Effect of Different Teaching Methods in Improving Level of Knowledge about Reproductive Health among Female Students Hadhramout University

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Abstract

Background: *Reproductive health (RH) care is a set of methods, techniques and services that contribute to reproductive health and wellbeing by resolving reproductive health (RH) problems.* ***Aim of the study:*** *To evaluate the effect of different teaching methods in improving level of knowledge about reproductive health among female student Hadhramout University.* ***Subjects and methods:*** *The study was conducted in two colleges from Hadhramout University (College of Nursing & Girls) at Mukalla City, Yemen using a quasi experimental design. It involved 100 female students from Nursing and Girls Colleges from students were registered in the first grade during academic year 2014~2015. The data collection tools were an interview questionnaire composed of two parts:* ***a-*** *socio-demographic characteristics, and* ***b-****knowledge of students about reproductive health issues used at pre-post test to evaluate the improvement of students knowledge regarding reproductive health (RH) issues. The data collection lasted from November 2014~January 2015.* ***Results:*** *Showed that the total score of satisfactory knowledge about reproductive health (RH) issues; Puberty, Fertilization, STDs, Marriage, Family planning, FGM, and Feminine hygiene among intervention group students improved from (2%, 8%, 16%, 14%, 6%, 10%, and 16%) respectively in pretest, to (94%, 96%, 94%, 98%, 98%, 98%, and 98%) respectively in posttest, compared to slightly increase among self-learning group students from (8%, 20%, 22%, 58%, 34%, 36%, and 52%) respectively in pretest, to (10%, 28%, 26%, 60%, 40%, 46, and 58%) respectively in posttest. Highly statistically significant in total score of knowledge among intervention and self-learning groups after the program implementation* ***(P = 0.000).*** ***Conclusion and recommendations:*** *The different teaching methods intervention had a positive impact on increasing the female students awareness regarding to reproductive health issues among intervention group. The study recommends conducting health education services about reproductive health issues in every college, booklet about reproductive health issues should be available in every college in addition to every medical care services.*

Keywords: *Teaching Methods, Knowledge, Reproductive Health, Female Students, Hadhramout University.*

I. Introduction

The focus on reproductive health among adolescents and adults shows the challenges and opportunity for healthcare providers. Generally, adolescence is a healthy life span; many adolescents are less informed, less experienced, and less comfortable in accessing reproductive health services than adults. In addition, adolescents often lack access to basic reproductive health information, knowledge and access to affordable and confidential health and safety (HS) services for reproductive health. The Yemeni government is focusing more attention on the needs of youth to ensure a healthy transition to adulthood. This is critical because adolescent population (ages 15–24) of 3.35 million will double in just 20 years. Young adults often lack basic knowledge about reproductive health ***(Masood and Alsonini., 2017).***

Reproductive health (RH) is a state of complete physical, mental and social health, not just the absence of illness or disability, in all matters related to the reproductive system, its functions and processes. Therefore, good reproductive health means that people are able to enjoy a satisfactory and safe sexual life, the ability to have children, and the freedom to decide whether, when, and how often ***(Word Health Organization, 2008).*** Men and women should be informed of the possibility of safe, effective, affordable and acceptable family planning methods of their choice and the right to appropriate health care services that enable women to conceive and deliver safely ***(Stidham et al., 2014).***

The method of teaching includes the principles and methods used in teaching. Common teaching methods may include classroom participation, demonstration, recitation, memorization, or a combination of these. The choice of teaching method or methods used depends largely on the information or skills being taught, and may also be influenced by the students' degree and enthusiasm. Common teaching methods are lecture, lecture with discussion, committee of experts, brainstorming, and videos. Group discussion, small group discussion, case studies and role play. Today, we see a shift from teacher-centered learning to student-centered learning that emphasizes the need to develop students' ability to learn and self-teach. The student-centered expression of learning describes the learning situations in which learners are expected to take responsibility for defining and agreeing upon goals, and planning and implementing their own learning activities. We consider student-centered learning to focus on each student's interests, abilities, and learning styles, allowing them to participate actively in exploratory learning processes from an independent point of view *(Sagitova, 2014)*.

Self-learning takes information, processing and retention without the need for someone else to teach it until comprehension occurs. Self-education (or self-learning) requires a student to work independently. Self-taught students are stimulated by a sense of well-done work. They are self-motivated because they trust that if they do not know the answer to a question, they know how to use available resources to figure out the answer. Students who have completed self-study can often complete the course of the course in the time it takes to complete the teacher's preparation. Self-teaching in student education should be a concept of continuous success, gradual and steady success that results from diligence and the pursuit of excellence. Self-teaching can be done anywhere at any time and is unlimited but unstructured *(Sagitova, 2011)*.

Significance of the study

In Yemen, pregnancy and childbirth are "life-threatening events". Maternal mortality accounts for 42% of all female deaths among women of reproductive age (15-49 years). Is the leading cause of death among women in that age group. Most maternal deaths occur between the third quarter and the first week after the end of pregnancy *(Carine and Wendy, 2006)*. Approximately 80% of maternal deaths are caused by direct causes, such as hemorrhage (39%), obstructed labor (23%), infection (19%), and eclampsia (19%), other indirect causes are 20% diseases that are exacerbated or complicated by pregnancy, such as malaria, anemia, HIV / AIDS and cardiovascular disease *(Richard, 2008)*. In addition, for every woman who dies from obstetric complications, another 20 women suffer from injuries, infections and disabilities *(UNICEF, 2010)*.

Aim of the study

The aim of study was to evaluate the effect of different teaching methods in improving level of knowledge about reproductive health among female student Hadhramout University.
This was accomplished through the specific objectives: -
1. Assess female students knowledge regarding reproductive health before and after the different teaching methods.
2. Plan, implement, and evaluate the effect of different teaching methods for female students Hadhramout University at Mukalla City.

Hypothesis:

Female students knowledge score regarding reproductive health issues will be improved after conducting different teaching methods intervention.

II. Subjects And Methods

Research design and setting: A quasi-experimental design, with pre-post tests was used to conduct this study, which was carried out two College, Hadhramout University; a) College of Nursing because of the researcher worked in this College and b) College of Girls because this topic is important for woman, Mukalla City, Hadhramout Government, Yemen .

Subjects: The study was conducted on 100 female students. 30 students from College of Nursing accepted to participate in this study out of 50 female students were registered in first grade College of Nursing during academic year 2014~2015 and 70 students from five departments of Girls College (25% from every department) out of 280 students (60 English, 60 Arabic, 60 Islamic studies, 60 social service, and 40 Fine Arts) were registered in first grade Girls College during the same academic year. This chosen because of these students not taking anything about reproductive health and it's topic important for woman.

Data collection tools: A questionnaire sheet was designed by the researcher, based on the literature review from national and international books, journals and internet about the study topic. Guided of **Hassan et al., (2010)**. It was constructed in Arabic language and composed of two parts: **a)** socio-demographic data of the female students such as; residence, mother and father education and occupation, mass media in home and preferred programs and **b)** knowledge of students about reproductive health issues used at pre-post test to evaluate the

improvement of students knowledge regarding reproductive health (RH) issues; Puberty (Q1-14), marriage (Q15-19), fertilization (Q20-23), family planning (Q24-27), sexually transmitted diseases (Q28-29), female genital mutilation (Q30-34), and feminine hygiene (Q35-48).

Scoring system: For the knowledge items, each correct answer scored two, one score for did not know, and zero score for the incorrect answer. The total score of knowledge was (110) points. These scores were converted into percent scores. Knowledge was considered satisfactory if the percent score was 60% or more (60 point and more) and unsatisfactory if less than 60% (59 point and less).

Validity and reliability: The validity of data collection tools and booklets' content was tested by two experts, one professor from the Community Health Nursing, the Faculty of Nursing, Zagazig University, and one professor from the Faculty of Medicine, Zagazig University, to assess clarity, application, and understanding of the tools. All recommended change on the tools were done. Reliability of the proposed tools was done by **Cronbach's Alpha test**; it was **0.907.**

Pilot study: A pilot study was carried out before starting data collection on 10% of the study sample (10 female students from Nursing and Girls colleges). It aimed at testing the clarity and applicability of the tools. The necessary modifications were done according to the answers and comments**.** The subjects who shared in the pilot study were excluded from the main study sample.

Fieldwork: Data collection took a period of 3 months from November 2014 ~ January 2015. The researcher initiate the data collection two days per week (Sundays and Thursdays) during the three months. The accomplishment of the study was done through four phases: assessment, planning, implementation, and evaluation.

▪ **Assessment phase:**

This phase included the pre-intervention data collection for baseline assessment. The researcher first introduced yourself and explained the purpose of the research to the dean of Colleges and the students to gain their cooperation. The pre-test students knowledge about reproductive health issues questionnaires were distributed and then the same questionnaires were used after the sessions' implementation (one month later) as post-test for comparison. The time consumed for answering questionnaires ranged from 15-20 minutes for each. The data were primary test to provide the basis for designing the intervention different teaching methods sessions.

▪ **Planning phase:**

Based on the results obtained from the assessment phase, the researcher divided the students' into two groups (intervention and self-learning) according to the students' score of knowledge about reproductive health issues; intervention group for students with low score of knowledge in pre-test assessment and self-learning group for students with slight increase in pre-test score of knowledge. An illustrated booklet was prepared by the researchers and it was given to intervention and self-learning students groups to be used as a guide about reproductive health issues. The sessions were conducted for the intervention group only through different teaching methods such as lecture, group discussion, and brainstorming with used teaching material as data show, booklet, posters, pictures, and video tapes about reproductive health issues but self-learning group taking the booklet only as a reference at home as a purpose of self-teaching method.

General objective: The general objective of intervention group the students' sessions was to improve their knowledge toward reproductive health issues.

Specific objectives*:* By the end of conducting the different teaching methods sessions, the students should be able to:
1. Define the meaning of reproductive health (RH) and the puberty items.
2. Explain marriage, fertilization and family planning issues.
3. Identify the STDs and female genital mutilation issues.
4. Recognize feminine hygiene items.

▪ **Implementation phase:**

The intervention was implemented in the discussion room of the Nursing and Girls Colleges for the intervention group only. Teaching methods were lecture, group discussion and brainstorming. Sessions were supported by data show, booklet, brochure, posters, images, and videos through the labtop to facilitate and clarify teaching. The intervention was implemented in six sessions. The time for each session was 60 minutes. The objectives of the courses were as follows:

In *the first session (60 minutes)*: The main objective was to help students gain knowledge about the meaning of reproductive health (RH), and the puberty items as female genital system; anatomy of the external and internal reproductive organs of the female, menstruation, followed by vaginal discharge, hymen and types. Group discussions and lecture were used as teaching methods with data show, images, and videos through the labtop to facilitate and clarify teaching.

The second session (60 minutes): The main objective was to help students gain knowledge about marriage; the

researchers explained the appropriate age for marriage. Additionally, the risk of early marriage, and dangers of consanguinity. Group discussions and lecture were used as teaching methods with brochure.

In *the third session (60 minutes)*: The main objective was to help students identify the fertilization through the onset of ovulation, the characteristics of the menstrual cycle abnormal, and personal hygiene regarding self-care during menstruation, as well, signs and symptoms of pregnancy, care and avoidance during pregnancy, and serious signs that require going to the doctor during pregnancy and in the postpartum period. Group discussion, and demonstration, re-demonstration were used as teaching methods.

In *the fourth session (60 minutes)*: The main objective was to help students gain knowledge about definition, benefits, and types of family planning methods. Sessions were supported by data show, booklet, brochure, posters, images, group discussions and lecture were used as a teaching method.

In *the fifth session (60 minutes)*: The main objectives were to help students know definition, types, dangerous, symptoms of sexually transmitted disease infection. Group discussions and lecture were used as teaching methods.

In *the sixth session (60 minutes)*: The main objective was to help students know definition and types of circumcision, and the risk of female genital mutilation (FGM), and feminine hygiene for girls. Sessions were supported by group discussions and lecture with data show, booklet, brochure, posters, images, and videos through the labtop to facilitate and clarify teaching.

Evaluation phase:

Evaluation of the teaching methods intervention and self- learning method were done one month later after application of the sessions; through the same tools.

Administrative and ethical considerations: A written permission has been from the Dean of the colleges chosen in the study. The agreement for participation of the students was taken after the aim of the study explained to them, they were given an opportunity to refuse to participated, they were notified that could withdraw at any time stage of the research, also they were assured that the information would renowned confidential and used for the research purpose only.

Statistical analysis: Data entry and statistical analysis were done using SPSS version 14.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages. Chi-square test (X^2) was used for comparing quantitative categorical variables pre and post- test. Statistical significance was considered at P-value < 0.05.

III. Results

Table 1. Reveals that, 73.0% of the participants coming from urban areas, 42.0% of mothers were having elementary education, and the majority of mothers (81.0%) were housewives. On the other hand, 36.0% of intervention group compared to 54.0% among self-learning group reported that they had all kinds of mass media apparatus at their homes.

Percentage of correct knowledge among the intervention & self-learning group about puberty items before program implementation are summarized in table 2. From the table, nothing of the intervention group compared to 6.0% self-learning group were able to define reproductive health. On the other hand, 6.0% of the intervention group compared to 16.0% among the self-learning group mentioned that puberty age begins at 10-13 years and only 4.0% among the intervention group and 20 % among the self-learning group reported ovaries, uterus and fallopian tubes as parts of female genital system. Also, table 2 shows that only 8.0% among intervention group and 24.0% among self-learning group know that the difference between menstruation & menstrual cycle and 16.0% among intervention group compared to 24.0% among self-learning group know the normal menstrual period (3-7 days). Furthermore, 4.0% among the intervention group compared to 14.0% among the self-learning group reported that bathing with tap water during menses does not cause harm and none of the intervention group and 10% among the self-learning group know the characters of vaginal discharge. As regards things relieving menstrual pains, only 2.0% among intervention group compared to 8.0% among self-learning group given correct answers as regards using sedatives, applying heat compresses on the lower abdomen, drinking warm fluids and practices exercise. There is a difference in correct knowledge about puberty items between intervention and self-learning group.

Table 3. Displays Percentage of correct knowledge among intervention & self-learning groups about marriage, fertilization and family planning issues before program implementation. The table indicates that 20% among intervention group compared to 44.0% among self-learning group mentioned the suitable age of marriage is 20 years or above. Concerning correct knowledge about fertilization among the study sample indicates that only 4.0% among intervention group compared to 8.0% among self-learning group were able to define of fertilization correctly. Few percentages (4.0%) among intervention group compared to 14.0% among self-learning group mentioned correct answers about ovulation period (half of menstrual cycle). Additionally, only 2.0% among intervention group compared to 10% among self-learning group reported the suitable birth intervals

is 3-5 years. Moreover, few percent (6.0%) among intervention group compared to 30.0% among self-learning group reported loops, pills and injections were the most contraceptive methods known.

Table 4. Displays percentage of correct knowledge among intervention & self-learning groups about sexually transmitted diseases (STDs) and female genital mutilation before program implementation. According to the table, 14.0% among intervention group compared to 26.0% among self-learning group mentioned that Aids, Syphilis and Hepatitis are most common sexually transmitted diseases. Furthermore, this table shows that none of the intervention group compared to 6.0% among self-learning group were able to define female genital mutilation correctly. On the other hand, 20% of the intervention group compared to 48.0% of self-learning group reported that there are drawbacks for female genital mutilation.

Table 5. Reveals percentage of correct knowledge among the study sample (intervention & self-learning group) about feminine hygiene before program implementation. The table represents that 22.0% among intervention group and 44.0% among self-learning group were changing pads 3 times / day during menses and 26.0% among intervention group compared to 54.0% among self-learning group reported that using perfumed soap to wash genital area causes harm. Additionally, 38.0% among intervention group compared to 64.0% among self-learning group reported directing strong water toward genital area during washing causes harm. According to students respondents in this table (34.0% & 46.0%) among intervention group compared to (44.0% & 76.0%) among self-learning group were neither making abdominal massage nor using sedatives or aspirin to relieve menstrual pain. On the other hand, 52.0% among intervention group compared to 86.0% among self-learning group reported carrying heavy objects during menses can cause harm. Moreover, 28.0% among intervention group and 46.0% among self-learning group seeking medical counseling when irregular menses. As well as the data in this table shows that (46.0% & 86.0%) among intervention group compared to (78.0% & 94.0%) among self-learning group were not using belts to hide abdominal distention during menses nor exchange underwear's with sisters.

Table 6. represents, total score of knowledge about some reproductive health issues (Marriage, Family Planning, Female Genital Mutilation and Feminine Hygiene) throughout the program implementation among the study sample. From the table illustrated that 14.0% and 58.0% of the sample have satisfactory knowledge about marriage among both groups respectively in the pre-test compared to 98.0% satisfactory knowledge among the intervention group and slight improvement in knowledge (60.0%) among self-learning group after program implementation $(P_2 = 0.000)$. While, only 6.0% among intervention group and 34.0% among self-learning group had satisfactory level of knowledge regarding to family planning in pre-test $(P_1 = 0.000)$, which increased among intervention group to reach 98.0% after program implementation. While in self-learning group there were slightly increased 40.0% after program $(P_2 = 0.000)$. The same table indicates that increased in total score of satisfactory knowledge about female genital mutilation among intervention group after program implementation to reach 98.0% compared to slight increase to reach 46.0% among self-learning group $(P_2 = 0.000)$. Furthermore, the total score of knowledge about feminine hygiene increased in the intervention group to reach 98.0% after program implementation compered to a slight increase to reach 58.0% among self-learning group $(P_2 = 0.000)$. The findings among both groups after program implementation were statistically highly significant.

Figure 1. Shows total score of knowledge about puberty among intervention and self-learning groups throughout the program implementation, from the figure 1. Indicates that very low percentage (2.0%) of participants had satisfactory knowledge among the intervention and 8.0% among self-learning group in the pre-test compared to 94.0% among the intervention group and slight increase (10.0%) among self-learning group after program implementation $(P_2 = 0.000)$.

Figure 2. Clarifies total score of knowledge about fertilization among both groups throughout program implementation, only 8.0% of participants among intervention group had satisfactory knowledge regarding to fertilization compared to 20.0% among self-learning group pre-test compared to 96.0% satisfactory knowledge among intervention group and little increase in satisfactory knowledge (28.0%) among self-learning group after program implementation $(P_2 = 0.000)$.

Figure 3. Shows total score of knowledge about sexually transmitted diseases (STDs) among both groups throughout program implementation, from the figure reveals that increased total score of satisfactory knowledge among the intervention group to reach 94.0% compared to few increase (26.0%) among self-learning group after program implementation $(P_2 = 0.000)$.

Table 7. Shows the relation between residence and the satisfactory level of knowledge about reproductive health issues for the study sample (intervention & self-learning groups) throughout the program. From the table revealed that there was an increase in satisfactory level of knowledge in all reproductive health issues among the intervention group throughout the program. While, among the self-learning group there was a slight increase in the level of satisfactory knowledge in some reproductive health issues throughout the program. No statistically significant difference was found between satisfactory level of students' knowledge and residence $(P > 0.05)$.

Table 8. Clarifies the relation between mothers' education and the satisfactory level of knowledge about reproductive health issues among the intervention group throughout the program. The table illustrated that none of the intervention group students their mothers' graduates' from university education, there was an increase in level of satisfactory knowledge in all reproductive health issues among the intervention group after program implementation. A statistically significant differences were found between satisfactory level of students' knowledge and mothers' education regarding to puberty and feminine hygiene **(P_1 & P_2 = 0.04).**

Table 9. Shows the relation between mothers work and the satisfactory level of knowledge about reproductive health issues for the study sample throughout the program. The table reveals that there was an increase in the level of satisfactory knowledge in all reproductive health issues among the intervention group throughout the program. A statistically significant difference was found between satisfactory level of students' knowledge and their mothers work regarding to marriage **(P_2 = 0.001).** Additionally, a slight increase in the level of satisfactory knowledge in most reproductive health issues among the self-learning group throughout the program, the level of satisfactory knowledge was higher among students' of working mothers. A statistically significant differences were found between satisfactory level of students' knowledge and their mothers work regarding to sexually transmitted diseases **(P_2 = 0.003).**

Table (10-a) displays the relation between mass media and the satisfactory level of knowledge about reproductive health issues for the intervention group throughout the program. The table reveals that there was an increase in the level of satisfactory knowledge in all reproductive health issues after program implementation; the level of increased knowledge was higher among students' having all and more than one mass media apparatus at home. A statistically significant differences were found between satisfactory level of students' knowledge and presence of mass media apparatus at their home regarding to marriage **(P_2 = 0.000)** and female genital mutilation **(P_1 = 0.03).**

Table (10-b) illustrates the relation between mass media and the satisfactory level of knowledge about reproductive health issues for the self-learning group throughout the program. The table reveals that there was slight increase in the level of knowledge in some reproductive health issues after program implementation; the level of increased knowledge was higher among students' having all and more than one mass media apparatus at home. statistically significant differences were found between satisfactory level of students' knowledge and presence of mass media apparatus at their home regarding to puberty **(P_1 = 0.01 & P_2 = 0.02)** and female genital mutilation **(P_2 = 0.03).**

IV. Discussion

The Government of Yemen focuses more attention on the needs of young people to ensure healthy transition to adulthood. This is critical because the number of adolescents (aged 15-24) of 3.35 million will double in just 20 years. Young people often lack basic knowledge about reproductive health and family planning *(Masood and Alsonini, 2017).* This study was conducted on a sample of the student university which is considered an important sector in the society and will be the future couples and family caregivers. This study attempted to improve and raise awareness for students about RH, how to prepare themselves for maternity, and to protect themselves from sexually transmitted diseases. So, the present study amid to evaluate the effect of different teaching methods in improving level of knowledge about reproductive health among female student Hadhramout University.

The results of the present study showed that some socio-demographic factors as residence, education, work of mothers and media used at home were considered to be have a significant effect on level of knowledge about reproductive health issues among only self-learning group students before program, these results disagreed with the study result in Zagazig City by *Hassan et al., (2010)* who found that none of socio-demographic factors were considered to have a significant effect on the level of secondary school students knowledge before program implementation.

In this study, with regard to student information sources, the results revealed that forty five percent of the knowledge gained was from more than one source (radio, television, computer and net), while for the minority it was radio. This result was consistent with *Ali and Abdel-Al. (2015)* in Cairo, where more than three-quarters of students' knowledge gained was from more than one source. Similarly, *Wafik et al. (2015)* in Zagazig City proved to be the majority of more than one source; friends, followed by sisters, and teachers are the preferred sources of information about changes in puberty and reproductive health. This should be taken with caution because friends are a frequent source of misinformation and misconceptions in this age.

The present study results revealed that, there was unsatisfactory score of knowledge as regards reproductive health issues; puberty, marriage, fertilization, family planning, STDs, female genital mutilation, and feminine hygiene among intervention and self-learning groups before program implementation. These results were supported by *De Jong et al., (2007)* who reported that young people may be at risk for reproductive health problems because they lack basic knowledge of reproductive anatomy and physiology, how pregnancies or Sexual transmitted infections occur, how to prevent themselves and where to obtain protection. In the same

line, *Sedgh et al., (2007)* stated that, there is a lack of accurate information about reproductive health (RH) issues by high percentage of females; negative beliefs were held by girls, before and after menarche

The present study results shows high percentages of female students had low information about reproductive health issues, these results in agreement with *He (2009),* in China, who reported high percentages of adolescents had no information about reproductive health issues. On the same line, *Kotecha (2009),* in India who found that minority of the girls mentioned that they had heard about contraception. The findings are in accordance with scattered previous studies which demonstrated low levels of knowledge among adolescent girls regarding component of reproductive health issues in developing countries such as; in urban Nepal, *Shrestha et al. (2013),* in Ibrahimiah District Sharkia Governorate *Mohamed et al. (2014)* and in Jharkhand, *Banerjee et al. (2015).*

The study results pointed out that, most of students had unsatisfactory score of knowledge about puberty; a few percentage (two) among intervention group and ten percent among a self-learning group before program were able to define the term of RH correctly, high percentage among intervention and self-learning groups had incorrect knowledge as regard labia majora, minora, and clitoris as a structure of female genital system, and they had deficient knowledge about the physical changes which occur during puberty, menstruation, and hymen. These results in the same line with *Carvacho et al., (2008)* among Brazili students, they found that, there is a lack of knowledge, and information about female reproductive system and how their bodies, minds and feelings are changing; most of students had little knowledge of anatomy, with external organs more easily identified, and placed than internal; physiology of reproductive organs (61.0%), and of physiology of reproduction (76.5%). Similar results were reported by *Kotwal et al., (2008) and HIa et al., (2008)* among Indian school girls they revealed a gap in adolescents knowledge regarding to reproductive system, and menstruation. This lack of knowledge about puberty in the present study , may be attributed to the fact that adolescents are usually been shielded from information about their physical maturation and such issues are not often discussed even within the family.

Concerning knowledge about marriage, the current study results showed that, twenty percent among intervention group compared to (44.0%) among self-learning group mentioned that the suitable age of marriage is 20 years or above. These results were in the same line with study by *Hassan et al., (2010)* who showed that about one third of them had correct answer about ideal age of marriage (20 years and above), while these findings disagreed with *Sayed et al. (2008)* who showed that most of female university students had high level of knowledge regarding to the suitable age of marriage and pregnancy, most of the believed that early marriage restricts girls education . Yemeni female students in this study believed that early marriage and pregnancy can keep female more youth, and support the relation between mother and her child and also, agreed that girl should marry at early age but they believed that early pregnancy harms mother and child health. From view of researcher, this satisfactory level of knowledge about marriage in the present study may be attributed to , the age of the studied students 19-20 years.

Regarding to fertilization, the majority of female students had unsatisfactory level of knowledge in both intervention and self-learning groups; few percentage of students were able to define of fertilization , fertility period, and ovulation period. This results in the same line with the study conducted by *Jaffer (2006)* in Oman who reported that adolescent girls had little knowledge about physiology of reproductive organs and physiology of reproduction, knowledge of fertility period was poor, only 15% know the correct answer about mid-cycle for women. In contrast with study of *Nwaorgu et al. (2008)* found that Nigerian students demonstrated fair knowledge of human biology. From view of researcher, these results may be attributed to lack of adequate knowledge and understanding of the reproductive process, as these issues are difficult to talk about, and discuss openly, female students neither permitted to talk nor ask about this issue, parents consider discussing these matters "disgrace and impolite" or due to lack of parental knowledge and the students in this study registered in the first grade of university.

Concerning family planning knowledge, the present study results indicated that, before program implementation, the majority of students had unsatisfactory level of knowledge regarding the suitable birth intervals and the contraceptive methods; only (2.0%) among intervention group compared to ten percent among self-learning group reported that the suitable birth intervals is 3-5 years and few percent (6.0%) among intervention group compared to about one third (30.0%) among self-learning group reported that the contraceptive methods were loops, pills and injections. *MOPD and CSO (1998)* who revealed that the Yemeni Demographic Maternal and Child Health Survey (YDMCHS) 1997 reported that the unmet need for (FP) is still high among adolescent and young women, 36.7% for women ages 15–19, and 36% for ages 20–24. This results disagree with study by *Masood and Alsonini (2017)* in Yemen who reported that participants who had university education had more knowledge about methods of family planning (FP) and sources of information than those who had secondary school education. Participants with secondary education were likely to have more knowledge about for reproductive health (RH) and FP, methods of FP, meaning of FP, and sources of information than those who had basic education and also, disagree with a other study conducted in Yemen by

Dureab et al. (2015) who reported that more than three quarters of participants recognized contraception methods were pills. While, agreed with a study by *Rao et al. (2008)* in *India,* who reported that the students knowledge was poor about of different methods of contraception. From view of researcher, This lack of knowledge detected in this study about family planning may be attributed to, that this issue may be considered not from main girls interests at this age, their interests focused mainly on engagement and marriage than birth spacing.

Concerning Sexually transmitted diseases (STDs), the current study results revealed that, before program implementation, there was unsatisfactory level of knowledge as regards STDs; fourteen percent among intervention group compared to one quarter (26.0%) among self-learning group mentioned that Aids, Syphilis and Hepatitis are most common sexually transmitted diseases and only tow percent among intervention group compared to eight percent among self-learning mentioned that they can protect themselves by religion and avoiding illegal sexual relations. These results in line with study conducted in Zagazig City by *Hassan et al., (2010)* who reported that there was unsatisfactory level of students knowledge as regards STDs; about three fifths of both groups of students mentioned AIDs as one of STDs. These results disagreed with those of *Qwolabi et al., (2005)* in Nigeria and *Shakhatreh et al., (2005),* in Saudi Arabia which revealed that, adolescents of secondary school students had higher-level of knowledge regarding to STDs. From view of researcher, these results may be due to the difference in cultures, and availability to access to this information, since cultural inhibitions often prevent discussion with their parents or other adults.

As regards female genital mutilation (FGM), the current study findings revealed that majority of students had unsatisfactory level of knowledge concerning FGM among both groups; none of the intervention group compared to (6.0%) among self-learning group were able to define female genital mutilation correctly, and twenty percent of the intervention group compared to (48.0%) of self-learning group reported that there are drawbacks for female genital mutilation. Similar results in Egypt at the obstetric outpatient clinic of Ain-Shams University Hospital were found by *Abou-Shabana et al., (2005),* who conducted a study to evaluate perceptions and practices of women regarding to their reproductive health rights. Their results revealed that the majority of women had positive perceptions about their rights of reproductive health. However, 30% disagreed with prohibitions of discriminations against women, particularly prohibitions of FGM. *Mohamed et al. (2014)* found that circumcision among girls, in Ibrahimiah District reached about three-fifth of them. On the same line, the rates reached 89.2% in Upper Egypt *(Rasheed et al., 2011).* In this respect, the researcher views that globally, the prevalence of, and support for, female genital mutilation/cutting declining. This lack of knowledge about FGM in the current study, may be attributed to, the false belief that religion supports female genital mutilation, and also misconceptions, considering FGM as good tradition that protect girls from many ethical mistakes and ensure cleanliness. From view of researcher this lack of knowledge about FGM may be due to in Yemen population female circumcision was done with girls at age of 40 days.

Concerning with feminine hygiene, before program implementation, the present study revealed that, sixteen percent among intervention group had satisfactory level of knowledge in relation to feminine hygiene compared to more than half among self-learning group, these results agreed with *Rashed et al., (2005),* who stated that, due to cultural and religious restrictions many young girls in Egypt lack appropriate and sufficient information regarding to menstrual hygiene, leading them to practice incorrect and unhealthy behavior during their menstrual period. These results among self-learning group may be due to their mothers may provide some instructions as regards to personal hygiene for their daughters at puberty, as bathing after menses, removing hair, and using pads.

In the present study after the implementation of the program main objectives were highly achieved, the results point to generally high levels of score knowledge among intervention group who received different teaching methods particularly concerning the areas of puberty, marriage, fertilization, family planning, STDs, female genital mutilation, and feminine hygiene. These results are as in agreement with *Kotecha (2009),* in India who found that more than half of the adolescent student correctly know about the different ways of transmission of HIV/ AIDS, a significant proportion of whom have reported changes in puberty such as height and height change Sound and breast development. These results are compatible with *Madeni et al. (2011)* in Tanzania, who reported that the reproductive health program improved student knowledge and behavior about sexuality. In addition, these results coincide with *Ali and Abdel-Al., (2015)* in Cairo, who found statistically significant improvements among blind students between pre- and post-test results in relation to reproductive health. Similarly, *Osman et al. (2015)* in Assiut governorate found that the entire sample of students (deaf and blind) (100%) had a poor knowledge of reproductive health in the pre-test while their knowledge in the post-test improved to (58.8%).

After program implementation, there were significant improvements in female students level of knowledge about all reproductive health issues among intervention group who received different teaching methods program. This results agreed with study by *Mevsim et al., (2009)* who found lack of knowledge about reproductive health issues before the program and reported that, the knowledge scores of reproductive functions,

sexually transmitted infections and contraception increased after health education intervention by 17.4% and 11.9% respectively and also, in line with the results of study conducted in Zagazig City by *Hassan et al., (2010)*. The improvement in the level of knowledge score in the present study resulted from the simple message which tried to cover all the items in a simple way, using approach employs participatory, using different teaching methods such as lecture, group discussion, and brainstorming attractive and interactive methodologies, including, exploration of feelings, and questions and answers, and using teaching material as booklets and posters, data show, pictures and video tapes which contained the main items present in the message to attract attention of students, and facilitate their understanding of the message. Repetition of the message through a variety of methods, and by summarizing the previous session helped in retention. The current study revealed that there were a slight improvement in the level of knowledge among self-learning group about all reproductive health (RH) issues after program implementation, this may be due to given them the booklet only depending on self-learning method.

After investigating the relation between the satisfactory level of female students about reproductive health (RH) issues and their socio-demographic characteristics in the present study, the improvement in the level of knowledge score were affected by some socio-demographic factors; mother education work, and mass media. Regarding mother education and work, in the present study, the increase in knowledge level was higher among female students of highly educated and working mother, regarding puberty, feminine hygiene, marriage, and STDs. This may be attributed to that, female students of employed and educated mothers are more self confidence, responsible and independent than others. These results were supported by study of *Sayed et al. (2008)* in Alexandria who found that, the higher level of knowledge students regarding to changes during puberty, rejection of FGM related to educational levels of fathers and mothers education and their work status.

Regarding to presence of mass media apparatus at home, the current study results revealed that, the improvement in level of knowledge score was higher in some items of reproductive health as; puberty, marriage and FGM among female students who had all mass media sets (Radio, TV, Computer, Net,…etc) than those who had one mass media. This finding may be attributed to that, female students who have all mass media apparatus have more chance to access to health information than those who have one mass media. This result agreed with study of *Sayed et al. (2008)* in Alexandria and study in Zagazig City by *Hassan et al., (2010)* who found that mass media has a great role in providing information related to reproductive health issues. Similar results supported by Ethiopian study by *Tegegn et al., (2008)* who reported that, the mean score for knowledge about HS for RH and FP and methods of FP indices showed statistically significant differences for sources of information index such as radio and television.

V. Conclusion And Recommendations

In conclusion, the different teaching methods intervention had a positive impact on increasing the female students awareness regarding to reproductive health issues among intervention group. Additionally, in the post-test, there was a significant improvement of female students level of knowledge about all reproductive health issues among intervention group, while none or very lest change in level of knowledge among self-learning group, highly statistically significant in total score of knowledge among intervention and self-learning groups after the program implementation **(P = 0.000).** The study recommends providing health education about reproductive health for the students during medical examination before admission to university, and university services should distributed booklet about reproductive health issues and places provided these services. Mass media programs through television and radio and publishing materials related to reproductive health issues should be available for the community, and further researchers for female students Hadhramout University to evaluate their level of knowledge, beliefs and attitudes regarding to all reproductive health issues.

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Table 1. Socio-demographic characteristics of the studied sample (No. 100)

Socio-demographic Characteristics.	Intervention Group (50)		Self-learning Group (50)		Total (100)	
	No	%	No	%	No	%
Residence:						
Urban	35	70.0	38	76.0	73	73.0
Rural	15	30.0	12	24.0	27	27.0
Mother education:						
Illiterate or read & write.	21	42.0	16	32.0	37	37.0
Elementary education.	22	44.0	20	40.0	42	42.0
Secondary education.	7	14.0	11	22.0	18	18.0
University education.	0	0.0	3	6.0	3	3.0
Mother work:						
Work.	4	8.0	13	26.0	17	17.0
Housewives.	46	92.0	35	70.0	81	81.0
Mother death.	0	0.0	2	4.0	2	2.0
Media at home:						
Radio.	1	2.0	0	0.0	1	1.0
Television.	5	10.0	4	8.0	9	9.0
Computer & Net.	1	2.0	5	10.0	6	6.0
All of them.	18	36.0	27	54.0	45	45.0
More than one media.	25	50.0	14	28.0	39	39.0

Table 2. Percentage of correct knowledge among the study sample (intervention & self-learning group) about Puberty items before Program Implementation.

Puberty Items	Intervention Group (50)		Self-learning Group (50)		Total (100)	
	No	%	No	%	No	%
Definition of reproductive health (RH).	0	0.0	3	6.0	3	3.0
Puberty age: (10-13Years).	3	6.0	8	16.0	11	11.0
Structure of female genital system: (Ovaries, Fallopian tubes, Uterus, Vagina, Labia Majora & Minora).	2	4.0	10	20.0	12	12.0
Physical changes occurring during puberty: (Increase weight & height, hair (axilla & pubic), increase breast size).	6	12.0	9	18.0	15	15.0
There is a difference between menstruation & Menstrual cycle.	4	8.0	12	24.0	16	16.0
The difference between menses & Menstrual cycle.	0	0.0	1	2.0	1	1.0
Normal menstrual period: (3-7 days).	8	16.0	12	24.0	20	20.0
There is no effect of drinks & foods on menstrual pains or blood flow.	4	8.0	2	4.0	6	6.0
Bathing with tap water during menses doesn't cause harm.	2	4.0	7	14.0	9	9.0
Characters of vaginal discharge.	0	0.0	5	10.0	5	5.0
Things relieving menstrual pain: (Sedatives, exercise, warm fluids & heat compresses.)	1	2.0	4	8.0	5	5.0
Definition of hymen.	4	8.0	5	10.0	9	9.0
Types of hymen: (Annular, Circumferential &Crescent).	1	2.0	4	8.0	5	5.0

Table 3. Percentage of correct knowledge among the study sample (intervention & self-learning group) about Marriage, Fertilization and Family Planning issues before Program Implementation.

Marriage, Fertilization & Family Planning	Intervention Group (50) Pre-test		Self-learning Group (50) Pre-test		Total (100)	
	No	%	No	%	No	%
Age of marriage: (20 years & above)	10	20.0	22	44.0	32	
Drawbacks for early marriage: (Abortion, infertility & inflammation of female genital system).	2	4.0	2	2.0	4	4.0
The drawbacks of consanguineous marriage: (Fetal abnormalities & congenital diseases).	0	0.0	10	20.0	10	10.0
Definition of fertilization	2	4.0	4	8.0	6	6.0
Fertility period:(from puberty to menopause)	2	4.0	2	4.0	4	4.0
Ovulation period: (In half of menstrual cycle).	2	4.0	7	14.0	9	9.0
Suitable birth spacing: (3-5 years).	1	2.0	5	10.0	6	6.0

Importance of birth spacing: (Permits for breast feeding & Mother & child health).	0	0.0	0	0.0	0	0.0
Family planning methods: (Loops, Pills, & Injections).	3	6.0	15	30.0	18	18.0

Table 4. Percentage of correct knowledge among the study sample (intervention & self-learning group) about STDs and Female Genital Mutilation issues before Program Implementation.

STDs and Female Genital Mutilation	Intervention Group (50)		Self-learning Group (50)		Total (100)	
	Pre-test		Pre-test			
	No	%	No	%	No	%
Sexually transmitted diseases: (Aids, Syphilis & Hepatitis	7	14.0	13	26.0	20	20.0
Protection from STDs: (Avoid illegal sexual relations & Religion).	1	2.0	4	8.0	5	5.0
Definition of Female Genital Mutilation.	0	0.0	3	6.0	3	3.0
No importance for Female Genital Mutilation.	18	36.0	28	56.0	46	46.0
There are drawbacks for Female Genital Mutilation.	10	20.0	24	48.0	34	34.0
Drawbacks of Female Genital Mutilation.	0	0.0	0	0.0	0	0.0

Table 5. Percentage of correct knowledge among the study sample (intervention & self-learning group) about Feminine Hygiene before Program Implementation.

Feminine Hygiene Items	Intervention Group (50)		Self-learning Group (50)		Total (100)	
	Pre-test		Pre-test			
	No	%	No	%	No	%
Changing pads 3times /day.	11	22.0	22	44.0	33	33.o
Bathing daily during menses	8	16.0	7	14.0	15	15.0
Bathing at the first day of menses is harmless.	23	46.0	21	42.0	44	44.0
Washing genital area with soap and water during menses.	26	52.0	32	64.0	58	58.0
Using perfumed soap to wash genital area causes harm.	13	26.0	27	54.0	40	40.0
Directing strong water toward genital area during washing causes harm.	19	38.0	32	64.0	51	51.0
It is important to remove hair from genital area before menses	3	6.0	4	8.0	7	7.0
Abdominal massage for relieving menstrual pains causes harm.	17	34.0	22	44.0	39	39.0
Sedatives & aspirin are not used to relieve menstrual pains.	23	46.0	38	76.0	61	61.0
Carrying heavy objects during menses causes harm.	26	52.0	43	86.0	69	69.0
Seeking medical counseling for irregular menses.	14	28.0	23	46.0	37	37.0
Vaginal dryness is abnormal.	3	6.0	8	16.0	11	11.0
Not using belts to hide abdominal distension.	23	46.0	39	78.0	62	62.0
Not exchanging underwear with sisters.	43	86.0	47	94.0	90	90.0

Table 6. Total score of knowledge about some Reproductive Health issues throughout the Program among the study sample (intervention & self-learning group).

Reproductive Health Items	Intervention Group (50)				Self-learning Group (50)				P-Value
	Unsatisfactory		Satisfactory		Unsatisfactory		Satisfactory		
	No	%	No	%	No	%	No	%	
Marriage.									
- Pre-test	43	86.0	7	14.0	21	42.0	29	58.0	P1 = **0.000**
- Post-test	1	2.0	49	98.0	20	40.0	30	60.0	P2 = **0.000**
Family Planning									
- Pre-test	47	49.0	3	6.0	33	66.0	17	34.0	P1 = **0.000**
- Post-test	1	2.0	49	98.0	30	60.0	20	40.0	P2 = **0.000**
Female Genital Mutilation (FGM).									
- Pre-test	45	90.0	5	10.0	32	64.0	18	36.0	P1 = **0.002**
- Post-test	1	2.0	49	98.0	27	54.0	23	46.0	P2 = **0.000**
Feminine Hygiene.									
- Pre-test	42	84.0	8	16.0	24	48.0	26	52.0	P1 = **0.000**

- Post-test	1	2.0	49	98.0	21	42.0	29	58.0	P2 = **0.000**

P_1 = Difference between Intervention & Self-learning group Pre- test, P_2 = Difference between Intervention & Self-learning group Post- test, statistically significant $P < 0.05$
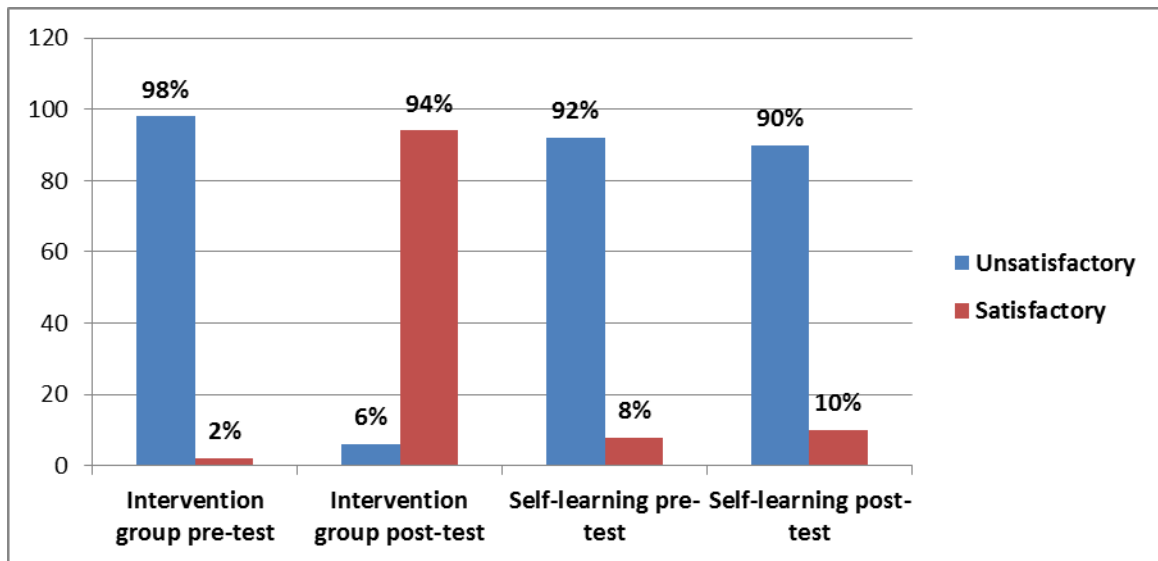

Figure 1. Distribution Total Score of Knowledge about Puberty among Intervention and Self-learning groups throughout the Program Implementation
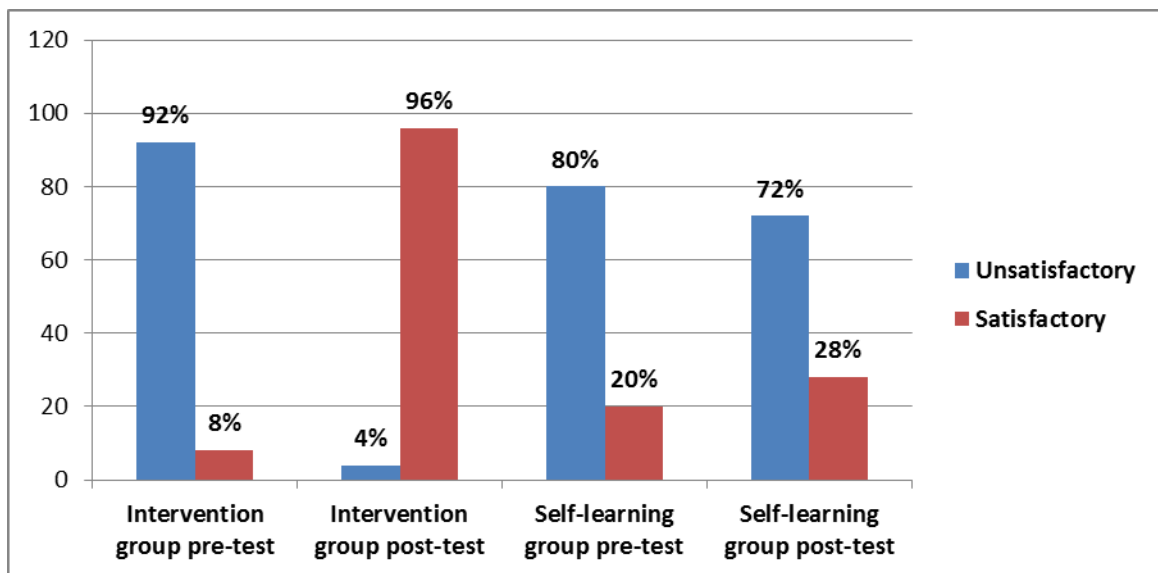

Figure 2. Distribution Total Score of Knowledge about Fertilization among Intervention and Self-learning groups throughout Program Implementation
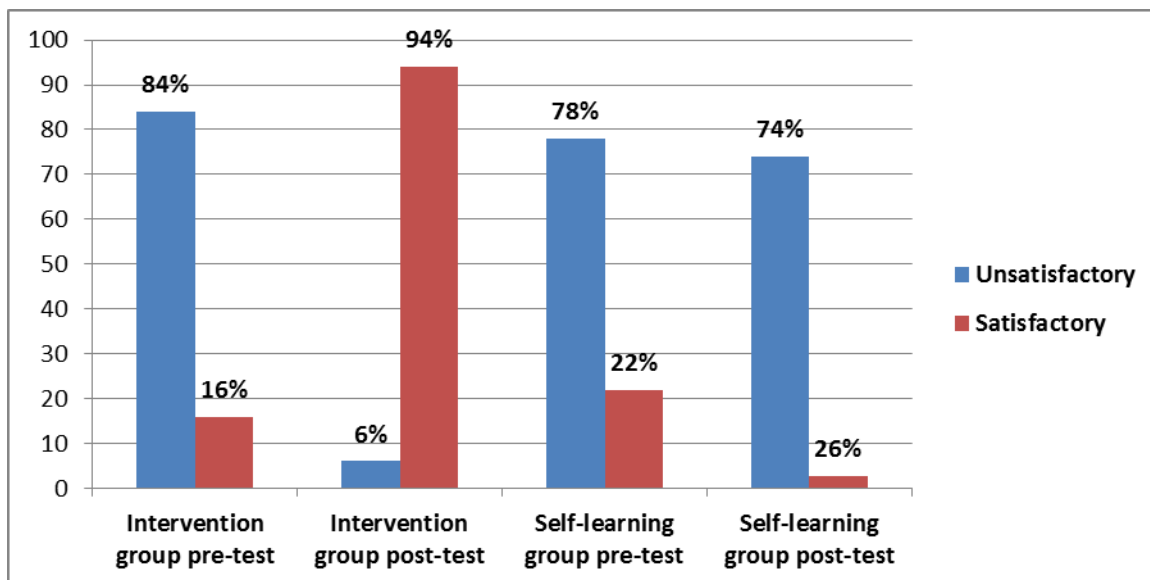
Figure 3. Distribution Total Score of Knowledge about Sexually Transmitted (STDs) Diseases among Intervention and Self-learning groups throughout the Program Implementation

Table 7. Relation between Residence and the Satisfactory level of Knowledge about Reproductive Health issues for the study sample throughout the Program. (No. 100)

Reproductive Health Items	Intervention group				Self-learning group			
	Urban (35)		Rural (15)		Urban (38)		Rural (12)	
	No	%	No	%	No	%	No	%
Puberty.								
Pre-test	1	2.9	0	0.0	3	7.9	1	8.3
Post-test	34	97.1	13	86.7	4	10.5	1	8.3
P-Value	$P_1 = 0.50$		$P_2 = 0.15$		$P_1 = 0.96$		$P_2 = 0.82$	
Marriage.								
Pre-test	6	17.1	1	6.7	22	57.9	7	58.3
Post-test	34	97.1	15	100.0	23	60.5	7	58.3
P-Value	$P_1 = 0.32$		$P_2 = 0.50$		$P_1 = 0.97$		$P_2 = 0.89$	
Fertilization.								
Pre-test	1	2.9	3	20.0	8	21.1	2	16.7
Post-test	33	94.3	15	100.0	12	31.6	2	16.7
P-Value	$P_1 = \mathbf{0.04}$		$P_2 = 0.34$		$P_1 = 0.74$		$P_2 = 0.31$	
Family planning.								
Pre-test	1	2.9	2	13.3	12	31.6	5	41.7
Post-test	34	97.1	15	100.0	15	39.5	5	41.7
P-Value	$P_1 = 0.15$		$P_2 = 0.50$		$P_1 = 0.52$		$P_2 = 0.89$	
STDs								
Pre-test	6	17.1	2	13.3	8	21.1	3	25.0
Post-test	32	91.4	15	100.0	11	28.9	2	16.7
P-Value	$P_1 = 0.73$		$P_2 = 0.24$		$P_1 = 0.77$		$P_2 = 0.39$	
FGM								
Pre-test	4	11.4	1	6.7	13	34.2	5	41.7
Post-test	34	97.1	15	100.0	16	42.1	7	58.3
P-Value	$P_1 = 0.60$		$P_2 = 0.50$		$P_1 = 0.63$		$P_2 = 0.32$	
Feminine hygiene.								
Pre-test	4	11.4	4	26.7	20	52.6	6	50.0
Post-test	35	100.0	14	93.3	22	57.9	7	58.3
P-Value	$P_1 = 0.17$		$P_2 = 0.12$		$P_1 = 0.87$		$P_2 = 0.97$	

P_1 = Pre- test, P_2 = Post- test, statistically significant $P < 0.05$

Table 8. Relation between Mother Education and the Satisfactory level of Knowledge about Reproductive Health issues for the Intervention group (No.50) throughout the Program.

Reproductive Health Items	Illiterate or read & write (21)		Elementary School (22)		Secondary School (7)		P-Value
	No	%	No	%	No	%	
Puberty.							
Pre-test	0	0.0	0	0.0	1	14.3	$P_1 = 0.04$
Post-test	18	85.7	22	100.0	7	100.0	$P_2 = 0.11$
Marriage.							
Pre-test	4	19.0	3	13.6	0	0.0	$P_1 = 0.45$
Post-test	21	100.0	21	95.5	7	100.0	$P_2 = 0.52$
Fertilization.							
Pre-test	1	4.8	3	13.6	0	0.0	$P_1 = 0.39$
Post-test	20	95.2	21	95.5	7	100.0	$P_2 = 0.84$
Family planning							
Pre-test							$P_1 = 0.60$
Post-test	2	9.5	1	4.5	0	0.0	
	21	100.0	21	95.5	7	100.0	$P_2 = 0.52$
STDs							
Pre-test	3	14.3	4	18.2	1	14.3	$P_1 = 0.93$
Post-test	19	90.5	21	95.5	7	100.0	$P_2 = 0.60$
FGM							
Pre-test	2	9.5	3	13.6	0	0.0	$P_1 = 0.57$
Post-test	20	95.2	22	100.0	7	100.0	$P_2 = 0.49$
Feminine hygiene.							
Pre-test							$P_1 = 0.88$
Post-test	4	19.0	3	13.6	1	14.3	$P_2 = 0.04$
	21	100.0	22	100.0	6	85.7	

P_1 = Pre- test, P_2 = Post- test, statistically significant $P < 0.05$

Table 9. Relation between Mother work and the Satisfactory level of Knowledge about Reproductive Health issues for the study sample throughout the Program.

Reproductive Health Items	Intervention group (50)				Self-learning group (48)			
	Working (4)		Housewives (46)		Working (13)		Housewives (35)	
	No	%	No	%	No	%	No	%
Puberty.								
Pre-test	0	0.0	1	2.2	1	7.7	3	8.6
Post-test	4	100.0	43	93.5	2	15.4	3	8.6
P-Value	$P_1 = 0.76$		$P_2 = 0.59$		$P_1 = 0.90$		$P_2 = 0.69$	
Marriage.								
Pre-test	1	25.0	6	13.0	7	53.8	20	57.1
Post-test	3	75.0	46	100.0	7	53.8	21	60.0
P-Value	$P_1 = 0.50$		$P_2 = 0.001$		$P_1 = 0.46$		$P_2 = 0.46$	
Fertilization.								
Pre-test	1	25.0	3	6.5	3	23.1	6	17.1
Post-test	4	100.0	44	95.7	3	23.1	10	28.6
P-Value	$P_1 = 0.19$		$P_2 = 0.67$		$P_1 = 0.50$		$P_2 = 0.72$	
Family planning.								
Pre-test								
Post-test	1	25.0	2	4.3	7	53.8	9	25.7
	4	100.0	45	97.8	6	46.2	12	34.3
P-Value	$P_1 = 0.09$		$P_2 = 0.76$		$P_1 = 0.16$		$P_2 = 0.15$	
STDs								
Pre-test	2	50.0	6	13.0	4	30.8	6	17.1
Post-test	4	100.0	43	93.5	8	61.5	5	14.3
P-Value	$P_1 = 0.05$		$P_2 = 0.59$		$P_1 = 0.37$		$P_2 = 0.003$	
FGM								
Pre-test	0	0.0	5	10.9	5	38.5	13	37.1
Post-test	4	100.0	45	97.8	7	53.8	16	45.7
P-Value	$P_1 = 0.48$		$P_2 = 0.76$		$P_1 = 0.55$		$P_2 = 0.36$	
Feminine hygiene.								
Pre-test								
Post-test	1	25.0	7	15.2	9	69.2	16	45.7
	4	100.0	45	97.8	11	84.6	17	48.6
P-Value	$P_1 = 0.60$		$P_2 = 0.76$		$P_1 = 0.34$		$P_2 = 0.07$	

P_1 = Pre- test, P_2 = Post- test, statistically significant $P < 0.05$,

Mother Death = 2 from self-learning group

Table (10-a). Relation between Mass Media and the Satisfactory level of Knowledge about Reproductive Health issues for the Intervention group (No.50) throughout the Program.

Reproductive Health Items	Radio (1)		T.V (5)		Computer & Net (1)		All of them (18)		More than one media (25)		P-Value
	No	%	No	%	No	%	No	%	No	%	
Puberty.											
Pre-test	0	0.0	0	0.0	0	0.0	1	5.6	0	0.0	$P_1 = 0.77$
Post-test	1	100.0	4	80.0	1	100.0	18	100.0	23	92.0	$P_2 = 0.52$
Marriage.											
Pre-test	0	0.0	1	20.0	0	0.0	2	11.1	4	16.0	$P_1 = 0.95$
Post-test	0	0.0	5	100.0	1	100.0	18	100.0	25	100.0	$P_2 = $ **0.000**
Fertilization.											
Pre-test	0	0.0	0	0.0	0	0.0	2	11.1	2	8.0	$P_1 = 0.93$
Post-test	1	100.0	4	80.0	1	100.0	17	94.4	25	100.0	$P_2 = 0.33$
Family planning											
Pre-test	0	0.0	1	20.0	0	0.0	1	5.6	1	4.0	$P_1 = 0.72$
Post-test	1	100.0	5	100.0	1	100.0	17	94.4	25	100.0	$P_2 = 0.77$
STDs											
Pre-test	1	100.0	1	20.0	0	0.0	4	22.2	2	8.0	$P_1 = 0.12$
Post-test	1	100.0	5	100.0	1	100.0	17	94.4	23	92.0	$P_2 = 0.96$
FGM											
Pre-test	0	0.0	0	0.0	1	100.0	1	5.6	3	12.0	$P_1 = $ **0.03**
Post-test	1	100.0	5	100.0	1	100.0	18	100.0	24	96.0	$P_2 = 0.90$
Feminine hygiene.											
Pre-test	0	0.0	2	40.0	0	0.0	3	16.7	3	12.0	$P_1 = 0.58$
Post-test	1	100.0	5	100.0	1	100.0	18	100.0	24	96.0	$P_2 = 0.90$

P_1 = Pre- test, P_2 = Post- test, statistically significant $P < 0.05$

Table (10-b). Relation between Mass Media and the Satisfactory level of Knowledge about Reproductive Health issues for the Self-learning group (No.50) throughout the Program.

Reproductive Health Items	T.V (4)		Computer & Net (5)		All of them (27)		More than one media (14)		P-Value
	No	%	No	%	No	%	No	%	
Puberty.									
Pre-test	2	50.0	0	0.0	1	3.7	1	7.1	$P_1 = $ **0.01**
Post-test	2	50.0	0	0.0	1	3.7	2	14.3	$P_2 = $ **0.02**
Marriage.									
Pre-test	3	75.0	3	60.0	14	51.9	9	64.3	$P_1 = 0.77$
Post-test	4	100.0	3	60.0	14	51.9	9	64.3	$P_2 = 0.31$
Fertilization.									
Pre-test	0	0.0	2	40.0	5	18.5	3	21.4	$P_1 = 0.51$
Post-test	2	50.0	2	40.0	7	25.9	3	21.4	$P_2 = 0.64$
Family planning									
Pre-test	1	25.0	1	20.0	10	37.0	5	35.7	$P_1 = 0.87$
Post-test	2	50.0	2	40.0	11	40.7	5	35.7	$P_2 = 0.96$
STDs									
Pre-test	1	25.0	0	0.0	6	22.2	4	28.6	$P_1 = 0.61$
Post-test	1	25.0	0	0.0	7	25.9	5	35.7	$P_2 = 0.48$
FGM									
Pre-test	3	75.0	2	40.0	9	33.3	4	28.6	$P_1 = 0.37$
Post-test	4	100.0	3	60.0	13	48.1	3	21.4	$P_2 = $ **0.03**
Feminine hygiene.									
Pre-test	2	50.0	4	80.0	15	55.6	5	35.7	$P_1 = 0.36$
Post-test	2	50.0	4	80.0	16	59.3	7	50.0	$P_2 = 0.68$

P_1 = Pre- test, P_2 = Post- test, statistically significant $P < 0.05$