere with the successes of PMP. Include PMP in the academic curriculum starting from high school to university curriculums. More attention should be directed to increase public awareness toward PMP especially among young generation. The generalizability of the results is limited due to the use of a non-probability, convenience sample, and to collecting data from one university.

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Appendix:

Table 1: shows the sociodemographic data of the participants.

variables	Frequency	Percent
age	Mean : 21.34	Std. deviation: 2.392
Marital status:		
Single	122	76.3
Married	12	7.5
Engaged	26	16.3
Stream:		
1	148	92.5
2	12	7.5
Level:		
Junior	79	49.4
Senior	67	41.9
Intern	14	8.8
Residency:		
Jeddah	133	83.1
Other	27	16.9

Personal history of hereditary disease:		
Yes	12	7.5
No	148	92.5

Table 2: shows the sociodemographic data of the participant's family.

variables	Frequency	Percent
Father's age	Mean :55.47	Std. deviation: 7.564
Educational level of the father:		
Primary	4	2.5
Secondary	105	65.0
Tertiary	51	31.9
Father's occupation:		
Working	80	50.0
Retired	54	33.8
Not working	26	16.3
Mother's age	Mean: 46.94	Std. deviation: 6.099
Educational level of the mother:		
Primary	10	6.3
Secondary	92	57.5
Tertiary	58	36.3
Mother's occupation:		
Working	40	25.0
Not working	12	7.5
Housewife	108	67.5
Family income:		
Enough	130	81.3
Enough and saved	25	15.6
Not enough	5	3.1
Family history of heredity disease:		
Yes	43	26.9
No	117	73.1

Table 3: shows the student's knowledge about premarital program.

variables	Frequency	Percent
Aware about premarital program		
○ Yes	119	74.4
○ No	41	25.6
Availability of premarital program in KSA		
○ Yes	114	71.3
○ No	46	28.8
Availability regional premarital program clinics in Jeddah?		
○ Yes	76	47.5
○ No	84	52.5
Suitable time for premarital program		
○ Before marriage	159	99.4
○ After marriage	1	0.6

❖ knowledge about the services provided in the premarital program		
○ Vaccination	51	31.9
○ counseling	61	38.1
○ Nutrition	19	11.9
○ Genetic counseling	79	49.4
○ contraception	23	14.4
○ Treatment of infection and chronic diseases.	45	28.1
○ I don't know	51	31.9

❖ Knowledge about the infectious diseases screened in PMP		
○ HIV/AIDS	112	70.0
○ Hepatitis B virus	97	60.6
○ Sexually transmitted disease	97	60.6
○ Hepatitis C virus	70	43.8
○ I don't know	33	20.6
❖ Knowledge about the heredity diseases screened in the premarital program		
○ Sickle cell anemia	101	63.1
○ Thalassemia	53	33.1
○ Hemophilia	47	29.4
○ I don't know	52	32.5
Heredity diseases can be transmitted to the children		
○ Yes	131	81.9
○ No	4	2.5
○ I don't know	25	15.6
Heredity disease are incurable		
○ Yes	78	48.8
○ No	22	13.8
○ I don't know	60	37.5
Carrier parents can have an infected child		
○ Yes	123	76.9
○ No	11	6.9
○ I don't know	26	16.3
Premarital program reduces the risk of heredity diseases		
○ Yes	119	74.4
○ No	8	5.0
○ I don't know	33	60.6

Managing a child with heredity disease has a high psychological effect as well as high cost <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> I don't know		
	102	63.8
	9	5.6
	49	30.6

Table 4: shows attitude of the students toward premarital program.

Variables	Strongly agree		agree		neutral		disagree		Strongly disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
PMP is important	137	85.6	13	8.1	4	2.5	0	0	6	3.8
PMP is not against Islamic roles	106	66.3	22	13.8	10	6.3	8	5.0	10	8.8
related marriage can increase the risk of hereditary diseases	47	29.4	63	39.4	33	20.6	8	5.0	9	5.6
PMP will reduce the prevalence of some genetic and STDs	70	43.8	56	35.0	20	12.5	7	4.4	7	4.4
It is important to raise awareness about PMP before marriage	99	61.9	33	20.6	14	8.8	5	3.1	9	5.6

	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Religious leaders should include PMP in their discussions	64	40.0	50	31.3	34	21.3	5	3.1	7	4.4
Ma'zoon should conduct marriage contract only for couples who did PMP	56	35.0	38	23.8	51	31.9	9	5.6	6	3.8
The law that obligate all future couples to do PMP is important	85	53.1	47	29.4	20	12.5	3	1.9	5	3.1

	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
PMP should be obligatory	20	12.5	28	17.5	35	21.9	33	20.6	44	27.5
In case of negative PMP test results the decision of marriage should left for the couple	28	17.5	49	30.6	31	19.4	24	15.0	28	17.5
Test results that shows presence of genetic diseases should change marriage decision	45	28.1	48	30.0	44	27.5	17	10.6	6	3.8

	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
It is important to apply a law that stop marriage upon discovery presence	41	25.6	43	26.9	40	25.0	32	20.0	4	2.5

of genetic disease											
PMP does not breaks personal privacy	81	50.6	33	20.6	24	15.0	7	4.4	15	9.4	

Table 5: shows the intention of engaged students towered PMP.

variables	Frequency (No. 26)	Percent
Intention to conduct the PMP before marriage		
○ Yes	23	88.5
○ No	3	11.5
❖ If yes, specify the cause	(No. 23)	
○ PMP is obligatory	5	21.7
○ Believe in the benefits of PMP	19	82.6
❖ If no, specify the cause	(No. 3)	
○ Don't believe in the benefits of PMP	2	66.6

Table 6: shows the experience of PMP among married students.

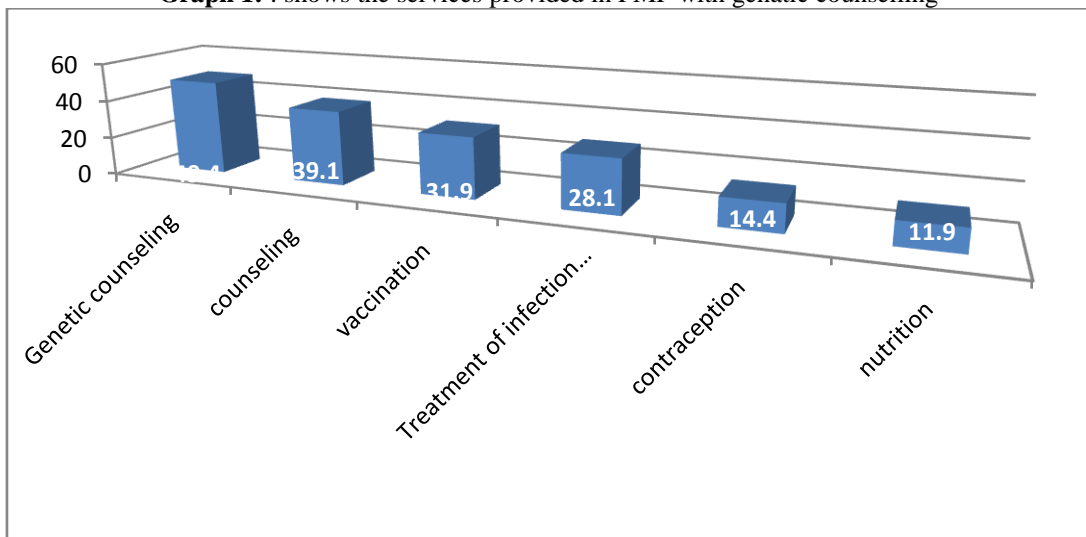
variables	Frequency (no. 12)	Percent
Duration of marriage:		
○ less than one year	7	58.3
○ one to three years	3	25
○ > 3 years	2	16.6
Consanguineous marriage:		
○ Yes	9	75
○ No	3	25
Having children:		
○ Yes	3	25
○ No	9	75
Having Children with genetic or infectious diseases:		
○ No	12	100
Conducting pre-marital program:		
○ Yes	12	100
❖ If yes:		
○ mandatory	11	91.6
○ having history	4	33.3
○ husband desire	4	33.3
○ family desire	3	25
○ believe on the importance of PMP	8	66.6
○ to receive counseling and education	3	25
○ to do medical examination and investigation	5	41.6
○ to receive the needed vaccination	2	16.6
Place where you conducted pre-marital program:		
○ governmental hospital or clinic	12	100
Satisfaction about PMP results		
○ highly satisfied		
○ moderate satisfied	6	50
○ mild satisfied	2	16.6
○ not satisfied	3	25
	1	8.3

Result of the PMP interferes with the marriage decision?		
○ yes	6	50
○ no	6	50
Intention to advice others to do PMP		
○ Yes	7	58.3
○ No	5	41.7

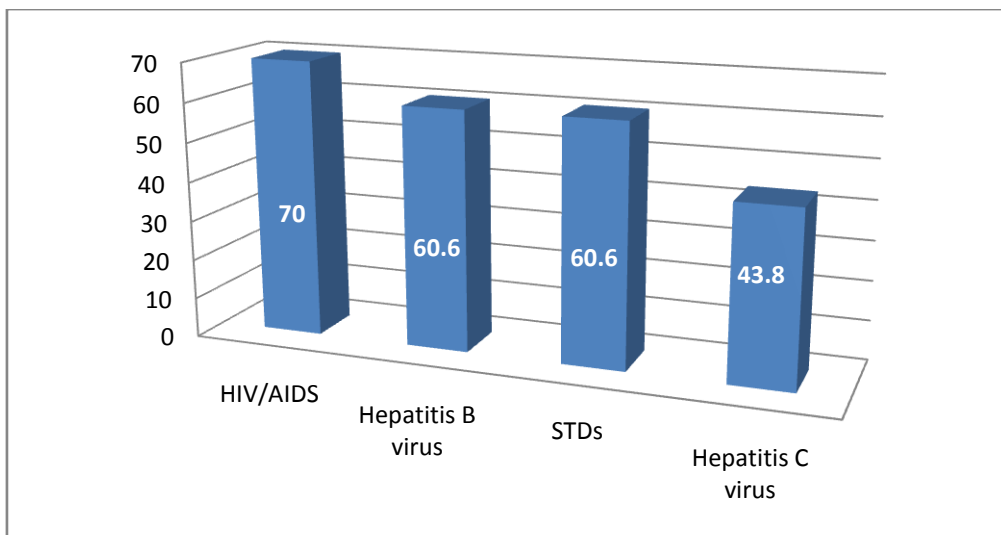
Table 7: shows the relationship between total attitude score and knowledge score.

Variables	Mean	T.test
Attitude	3.5245	0.001
Knowledge	3.8688	

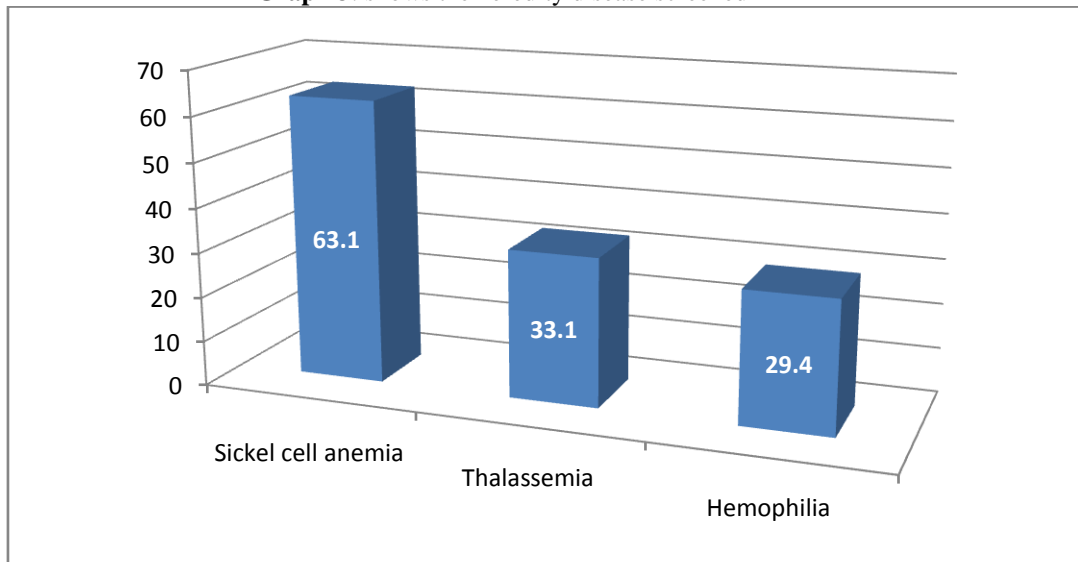
Graph 1: : shows the services provided in PMP with genatic counselling



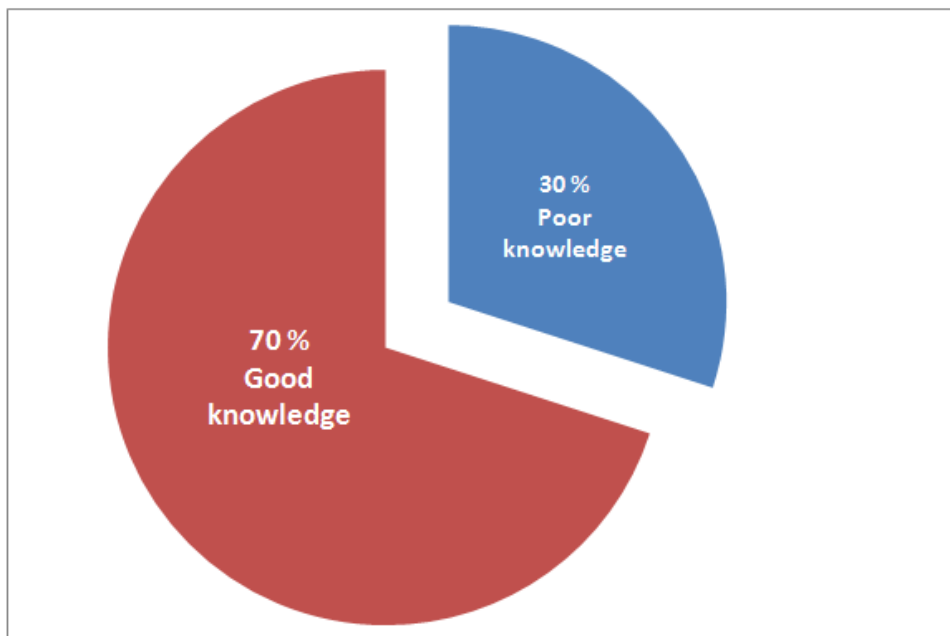
Graph 2: shows the knowledge of the students about infectious disease screened in PMP



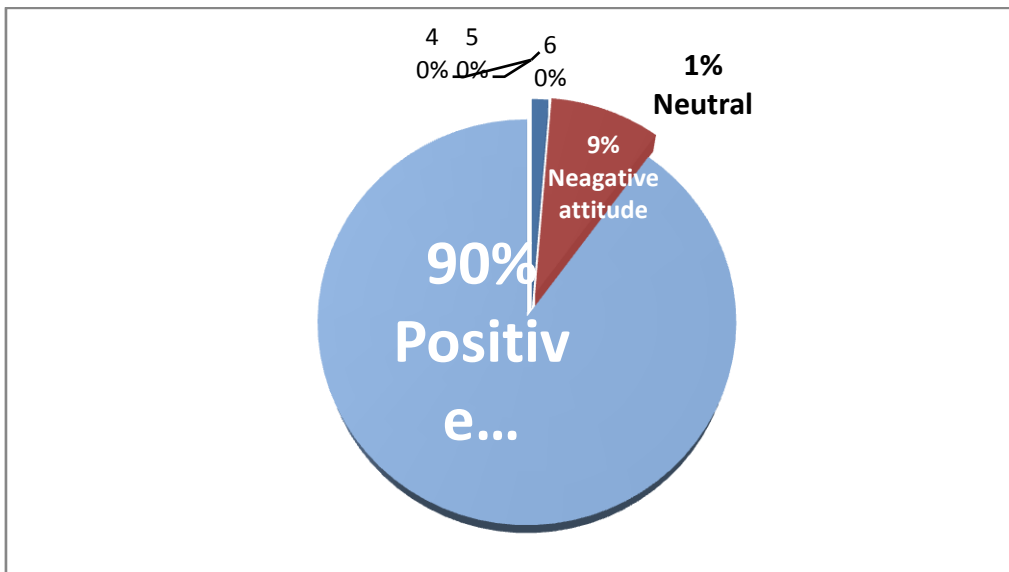
Graph 3: shows the heredity disease screened in PMP



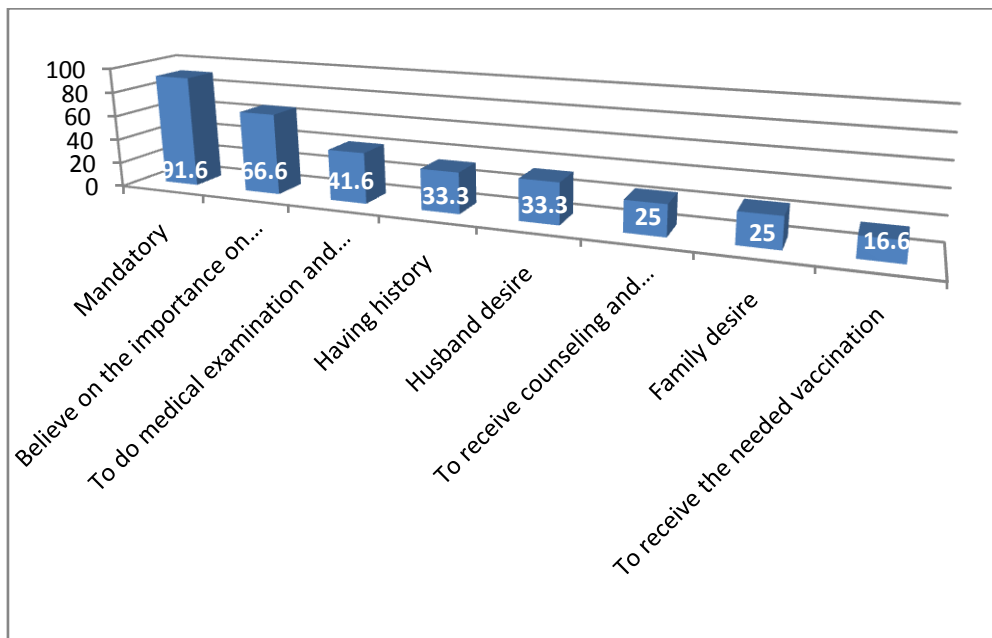
Graph 4: shows the total knowledge score of the participants regarding PMP



Graph 5: shows the total attitude score regarding PMP



Graph 6: shows the reasons for conducting PMP



Ola Mamdouh Esheabal . “Investigating The Knowledge, Attitudes And Practices Of Nursing Students Regarding A Pre-Marital Program In Jeddah.” IOSR Journal of Nursing and Health Science (IOSR-JNHS) , vol. 7, no.3 , 2018, pp. 07-31.