

Effectiveness of an Instructional Module on Knowledge and Practices of Adolescent Girls regarding Vulvitis Prevention

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Abstract: Vulvitis is considered one of the most common inflammatory conditions that occurs in the lower female genital tract and constitutes a considerable problem for many females causing ascending infection as well as anxiety and discomfort which was affecting the female's quality of life. The aim of the study was to evaluate the effectiveness of an instructional module on vulvitis prevention among adolescent girls. **Method:** A quasi-experimental design was utilized. **Sample:** A purposive sample of 200 adolescent girls was included in the current study. **Setting:** The study was carried out at industrial secondary school and joint commercial secondary school at menouf city. **Instruments:** A structured self-administered questionnaire, knowledge assessment questionnaire, adolescent girl's practices evaluation form and adolescent girls' satisfaction scale. The results revealed that 1) There was a highly statistically significant difference between both groups regarding all knowledge and practices items one-month post intervention ($P < 0.0001$) compared to pre intervention. 2) All adolescent girls in the study group were satisfied about the instructional module concerning vulvitis and its preventive measures. **Conclusion:** Instructional module was effective and had positive effects on enhancing of adolescent girls' knowledge and practices regarding vulvitis and its preventive measures in the study group compared to the control group. **Recommendation:** Instructional module should be included as components adolescence education curriculum as active steps to increase awareness of adolescent girls regarding vulvitis and its preventive measures through schools, community and cultural groups.

Keywords: Instructional Module, Vulvitis Prevention, Adolescent Girls.

Introduction

Adolescence in females has been recognized as a special period in their life cycle that requires specific and special attention. This period recognized as the most turbulent phase of life in term of health as it's linked with several practices which sometimes may result in adverse outcomes. It is a transitional stage of physical and psychological development that generally occurs during the period from puberty to adulthood and it is usually associated with the teenage years but its physical, psychological or cultural expressions may begin earlier and end later, for example, puberty now typically begins during pre-adolescence especially in females (Gomathi & Boswell, 2020).

Vulvitis is considered one of the most common and prevalent infections among reproductive tract infections especially among adolescent girls, that refers to any inflammation or infection of the vulva (Gor, 2019). It is a common gynecological problem occurs in girls of all ages. Infections that may cause vulvitis are candidiasis, genital herpes and warts. Allergic reactions to hygiene products, excessive vaginal discharge or urinary incontinence and infestations with pubic lice or scabies are possible causes for occurrence of vulvitis (Tidy, 2019).

Female students have a high risk of making unhealthy lifestyle choices that could affect their health and wellbeing. This is the result and influence of a

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variety of popular cultures among this age group. Uninformed school students could formulate inaccurate and incomplete notions regarding health lifestyle, physical activity and fitness (Niekerk, Barnard & Justhinus, 2019). Awareness and knowledge regarding the prevention and control of reproductive tract morbidity in order to uncover the asymptomatic infections must be supplemented with reliable and appropriate instructions and guidance for early diagnosis of the wide range of genital tract infections (Pushpanath, 2019). According to Gilson, (2020), health education by instructional module is one of the key components of primary health care and one of the most vital health care requirements for females that must be considered much more in the primary health care system particularly maternal and child health.

As adolescents are often victims of various gynecological morbidities, the nurse plays an important role in preventing vulvitis through counseling and education. Nurses must give health teaching to adolescent girls to prevent having vulvitis such as wear loose clothing, choose cotton underwear, hygiene the vulva to remove any residue of lotions or other products. Pat dry and use any prescribed medication or a soothing and substance such as vaseline or olive oil (Newson, 2019).

Conceptual Framework of the study

Conceptual frameworks are inter-related concepts that assembled together in some rational scheme by virtue of their relevance to a common theme. A conceptual framework is the presentation of written state or visual state which gives explanation of the major things in the form of either graphically or narrative to study (Miles & Huberman, 2020). Conceptual framework is the precursor of a theory

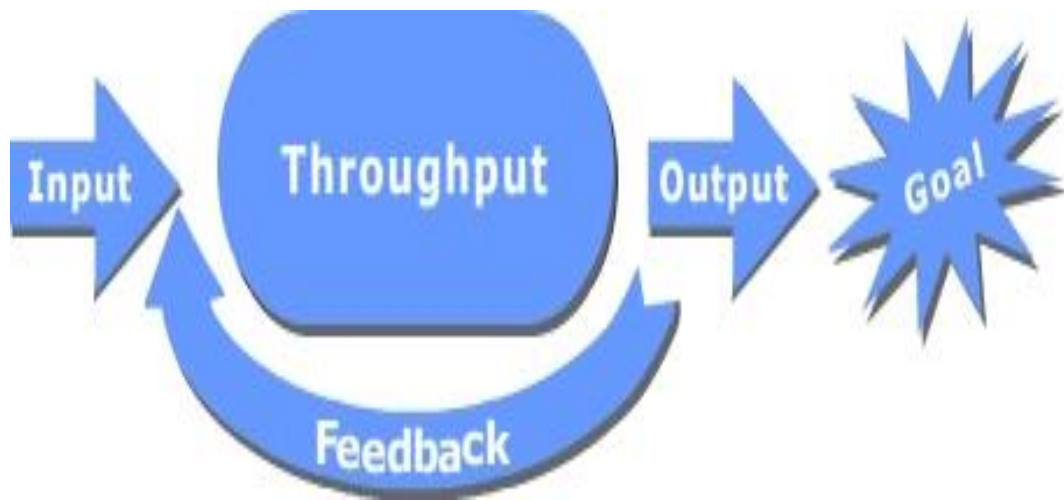
that helps to stimulate research and the extension of knowledge by providing both direction and inputs, provides broad prospective for nursing practice, research and education and plays several interrelated roles in the progress of science. Their overall purpose is to make scientific and meaningful findings and also to generalize the findings (Basvanthappa, 2018).

The present study was focused on assessing the effectiveness of an instructional module on vulvitis prevention among adolescent girls. The conceptual framework of the present study was developed by the researcher based upon J.W. Kenny's Open System Model. { source J.W. Kenny open system model, WHO SEAROS technical publication, (1999). A system consists of a set of interacting components within a boundary that filters the type and rate of exchange with the environment. All living systems are open in which there is a continual exchange of matter, energy and information. Open system has varying degrees of input and gives back output in form of matter, energy and information.

The main concepts of Kenny's open system model are input, throughput, output and feedback. Input refers to matters and information which are continuously processed through the system and released as outputs. After processing the input, the system returns output (matter and information) to the environment in as altered state, affecting the environment for information to guide its operation. This feedback information of environment responses to the systems output is used by the system in adjustment correlation with the environment. Feedback may be possible, negative or neutral.

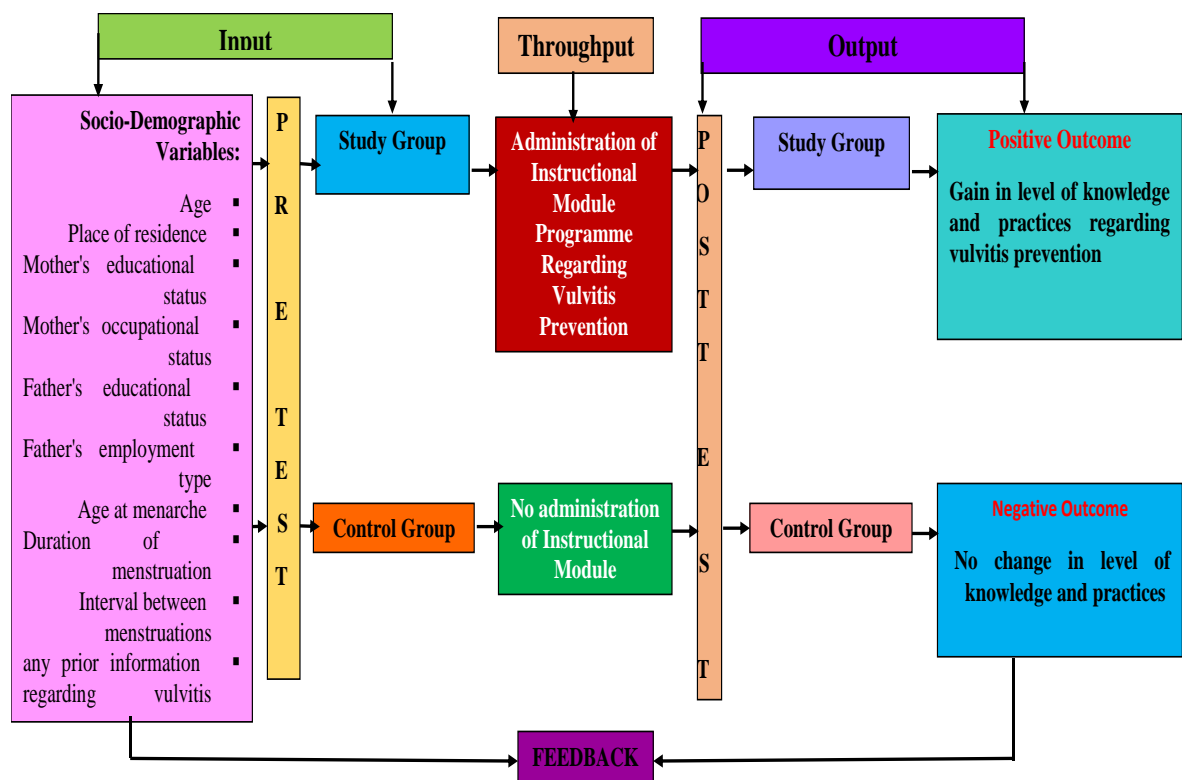
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Figure (1): Input, Throughput, Output and Feedback open system model.



Adopted from Dongre, A.R., Deshmukh, P.R & Garg, B.S., (2019): The effect of community-based instructional module approach on management of genital infections among rural Indian adolescent girls. *World Health Population*, 9(3), 48-54.

Figure (2): Conceptual Frame work based on Modified J.W KENNY'S Open System Model



Adapted from Dongre, A.R., Deshmukh, P.R & Garg, B.S., (2019): The effect of community-based instructional module approach on management of genital infections among rural Indian adolescent girls. *World Health Population*, 9(3), 48-54.

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Significance of the study:

Vulvitis is one of the most common and prevalent infections among reproductive tract infections especially among adolescent girls (Gor, 2019). Adolescent girls are especially susceptible to genital tract infections especially vulvitis because of weakness of mucosal defense mechanism, immature lining of the cervix give low barrier against infections and relatively low level of vaginal acidity (Umar, Yusuf & Musa, 2020).

Vulvitis can cause many complications such as ascending infection (infection spreads up to the upper genital tract to cause Pelvic Inflammatory Disease (PID), damage to the fallopian tube, chronic pelvic pain and infertility (Msuya et al., 2019). Also, genital tract infections can cause the female embarrassment, may lower self- image and may negatively affect relationships (Tempera and Bruce, 2018).

Adolescent's girls do not receive sufficient education about reproductive health through their formal education in schools (Hamed, 2018). Also, in spite of increased attempts of awareness generated by health related organizations, there is still significant lack of knowledge on genital tract infections among adolescent females, open and informative discussion sessions on this issue are long overdue. Instructional module implementation is crucial as it can cause positive changes in knowledge, attitudes and practices of adolescent girls concerning prevention of vulvitis and contribute significantly to reduce the risk of developing vulvitis (Dalrymple, Bansal & Gaffar., 2019). Consequently, this study was intended to evaluate the effectiveness of an instructional module on vulvitis prevention among adolescent girls in Menoufia governorate.

Purpose of the Study:

The study aimed to evaluate the effectiveness of an instructional module on vulvitis prevention among adolescent girls.

Research Hypotheses:

- 1- Adolescent girls who follow the instructional module exhibit higher knowledge scores concerning vulvitis and its preventive measures than those who do not follow.
- 2- Adolescent girls who follow the instructional module exhibit higher practice scores concerning vulvitis prevention than those who do not follow.
- 3- Adolescent girls in the study group have high satisfaction scores about the instructional module concerning vulvitis and its preventive measures after intervention.

Methods

Research design:

A quasi-experimental research design (comparative study) was utilized in this study.

Settings:

The present study was conducted in selected technical secondary schools at Menouf city (industrial secondary school and joint commercial secondary school); both are affiliated to the ministry of education in Menouf city, Menoufia Government in Egypt. These settings were easy to access and contained big number of female students in adolescence stage.

Sampling:

A purposive sample of (200) adolescent girls "110 adolescent girls from industrial secondary school and ninety adolescent girls from joint commercial secondary school" who fulfilled the inclusion criteria were

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selected, involving single adolescent girls aged from 14- 19 year, Adolescent girls who were free from any medical problems such as kidney disease, heart disease and diabetes mellitus. Adolescent girls who were free from any mental diseases and Adolescent girls who were not received any training program about vulvitis and its preventive measures. The selected adolescent girls who met the inclusion criteria were then randomly assigned (using simple randomization technique) to two groups (Group1 and Group2), according to the list of student names as girls that had odd numbers in the list of student names were assigned to group 1(study group). While girls who had even numbers in the same list were assigned to group 2 (control group). This technique was used to avoid sample contamination and bias.

Sample size:

Sample size was based on the past review of the literature that examined the same outcomes and found significant differences; a sample size has been calculated using the following equation (Fisher & Yates, 2021).

At power 80% and CI 95% the sample size was conducted to be 200 adolescent girls (100 for each group) participated in the study.

$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\epsilon^2}$$

Where

z is the z score

N is population size

Instruments

Instrument I: A Structured Self – Administered Questionnaire: This instrument was developed by the researcher to collect the necessary data about the study participants based on

the review of currently related literature. It was in the form of close ended questions and included the following parts:

Part I: Socio-demographic characteristics of the study participants: It included age, place of residence, academic year, mother's educational status, mother's occupational status, father's educational status and father's employment type.

Part II: Menstrual history: It included age at menarche, regularity of menstruation, duration of menstruation, interval between menstruations, menstrual bleeding amount and pain with menstruation.

Part III: Previous history of vulvitis.

Part IV: Sources of previous information about vulvitis and its preventive measures.

Validity of the instrument I: -

Validity of the instrument was established by five qualified experts (three experts from Maternal and Newborn Health Nursing department at Faculty of Nursing and two physicians from Obstetrics and Gynecology department at Faculty of Medicine). They reviewed the instrument for content accuracy and internal validity. Also, they were asked to judge the items for completeness and clarity (content validity). Suggestions were incorporated into the instrument and modifications were be made.

Reliability of the instrument I: -

Reliability of the instrument was computed by the researcher for testing the internal consistency of the instrument, using test-retest reliability. This method took place through the administration of the same instrument to the same participants under similar conditions on one or more occasions.

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Results from repeated testing were compared.

Instrument II: Knowledge Assessment Questionnaire:

It was developed by the researcher in the form of close-ended questions and open-ended questions. It consisted of (9) questions to assess adolescent girls' knowledge concerning vulvitis and its preventive measures. These questions were used pre and post instructional module for both groups. Knowledge's Scoring System: Knowledge questions were determined and coded accordingly. Each item was assigned as follows; correct & complete answer took (3), correct & incomplete answer took (2), while incorrect answer & don't know took (1) (Divya, Pushpa & Lata., 2020).

The total score of knowledge was classified as follows:

- Good knowledge: > 75%
of total knowledge score (21-27)
- Average knowledge: 60-75%
of total knowledge score (17-20)
- Poor knowledge: < 60 %
of total knowledge score (9- 16)

Validity of the instrument II:-

Validity of the instrument was established by five qualified experts (three experts from Maternal and Newborn Health Nursing department at Faculty of Nursing and two physicians from Obstetrics and Gynecology department at Faculty of Medicine). They reviewed the instrument for content accuracy and internal validity. Also, they were asked to judge the items for completeness and clarity (content validity). Suggestions were incorporated into the instrument and modifications were be made.

Reliability of the instrument II:-

Reliability of the instrument was computed by the researcher for testing the internal consistency of the instrument, using test-retest reliability. This method took place through the administration of the same instrument to the same participants under similar conditions on one or more occasions. Results from repeated testing were compared.

Instrument III: Adolescent girl's Practices Evaluation Form:

It was designed by the researcher after reviewing related literature (Curran, Latha & Singh, 2019), (Jain, Katiyar & Ezike, 2019) and (AbdElhady, 2020). It was included (31) items to assess adolescent girl's practices for preventing of vulvitis. Items were focused on general hygiene measures (18 items) & conditional hygiene measures during menstruation (13 items) and were used pre and post instructional module for both groups. Practice's Scoring System: Practice questions were determined and coded accordingly. Each item was judged according to three point likert scale continuum from never done (1), sometimes done (2) and always done (3).

The total score of practice was classified as follows:

- Unsatisfactory practice: < 60%
of total practice score (31- 57)
- Satisfactory practice: 60 - 75%
of total practice score (58-72)
- Highly satisfactory practice: > 75 %
of total practice score (73-93)

Validity of the instrument III:-

Validity of the instrument was established by five qualified experts

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(three experts from Maternal and Newborn Health Nursing department at Faculty of Nursing and two physicians from Obstetrics and Gynecology department at Faculty of Medicine). They reviewed the instrument for content accuracy and internal validity. Also, they were asked to judge the items for completeness and clarity (content validity). Suggestions were incorporated into the instrument and modifications were made.

Reliability of the instrument III:-

Reliability of the instrument was computed by the researcher for testing the internal consistency of the instrument, using test-retest reliability. This method took place through the administration of the same instrument to the same participants under similar conditions on one or more occasions. Results from repeated testing were compared.

Instrument IV: Adolescent girls' Satisfaction Scale:

It was developed by the researcher based on the relevant literatures (Abd-El-Rasol & Dogham, 2020). This scale was consisted of (9 items) and designed to determine the opinions of adolescent girls in the study group concerning the instructional module program, its objectives, time and content.

Satisfaction's Scoring System:

Each item was scored using a three-point Likert scale which categorized and scored as: dissatisfied scored (1), satisfied scored (2) and strongly satisfied scored (3) with a score of (9-27). The total score of each adolescent girl was categorized into "Unsatisfied" when she achieved <70% points of the total score and those who had \geq 70% points were considered as "Satisfied".

Validity of Instrument IV:

Validity of the instrument was established by five qualified experts (three experts from Maternal and Newborn Health Nursing department at Faculty of Nursing and two physicians from Obstetrics and Gynecology department at Faculty of Medicine). They reviewed the instrument for content accuracy and internal validity. Also, they were asked to judge the items for completeness and clarity (content validity). Suggestions were incorporated into the instrument and modifications were made.

Reliability of Instrument IV:

Reliability of the instrument was computed by the researcher for testing the internal consistency of the instrument, using test-retest reliability. This method took place through the administration of the same instrument to the same participants under similar conditions on one or more occasions. Results from repeated testing were compared.

Pilot Study:

It performed on (10%) of the total study participants recruited from the above mentioned technical secondary schools, which is equal to (20) adolescent girls according to the selection criteria. A pilot study was implemented to ascertain the simplicity, clarity, applicability, relevance and content validity of instruments, to test the feasibility of the study, to estimate the time needed for data collection and to detect any problem peculiar to the statements such as sequence and clarity that might interfere with the process of data collection. The adolescent girls who participated in the pilot study were excluded from the sample to assure the stability of results and make the necessary modifications.

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Ethical Considerations:

Approaches to ensuring ethics were considered in the study regarding the confidentiality. The researcher introduced herself to the participants of the study sample and explained the purpose of the study in order to obtain their agreement to be recruited in the study as well as to gain their cooperation. Confidentiality was achieved by using closed sheets with the names of the participating adolescent girls replaced by numbers. All adolescent girls were informed that the information they provided during the study would be kept confidential and used only for statistical purposes. All adolescent girls were informed that participation in the study is voluntary and she could withdraw from the study whenever she decided to do so. Each participant was free to ask any question about the study details.

Administrative Approval Letters:

Official letters were taken from Dean of Faculty of Nursing, Menoufia University and submitted to the directors of (industrial secondary school and joint commercial secondary school) at menouf city before starting of data collection to carry out the study. An official permission was obtained from the directors of the above-mentioned settings to carry out the study. A full explanation about the rationale of present study was provided to the directors of the study settings. An approval from the committee of Hearing and Ethics was obtained from Faculty of Nursing - Menoufia University on 14/12/2019.

Study Field Work Description:

The present study carried out over a period of five months from the beginning of October (2021) to the end of February (2022). The researcher visited the previously mentioned settings three days/week (Sunday,

Monday and Thursday) from 9.00 am to 2.35 pm by rotation at previously mentioned settings respectively according to students' lessons table and break times between lessons. The researcher screened the adolescent girls to identify the eligible participants according to the inclusion criteria. The selected adolescent girls were then randomly assigned to two groups. The participants in the study group were divided into seven sub-groups; each sub-group was involved 15 students, only one sub-group included ten students.

Developing an instructional module:

it was done according to the following phases:

1. Preparatory Phase

An extensive review related to the study area was done including electronic dissertations, available books, articles and periodicals. A review of literature to formulate knowledge base relevant to the study area was also done.

2. Interviewing and Assessment Phase

This phase encompassed interviewing both control and study groups. Interviewing began first with the control group to avoid bias then with the study group. At the beginning of interviewing, the researcher greeted the students, introduced herself to all students in both groups included in the research study and provided the students with all information about the purpose, duration and activities of the research study.

Data were collected by the researcher through administration of the following instruments: a structured self-administered questionnaire, knowledge assessment questionnaire regarding vulvitis and its preventive measures as well as Adolescent girl's

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Practices Evaluation Form to each participant in both groups.

The data obtained during this phase constituted the baseline for further comparisons to evaluate the effectiveness of an instructional module on vulvitis prevention among adolescent girls. Average time for the completion of interviewing schedule for each sub-group in both groups was around (30- 60 minutes). The number of subgroups assessed /day ranged from (2-3) sub-groups and the number of sub- groups assessed per week was around (7) sub- groups. Questions of instruments were presented in Arabic language and the study participants were documented her answers in the instruments utilized.

3. Planning Phase

Based on the results obtained from the study group during the assessment phase, the instructional module was developed by the researcher according to the needs of study group, their level of understanding and related literature reviews. It was designed in a form of printed Arabic booklet and Arabic talking electronic booklet (CD ROM) to satisfy the studied adolescent girls' deficit knowledge, practices regarding vulvitis and its preventive measures. It covered the knowledge, practices regarding vulvitis and its preventive measures. Also, this module is developed to be a guide and a reference for adolescent girls. Instructional module objectives were constructed and included three general objectives distributed on three sessions with each session having set of specific objectives.

4. Implementation Phase:

This phase was conducted for the study group only Instructional module carried out totally by the researcher to ensure providing complete, consistent and accurate knowledge about vulvitis

and its preventive measures. It involved three scheduled instructional sessions per week; First session included overview about the female reproductive system. Second session included overview about definition, causes and symptoms- signs of vulvitis. Third session included overview about management, complications and preventive measures regarding vulvitis. All these sessions were presented in a power point presentation by the researcher and repeated to each sub-group by using the same teaching strategies until finished all sub-groups in the study group. Duration of each session took about 60-120 minutes including periods of discussion according to their achievement, progress and feedback.

At the beginning of the first session an orientation to the instructional module (the theoretical part of module) its general objective, specific objectives and contents using simple, brief, clear and Arabic language to suit the levels of education and understanding of all adolescent girls took place. Each session started by feedback about the previous session to ensure that they remembered the instructions given and to reinforce the knowledge and introduction of the objectives of new session. At the end of each session, the researcher informed each subgroup in the study group about the time of the next session. Also, the researcher summarized the bulk of information with each sub-group and emphasized the most important points. In addition, the researcher discussed the student' questions to correct any misunderstanding or false information about the topic at the end of each session. Different methods of teaching were used in implementation such as lectures, group discussion, demonstration, re-demonstration and brainstorming. Suitable instructional

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media was used and included hard and talking electronic booklet about vulvitis and its preventive measures which were constructed by the researcher in a simple Arabic language after reviewing the related literatures. This booklet distributed to all recruited students in the study group in the first day of the program to achieve its objectives.

5. Evaluation Phase

Evaluation started first with the control group then with the study group to avoid bias. This evaluation was conducted to the studied participants at two times:-

First time (pre-test): before implementation of the instructional module by using (instrument I, II, III) for both groups. Second time (post-test): one month after implementation of the instructional module by using (instrument II, III) for both groups and (instrument IV) was used for study group only to assess satisfaction of the study group regarding the instructional module program.

Statistical Analysis:

Data were collected, tabulated, statistically analyzed using an IBM personal computer with Statistical Package of Social Science (SPSS) version 22 (SPSS, Inc, Chicago, Illinois, USA). Chi square test, Fischer exact test (FE), Mc Nemar test were used to analyze the data.

Results:

Table (1) shows the socio demographic characteristics of the studied participants. There were no statistically significant differences between both groups regarding each item in their socio demographic characteristics ($P>0.05$ for each).

Table (2) highlights the menstrual history among studied participants. There were no statistically significant

differences between the study and control groups regarding the menstrual history items ($P>0.05$ for each).

Table (3) shows the previous history of vulvitis among studied participants. There were no statistically significant differences between the study and control groups regarding previous history of vulvitis items ($P>0.05$ for each).

Figure (1) shows the sources of previous information about vulvitis and its preventive measures among the study group. It revealed that the majority of the study group had no any previous information about vulvitis and its preventive measures while the minority of them had sources of information from more than one source such as friends, mass media, family members and health team respectively.

Figure (2) shows the comparison between study and control groups regarding mean total knowledge score about vulvitis and its preventive measures pre intervention and one month post intervention. There was a highly statistically significant difference between both groups regarding the mean total knowledge score about vulvitis and its preventive measures one month post intervention than pre intervention ($P<0.0001$).i.e. It increased from 17.9 ± 5.9 pre intervention to 35.7 ± 3.4 post intervention among the study group. However, its mean total score was remaining the same as its values in pre-intervention among the control group (18.1 ± 6.1).

Figure (3) clarifies the total knowledge score of the study group about vulvitis and its preventive measures pre and one month post intervention. There was a highly statistically significant difference between pre intervention and one month post intervention regarding total knowledge score about vulvitis and its

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preventive measures among the study group ($P < 0.0001$). i.e. good knowledge response was increased from 10% pre intervention to 99% post intervention among the study group.

Figure (4) shows the comparison between study and control groups regarding mean total daily personal hygiene practices score for prevention of vulvitis pre intervention and one month post intervention. There was a highly statistically significant difference between both groups regarding the mean total daily personal hygiene practices score for prevention of vulvitis one month post intervention than pre intervention ($P < 0.0001$).

Figure (5) shows the comparison between study and control groups regarding mean total menstrual hygiene practices score for prevention of vulvitis pre intervention and one month post intervention. There was a highly statistically significant difference between both groups regarding the mean total menstrual hygiene practices score for prevention of vulvitis one month post intervention than pre intervention ($P < 0.0001$). i.e. It increased from 24.4 ± 7.9 pre intervention to 34.8 ± 1.4 post intervention among the study group. However, its mean total score was remaining the same as its values in pre-intervention among the control group (24.2 ± 8.1).

Table (4) highlights the grand total hygiene practices score for prevention of vulvitis among study and control groups pre intervention. There was no statistically significant difference between both groups regarding grand total hygiene practices score for prevention of vulvitis pre intervention ($P > 0.05$).

Figure (6) highlights the grand total hygiene practices score for prevention

of vulvitis among study and control groups one month post intervention. There was a highly statistically significant difference between both groups regarding grand total hygiene practices score for prevention of vulvitis one month post intervention ($P < 0.0001$).

Figure (7) shows the relation between total knowledge score and grand total hygiene practices score among adolescent girls in the study group pre intervention. There was a highly statistically significant relation between total knowledge score and grand total hygiene practices score among adolescent girls in the study group pre intervention ($P < 0.0001$).

Table (5) highlights the relation between total score of knowledge and practices of the study group and some their socio-demographic characteristics pre intervention. There was no statistically significant relation between total score of knowledge, practices of the study group and their age groups pre intervention. However, there was a highly statistically significant relation between total score of knowledge, practices of the study group and their place of residence pre intervention ($P < 0.0001$, $P < 0.001$) respectively.

Table (6) represents the satisfaction of the study group about the instructional module concerning vulvitis and its preventive measures one month post intervention. It illustrated that the majority of adolescent girls in the study group were strongly satisfied about the instructional module concerning vulvitis and its preventive measures one month after intervention with a range of (52% to 95%) and no one of them was dissatisfied.

Results:

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Table (1): Socio Demographic Characteristics of the Studied participants (N =200)

Variables	Study group (N=100)		Control group (N=100)		Test of sig.	P value
	No.	%	No.	%		
Age (years)						
1. 14 - <17 years	73	73.0	65	65.0	χ^2 1.5	0.22 (NS)
2. 17 - \geq 19 years	27	27.0	35	35.0		
Mean \pm SD	15.3 \pm 2.1 Y		16.2 \pm 2.4 Y		t-test =1.12	0.34 (NS)
Place of residence						
1. Rural	69	69.0	61	61.0	χ^2 1.4	0.24 (NS)
2. Urban	31	31.0	39	39.0		
Academic year						
1. 1 st year	51	51.0	49	49.0	χ^2 0.72	0.69 (NS)
2. 2 nd year	34	34.0	39	39.0		
3. 3 rd year	15	15.0	12	12.0		
Mother's educational status						
1. Illiterate	10	10.0	11	11.0	LR=2.3	0.67 (NS)
2. Read and write	12	12.0	12	12.0		
3. Secondary education	57	57.0	48	48.0		
4. University	21	21.0	29	29.0		
Mother's occupation						
1. House wife	66	66.0	55	55.0	χ^2 2.5	0.11 (NS)
2. Employee	34	34.0	45	45.0		
Father's education						
1. Illiterate	11	11.0	10	10.0	LR=0.21	0.95 (NS)
2. Read and write	12	12.0	13	13.0		
3. Secondary education	52	52.0	50	50.0		
4. University	25	25.0	27	27.0		
Father's occupation						
1. Employee	32	32.0	29	29.0	χ^2 1.0	0.80 (NS)
2. Vocational	37	37.0	35	35.0		
3. Business	21	21.0	27	27.0		
4. Farming	10	10.0	9	9.0		

NS: non-significant

Table (2): Menstrual History among Studied Participants (N= 200)

Variables	Study group (N=100)		Control group (N=100)		Test of sig.	P value
	No.	%	No.	%		
Age at menarche						
1. \leq 13 year	15	15.0	10	10.0	χ^2 1.14	0.28 (NS)
2. $>$ 13 year	85	85.0	90	90.0		
Regularity of menstruation						
1. Regular	100	100	100	100	--	*
2. Irregular						
Duration of menstruation						
1. 3-5 days	94	94.0	91	91.0	χ^2 0.65	0.42 (NS)
2. $>$ 5 days	6	6.0	9	9.0		
Interval between menstruations						
1. 21 – 35 days	100	100	100	100	--	**
Menstrual bleeding amount						
1. Light	55	55.0	69	69.0	LR=4.2	0.04 (NS)
2. Moderate	45	45.0	31	31.0		
Pain complain with menstruation						
1. Yes	17	17.0	21	21.0	χ^2 0.52	0.47 (NS)
2. No	83	83.0	79	79.0		
Total	100	100	100	100		

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NS: non-significant

* = No statistics are computed because regularity of menstruation is a constant.

** = No statistics are computed because interval between menstruations (per days) is a constant.

Table (3): Previous History of Vulvitis among Studied Participants (N= 200)

Variables	Study group (N=100)		Control group (N=100)		Test of sig.	P value
	No.	%	No.	%		
Complain from vulvitis previously					χ^2 1.3	0.25 (NS)
1. Yes	48	48.0	40	40.0		
2. No	52	52.0	60	60.0		
If yes, the frequency of occurrence	N= 88				χ^2 2.5	0.11 (NS)
1. One time	14	29.2	20	50.0		
2. > one time	34	70.8	20	50.0		
If > 1 time, the intervals between infections	N= 54				LR=1.5	0.47 (NS)
1. < 1 month	10	29.4	5	25.0		
2. 1- 6 months	15	44.1	12	60.0		
3. > 6 months	9	26.5	3	15.0		
Went to physician	N= 88				χ^2 0.0-	1.0 (NS)
1. Yes	6	12.5	5	12.5		
2. No	42	87.5	35	87.5		
If yes, did you expose to vulval examination by doctor?	N= 11				LR=0.75	0.38 (NS)
1. Yes	1	16.7	2	40.0		
2. No	5	83.3	3	60.0		
If no, the barriers of not going to physician	N=77				χ^2 0.60	0.89 (NS)
1. Feeling of shyness	14	33.3	10	28.6		
2. Custom& Habit	9	21.4	10	28.6		
3. Culture of community	7	16.7	5	14.2		
4. > one barrier	12	28.6	10	28.6		
Self-care activities that used for management of vulvitis	N=77				LR=2.4	0.49 (NS)
1. Avoiding anxiety and psychological stress.	3	7.1	2	5.7		
2. Using warm water	13	31	9	25.7		
3. Using antiseptic solution for cleaning the vulva	6	14.2	10	28.6		
4. All of the above	20	47.6	14	40		
Total	100	100	100	100		

NS: non-significant

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Figure (1): Sources of Previous Information about Vulvitis and Its Preventive Measures among the Study Group

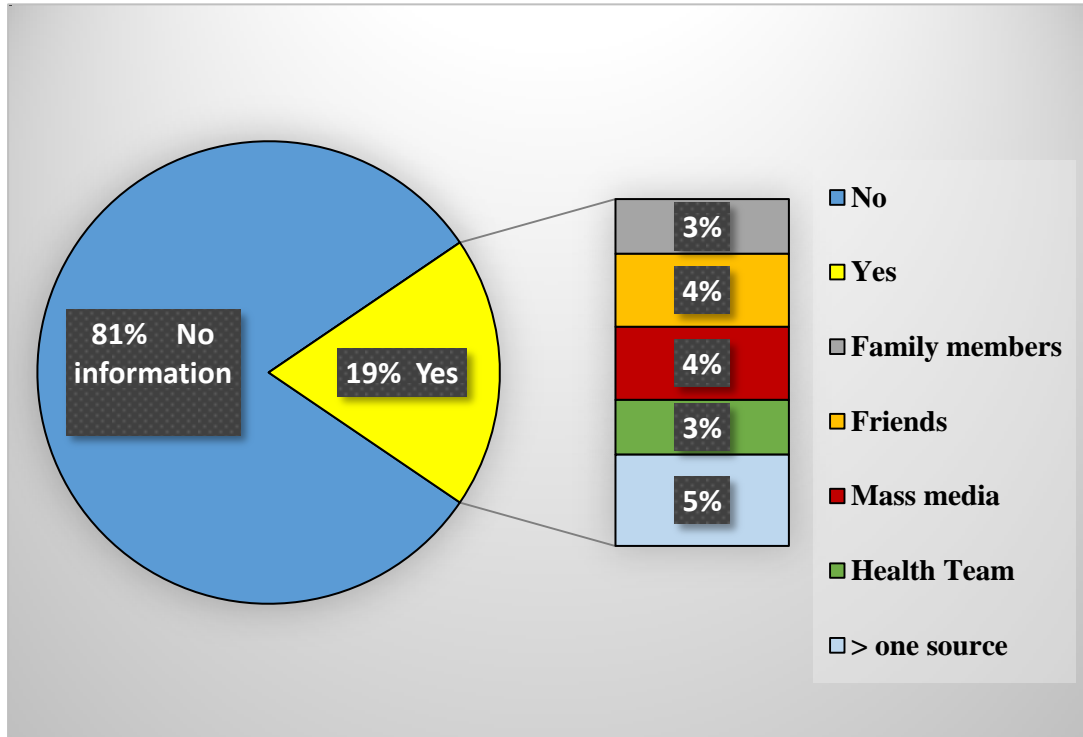
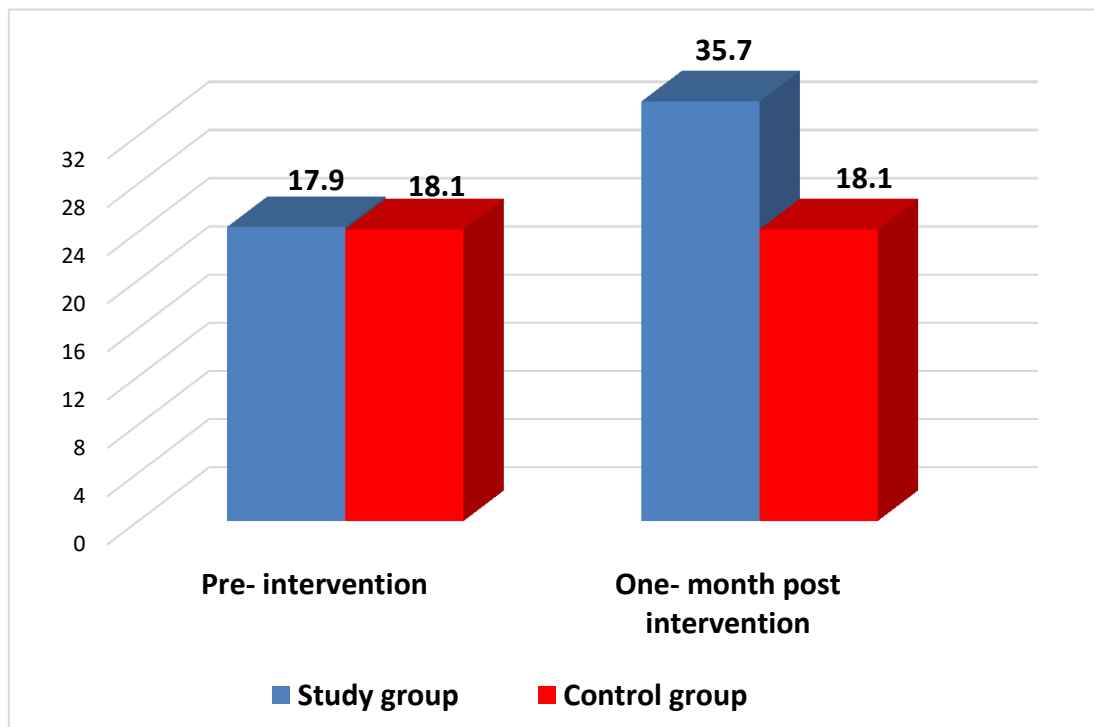


Figure (2): Comparison between Study and Control Groups regarding Mean Total Knowledge Score about Vulvitis and Its Preventive Measures Pre Intervention and One Month Post Intervention.



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Figure (3): Total Knowledge Score of the Study Group about Vulvitis and Its Preventive Measures Pre and One Month Post Intervention

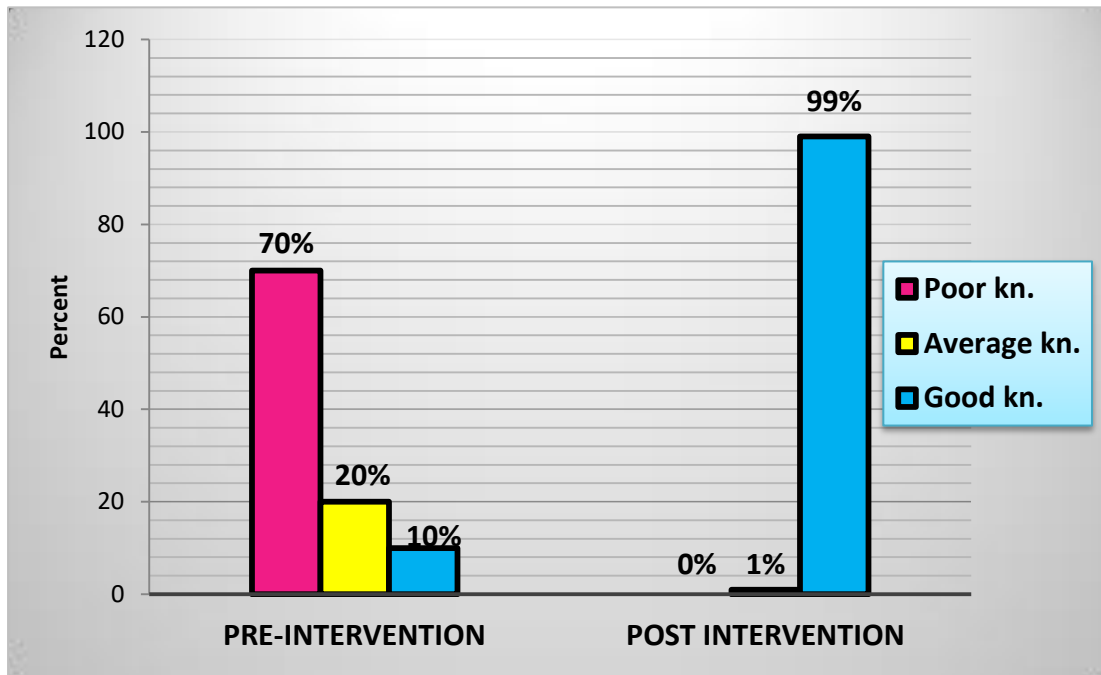
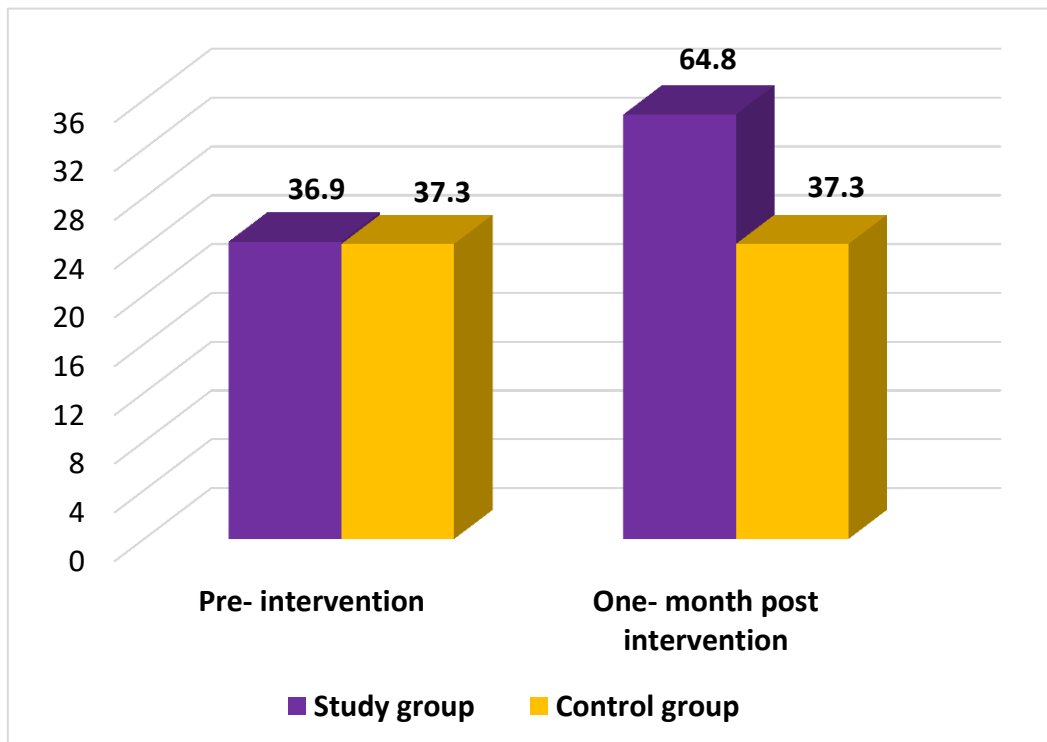


Figure (4): Comparison between Study and Control Groups regarding Mean Total Daily Personal Hygiene Practices Score for Prevention of Vulvitis Pre Intervention and One Month Post Intervention



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Figure (5): Comparison between Study and Control Groups regarding Mean Total Menstrual Hygiene Practices Score for Prevention of Vulvitis Pre Intervention and One Month Post Intervention

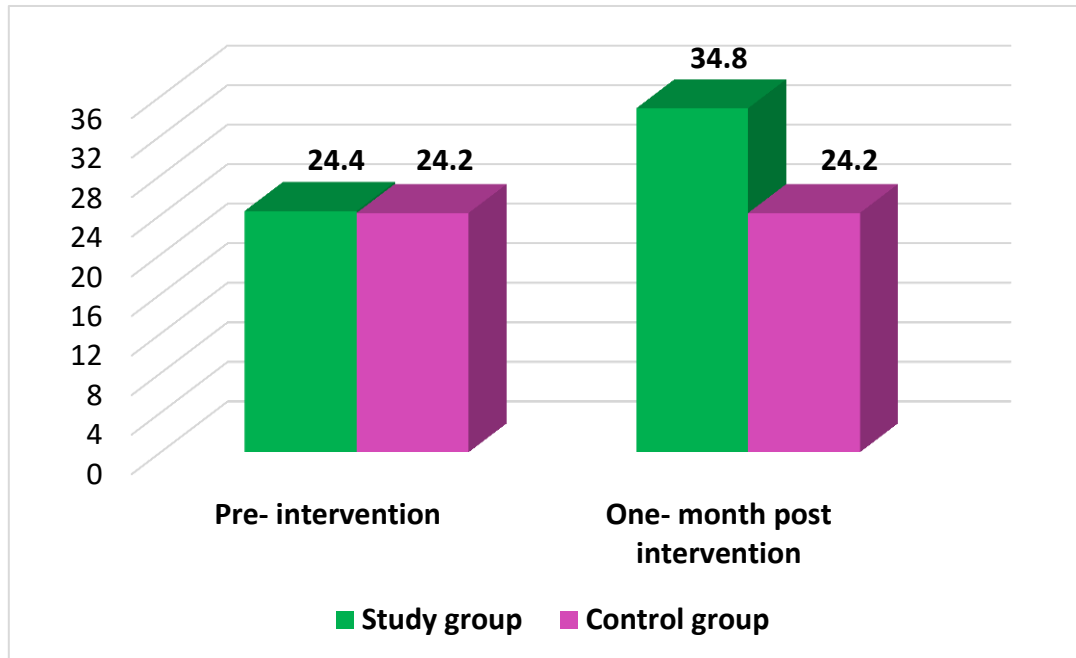


Table (4): Grand Total Hygiene Practices Score for Prevention of Vulvitis among Study and Control Groups Pre Intervention (N=200)

Study participants (N=200)	Grand total hygiene practices score (pre intervention)						P value
	Unsatisfactory practice (31-57)		Satisfactory practice (58-72)		Highly satisfactory practice (73-93)		
	N0.	%	N0.	%	N0.	%	
Study group (N=100)	38	38%	35	35%	27	27%	0.93 (NS)
Control group (N=100)	36	36%	35	35%	29	29%	

NS: non-significant

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Figure (6): Grand Total Hygiene Practices Score for Prevention of Vulvitis among Study and Control Groups One Month Post Intervention

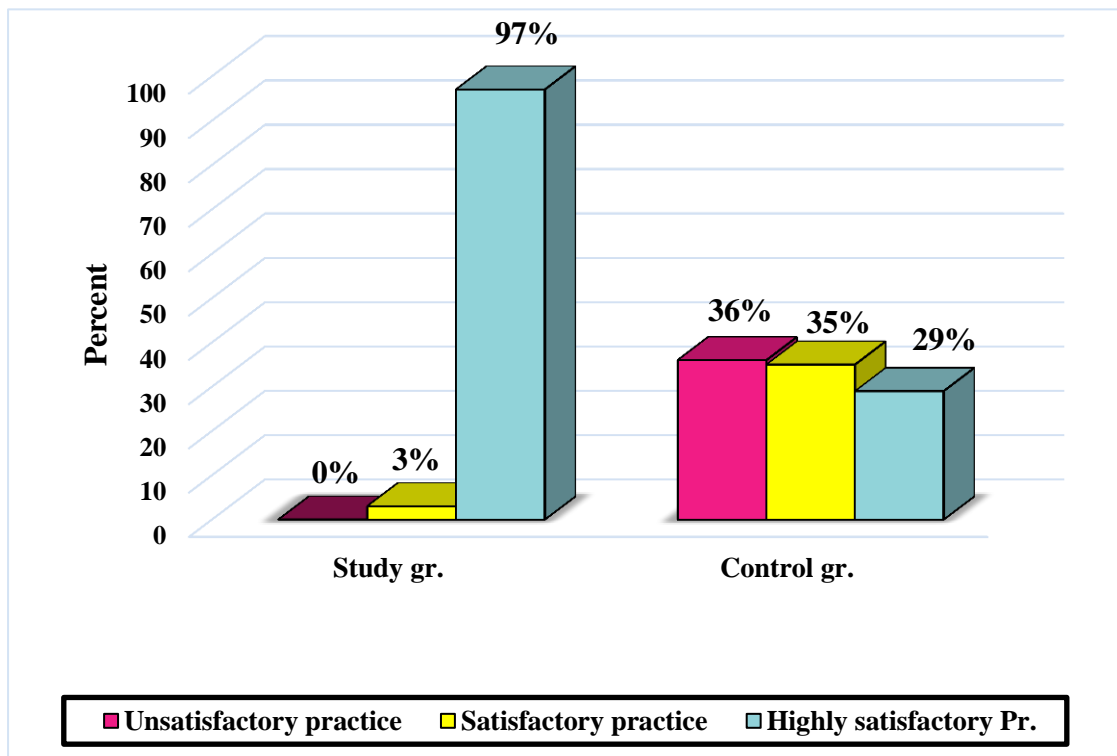
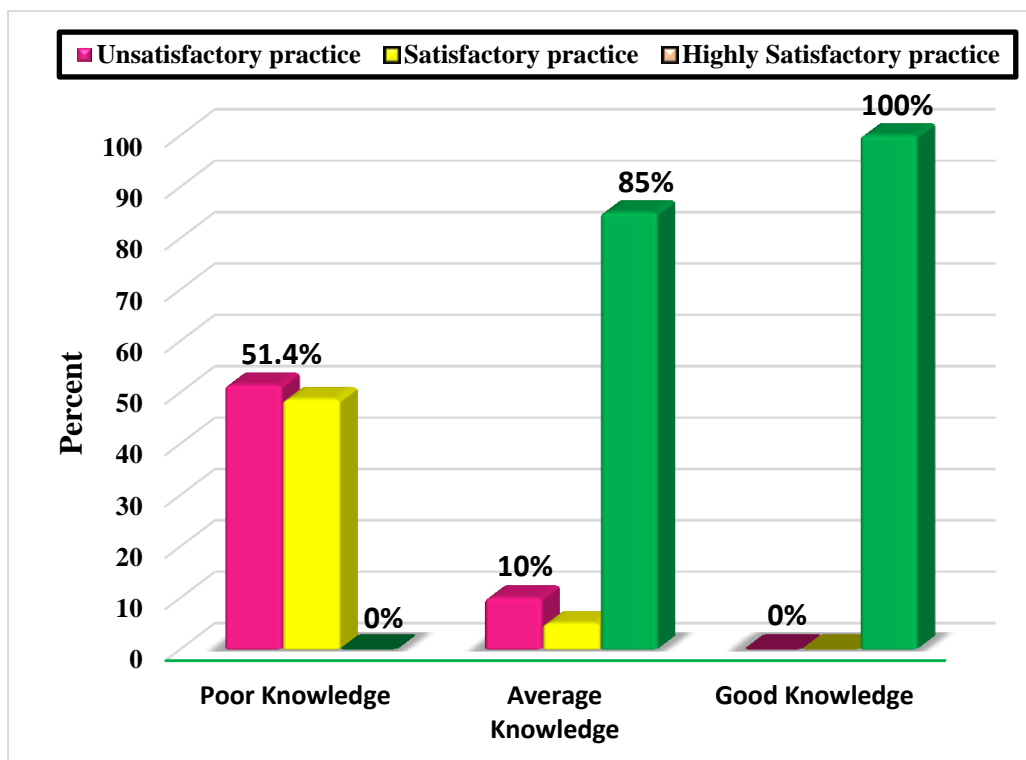


Figure (7): Relation between Total Knowledge Score and Grand Total Hygiene Practices Score among Adolescent Girls in the Study Group Pre Intervention



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Table (5): Relation between Total Score of Knowledge and Practices of the Study Group and Some Their Socio-Demographic Characteristics Pre Intervention (N=100)

Variables	Total knowledge score (Pre intervention)						χ^2 test of sig.	P value	
	Poor		Average		Good				
Total (N0.=%)	N0.	%	N0.	%	N0.	%			
Age (years)									
1. 14 - <17 years	73	43	95.9	20	4.1	10	0	$\chi^2 = 2.6$	P=0.11 (NS)
2. 17 - \geq 19 years	27	27	100	0	0	0	0		
Place of residence									
1. Rural	69	69	100	0	0	0	0	$\chi^2 = 80.1$	P<0.0001 (HS)
2. Urban	31	1	3.2	20	64.5	10	32.3		
Total Knowledge	100	70	70%	20	20%	10	10%		
Variables	Total practices score (Pre intervention)						χ^2 test of sig.	P value	
	Unsatisfactory Practice		Satisfactory practice		Highly Satisfactory practice				
Total (N0.=%)	N0.	%	N0.	%	N0.	%			
Age (years)									
1. 14 - <17 years	73	27	36.9	26	35.6	20	27.5	$\chi^2 = 0.08$	P=0.77 (NS)
2. 17 - \geq 19 years	27	11	40.7	9	33.3	7	26		
Place of residence									
1. Rural	69	26	37.7	35	50.7	8	11.6	$\chi^2 = 10.9$	P<0.001 (HS)
2. Urban	31	12	38.7	0	0	19	61.3		
Total practices	100	38	38%	35	35%	27	27%		

NS: non-significant

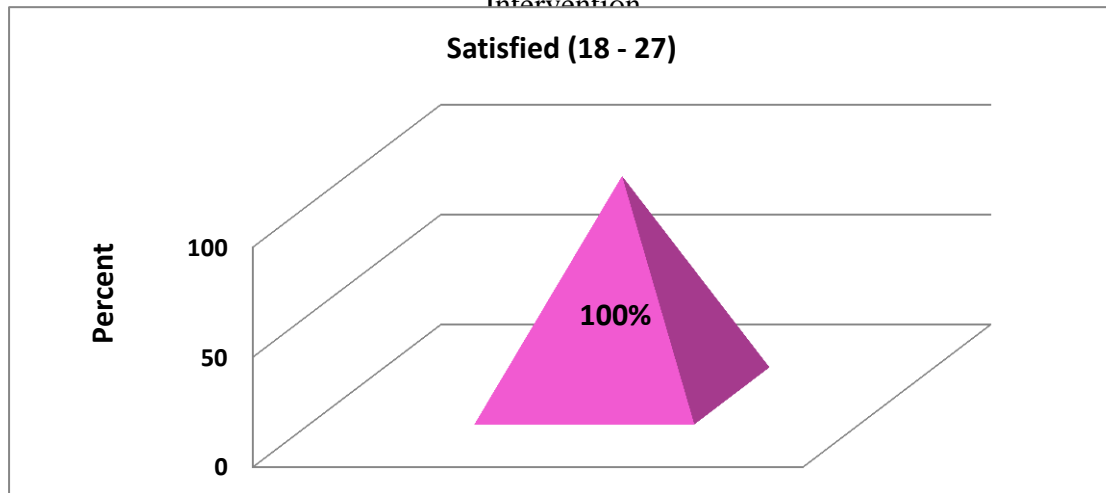
HS: High significant

Table (6): Satisfaction of the Study Group about the Instructional Module Concerning Vulvitis and Its Preventive Measures One Month Post Intervention (N = 100)

Variables	Dissatisfied (1)	Satisfied (2)	Strongly Satisfied (3)
1. The basic goals of the instructional module were clear	0	30	70
2. The instructional module contains clear and understandable information	0	25	75
3. The explanation used in the instructional module was appropriate, easy, orderly, effective and interesting	0	21	79
4. The instructional module sessions time was enough	0	48	52
5. The images used within the instructional module were clear	0	35	65
6. The instructional module helped to improve the knowledge toward vulvitis and its preventive measures	0	20	80
7. The instructional module helped to improve the attitudes toward vulvitis and its preventive measures	0	18	82
8. The instructional module helped to improve the practices toward vulvitis prevention	0	15	85
9. In general, instructional module was a good educational tool	0	5	95

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Figure (7): Total Satisfaction Score of the Study Group about the Instructional Module concerning Vulvitis and Its Preventive Measures One Month Post Intervention



Discussion:

Because of the importance of this issue, adolescent girls have been selected to be studied as they are more vulnerable to infections and its complications due to deficient knowledge. Also, they are the future mothers (Sevil et al., 2020). Findings are discussed in the following sequences: 1- General findings socio-demographic characteristics. 2- Menstrual history and previous history of vulvitis. 3- Previous information about vulvitis and its preventive measures among the study group. 4- Knowledge and practices of the studied participants about vulvitis and its preventive measures. 5- Satisfaction of the study group about the instructional module. 6- Relation between total score of knowledge and practices of the study group and some of their socio-demographic characteristics pre intervention.

The findings of the current study documented that there were no statistically significant differences between both groups regarding their socio demographic characteristics (age, place of residence, academic year, mother's educational status, mother's occupational status) also; there were no statistically significant differences

between both groups concerning father's educational status and father's employment type. These findings mean and ensure that the both groups under study were homogenous and comparable. These findings were in agreement with Shang et al. (2020) who investigated their studies about "Effectiveness of planned educational program on vulvitis and its preventive measures on nursing student's knowledge" in Singapore. Their findings revealed that the study and control groups were comparable in age, residence, academic year, mother's education and father's occupation.

In addition, Mittal & Goel. (2019) investigated their studies about "The effect of an Instructional Module on Knowledge regarding Reproductive Health among Urban Adolescent Girls of Haryana" in Rohtak, India on one hundred adolescent girls. Their findings concluded that no significant differences existed between the intervention and control groups concerning the socio demographic characteristics. Rashad & Yousef, (2019) also implemented their studies in Kingdom of Saudi Arabia concerning "The efficacy of learning package regarding vulval infection and

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associated risk health behaviors among female university students". Their findings revealed that there were no statistically significant differences in terms of age, academic level, mother's educational status and place of residence between the study and control groups.

The findings of the current study documented that there were no statistically significant differences between both groups regarding their menstrual data (age at menarche, regularity of menstruation, duration of menstruation, interval between menstruations, menstrual bleeding amount and pain with menstruation).

The present study findings showed that the majority of participants in both groups had menarche at the age of >13 years, "this may be rationalized due to lifestyle changes in female adolescents" and that all of study participants were having regular menstruation every 21-35 day. Also, the majority of participants' duration of menstruation ranged between three to five days, "this may be related to improvement of nutritional and socio-economic status of the adolescent girls in recent decades" and nearly two fifth of them complained from dysmenorrhea.

These findings were in agreement with Tolossa & Bekele., (2019) who investigated their studies concerning "Prevalence, impacts and medical managements of premenstrual syndrome among female students: cross-sectional study in college of health sciences" in Mekelle, Northern Ethiopia and indicated that among the study participants, (64.2%) started menstruation at the age of 13-15 years followed by the age of <13 years (22.5%). The usual menstrual cycle of the participants was every 28 days (57.8%) and menstrual duration was 4-5 days (56.2%).

In addition, these findings were consistent with Kulkarni & Durge., (2020) who implemented their studies in India regarding "Menstrual pattern among slum Adolescent Girls of Western Maharashtra" and revealed that the mean age at menarche was 13:15 and 13:16 years respectively among the majority of studied participants, high percent of sample was frequency of menstruation regular (84.6%) and menstrual periods between 2-5 days. On the contrary; these findings were inconsistent with Lee., (2018) who investigated a study about "Menstruation among girls in Malaysia: cross section school Survey" and reported that abnormal cycle length, majority of a menstrual cycle longer than 35 days. This is may be due to emotional and environmental factors or female students neglect of their complaints or shame to speak about menstruation with a strange person.

The findings of the current study documented that nearly a half of participants in the study group and two- fifth of participants in the control group complained from vulvitis and majority of participants in the both groups didn't consult a doctor due to several causes such as feeling of shyness, custom & habit and culture of community. This may be due to the Egyptian culture. Traditionally in Egypt, females were shielded from information about reproduction and sexuality until the time of marriage. These findings were in agreement with Chauhan, Patel & Solanki, (2021) who investigated their studies about "Reproductive Health Problems and Treatment Seeking Behavior Among Adolescent Girls" in Bhavnagar and showed that out of total 195 girls who had genital tract infection, 170 girls didn't approach any health facility for the treatment due to various reasons

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like shyness in 95(55.88%) girls, financial constraint among 65 (38.23%) girls and lack of awareness among 10 (5.89%) girls. As well, these findings were in line with Kennedy, Mohite & Kumber., (2020) who conducted their studies regarding "A qualitative study of adolescents & service providers' Perception of youth friendly sexual & reproductive health Services" in Vanuatu and reported that treatment seeking behavior for genital tract infection was only 18% &12.6% girls respectively.

The findings of the present study revealed that the majority of the study group had no any previous information about vulvitis and its preventive measures while the minority of them had sources of information from more than one source such as friends, mass media, family members and health team respectively. This may be due to the Egyptian culture. Traditionally in Egypt, females were shielded from information about reproduction and sexuality until the time of marriage. These findings were in agreement with Gupta et al., (2020) who studied "across sectional study of vulval infection among young females" in Bhopal, Central India and found lack of awareness among majority of girls (78.4%).

On the contrary; the current study findings were incongruent with Alessa et al., (2019) who investigated their studies about "awareness of vulvitis and its preventive measures among Saudi Females" in Kingdom of Saudi Arabia and reported that a number of females included in the study had prior knowledge about vulvitis is up to (56.7%) and the source of their knowledge was mostly from internet, followed almost equally by asking doctors or patients and the last used resource is reading. In addition, the current study findings were

incompatible with Upadhye & Shembekar., (2019) who performed their studies in India about "awareness of vulvitis (external genital tract infection) in adolescent and young girls" and found that (72%) girls were aware of vulvitis while (28%) were unaware of vulvitis and the source of their knowledge was mostly from teacher, friend, a doctor, newspaper and the last used resource is internet. In the researcher point of view this may be due to the difference of the culture among the studied samples.

Regarding the mean total knowledge score about vulvitis and its preventive measures among studied participants, the present study results documented that there was a highly statistically significant difference between both groups regarding the mean total knowledge score about vulvitis and its preventive measures one-month post intervention than pre intervention ($P < 0.0001$). This is rationalized to the importance of continuous instructional program to the adolescent girls, the ability of adolescent girls to gain knowledge easily and their interest to know about vulvitis and its preventive measures. These findings were in line with Jibril et al. (2020) who performed their studies in Kwara State, Nigeria on 120 adolescent girls concerning "Benefits of health education intervention on knowledge and accessibility of adolescent girls to health services". Their findings concluded that upward shift from pre-intervention mean of (71.08) to (93.33) post intervention mean in the experimental groups which implied the positive impact of health education intervention on the knowledge of adolescent girls.

Furthermore, Abd Elhaliem, AbdElhady & Mohamed, (2018) conducted their studies about "A quasi-experimental on Utilization of Self-

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Care Practices Guidelines on Relieving Vulval Infections among Adolescent Girls" in Egypt. Their findings illustrated that there was a highly statistically significant improvement in knowledge mean score; knowledge mean score was increased from 11.5 to 54.59 at post intervention among adolescent girls in the study group compared to the control group. In addition, Alka, Divya & Garima, (2019) investigated their studies about "Effectiveness of a Planned Teaching Programme (PTP) on Knowledge Related to Reproductive Tract Infections among Rural Women" in India. Their findings found that the mean of post-test knowledge score (16.93 ± 3.70) was higher compared with the mean of pretest knowledge score (13.25 ± 3.71). There was a significant difference between the mean pretest and post-test scores at $P < 0.05$ levels. Terzioglu, Sahin & Karaca, (2019) also implemented their studies in Turkey concerning "An awareness program on prevention of vulval infection among females". Their findings indicated that mean percentage of post-test knowledge score (10.97 ± 1.77) was higher than the mean percentage of pretest (5.74 ± 2.25). There was significant difference between the mean pretest and post-test knowledge scores of the samples ($p < 0.001$).

On the other hand, Youness & Ayat, (2018) investigated their studies in Egypt concerning "Effectiveness of planned educational program on vulvitis and its preventive measures on adolescent females". Their findings concluded that as regards the total knowledge score level, the mean of post-test knowledge score (8.3 ± 0.8) of the intervention group was higher than that of the mean pretest knowledge score (3.5 ± 2.6). There was a statistically significant difference

($P < 0.001$) as regards the pretest and post-test total knowledge score level among the intervention group. As well, these findings were compatible with Takagi et al., (2020) who evaluated their studies in Japan regarding "The effect of health education based on health belief model on behavioral promotion of genital infection prevention in adolescent females". Their findings documented that the mean knowledge about genital infection were significantly increased in the intervention group compared to control group after intervention.

Regarding the total knowledge score of the study group about vulvitis and its preventive measures, the present study results documented that there was a highly statistically significant difference between pre intervention and one month post intervention regarding total knowledge score among the study group ($P < 0.0001$). i.e., good knowledge response was increased from a minority pre intervention to a very large majority post intervention among the study group. Hence, these findings interpreted that implementing instructional module regarding vulvitis and its preventive strategies was effective in increasing the level of participant s' knowledge in the study group. These findings were strongly congruent with Mohamad & Elkheshen, (2019) who investigated their studies about "Efficacy of Self-Instructional Guide on Knowledge and Practices Regarding Preventive Strategies of Genital Tract Infections among Adolescent Girls" in Egypt. Their findings reported that the level of knowledge of adolescent girls in the experimental group improved from poor (47%) and average (40%) to good (85%) after intervention.

Furthermore, Ahmed & Omar, (2018) conducted their studies in Egypt

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regarding "Effectiveness of structured teaching program on vaginitis and its preventive measures on adolescent female nursing student's knowledge". Their findings revealed that the great majority of students in the study group had adequate knowledge in post-test with a statistically significant difference ($P < 0.001$). Shelke & Vidyapeeth, (2020) also implemented their studies concerning "Effect of Health Education Programme on Knowledge and Practices Related to Common Selected Reproductive Tract Infections among Married Women" in Sinhgad. Their findings illustrated that in pretest; most of the women in experimental group had poor knowledge regarding reproductive tract infections. Meanwhile, in posttest, the majority of them had good knowledge score.

As well, these findings were in line with Goudia et al., (2019) who examined their studies in Indonesia about "Effect of instructional program on knowledge regarding vulvovaginal candidiasis among female university students". Their findings revealed that the total score level of pre-test knowledge regarding anatomy of reproductive organs was very low which indicated poor knowledge level, while changed after program to good level among participants in the intervention group. The agreement between results of the current study and previous studies might be related to the effectiveness of instructional module on participant's knowledge.

On the contrary; the present study findings were inconsistent with Kamath et al., (2018) who revealed different results. They conducted their studies about "An awareness program on prevention of vaginal candidiasis among pregnant women" in India. Their findings revealed that half of participants had good knowledge level

score related to vaginal infections in pre-test which is more enhanced where almost all of them in the posttest 100% had good knowledge level. The difference between the results of the present study and the previous studies might be related to differentiation in culture and environmental factors that increase the awareness and older age with high educational level of participants. In addition, the current study findings were incompatible with Ilankoon et al., (2018) who examined their studies in Sri Lanka concerning "Public health midwives' role in health education regarding vaginal discharge". Their findings revealed that more than half of sample had moderate level of knowledge regarding vaginal discharge. This difference might be due to that the sample were public health midwives that have better level of awareness.

Regarding the grand total hygiene practices score for prevention of vulvitis among studied participants, the present study results documented that there was no statistically significant difference between both groups regarding grand total hygienic practices score pre intervention ($P > 0.05$). However, there was a highly statistically significant difference between both groups regarding grand total hygienic practices score one-month post intervention ($P < 0.0001$). Hence, these findings interpreted that implementing instructional module regarding vulvitis and its preventive strategies was effective and had positive effects on participant s' practices in the study group. This is attributed to that knowledge and behavioral skills that adolescent girls have been taught during the sessions. This also plays prominent role in motivating them to change their lifestyle behaviors.

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These findings were in harmony with Aburshaid et al., (2020) who investigated their studies in Kingdom of Saudi Arabia about "Effect of Planned Health Educational Program on Menstrual Knowledge and Practices among Adolescent Saudi Girls". Their findings illustrated that in the pre-intervention phase, only (28.2%) have satisfactory total practices score, while in the post- intervention phase (94.9%) were more likely to have satisfactory total practices score. In addition, Juntasopeepun et al., (2019) conducted their studies regarding "Effect of structured education on knowledge and practices regarding prevention of vulvitis among young women" in Thailand. Their findings revealed that after education, total practices score showed a significant increase compared to its previous status in intervention group. The agreement between results of the current study and previous studies might be related to the effectiveness of instructional module on participant's practices.

On contrast; these findings were inconsistent with Teklemariam, (2018) who conducted a study in Amhara Regional state, Ethiopia concerning "Practice of menstrual hygiene and associated factors among female mehalmeda high school students". His findings reported that majority of students had satisfactory practice of menstrual hygiene. This discrepancy might be due to that most of students were from urban areas that enhance their awareness regarding menstrual hygiene. In addition, Bano & Al Sabhan, (2020) investigated their studies regarding "Study of knowledge and practices of university females regarding reproductive health and hygiene" in Hail, Saudi Arabia. Their findings reported that majority of participants had good knowledge regarding reproductive health problems

as well as more than half of them had satisfactory practice of general personnel and genital hygiene. This difference might be related to the majority of that participants attained higher educational level and increased their awareness about genital hygiene.

According to the current study findings instructional module had positive effects on adolescent girls regarding vulvitis prevention in form of knowledge, and practices. These findings were in agreement with Hala, Howaida & Aml, (2020) who investigated their studies about "An Interventional Study for Vulvitis Prevention among Female Employees of Faculty of Medicine" in El-Minia, Egypt. Their findings concluded that the intervention program was effective in increasing knowledge and practices as regards vulvitis prevention. On the contrary; these findings were incompatible with Chan et al., (2018) who performed their studies in China about "Evaluation of vulvitis prevention teaching program for young females". Their findings indicated that knowledge, attitudes and related health behavior concerning vulvitis among nursing students before internship practice were inadequate and that there were considerable gaps in their existing knowledge especially in the aspects of preventive and treatment. The discrepancy could be explained by the difference in the sampled populations and also the differences in the data collection tools.

The findings of the current study documented that the majority of adolescent girls in the study group were strongly satisfied about the instructional module with a range of more than half to a very large majority and no one of them was dissatisfied. This may be due to the fact that the topic was relevant and important to them and it was focused on their needs

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to know more about vulvitis and its preventive measures. Moreover, the instructional module is now suitable for today's generation and for different learning styles of students. This finding was congruent with Muyunda et al., (2020) who investigated their studies about "Effect of antenatal instructional package on knowledge, attitudes, practices and satisfaction among pregnant women" in Zambia. Their findings reported that pregnant women's satisfaction over the instructional package delivered during ANC visits.

In addition, this finding was in agreement with Alostaz, (2019) who conducted a study in Jordan about "Effectiveness of instructional module on theoretical and practical achievement regarding reproductive tract infections prevention and satisfaction of maternity nursing students". His findings revealed that students of the study group were reported higher satisfaction scores regarding instructional module. On contrast; this finding was dispute with Alfes (2018) who performed a study regarding "Evaluating the use of instructional module versus traditional method in training nursing students for caring pediatric patients " in Spain. His findings showed that there were no statistically significant differences in the satisfaction of students, who were trained caring for pediatric patients through instructional module compared to those trained through the traditional method. The cause of inconsistency of this result with the present study might be explained by that the satisfaction was evaluated with using different tools, different sample size and different methods and in different specialties.

The findings of the current study documented that there was no statistically significant relation

between total score of knowledge and practicess of the study group and their age groups pre intervention. This might be due to that the adolescent girls approximately the same age. However, there was a highly statistically significant relation between total score of knowledge and practices of the study group and their place of residence pre intervention ($P < 0.0001$, $P < 0.001$) respectively. This might be due to increasing the awareness in the urban areas than in rural areas. These findings were consistent with Shah et al., (2019) who investigated their studies about "A study on knowledge and practices concerning genital health and hygiene among adolescent girls of Lalitpur Metropolitan city" in Nepal. Their findings mentioned that the total mean score of knowledge and total mean score of practices had not a significant relation with age. Moreover, El-Beih et al., (2020) conducted their studies about "Healthy Practices among Female University Students Regarding Prevention of Reproductive Tract Infections" in Egypt. Their findings demonstrated that there was a highly statistically significant relation between students' total knowledge score level and their residence.

On the other hand, Slave et al., (2018) investigated their studies in India concerning "Assessment of Knowledge and Practices about Menstrual Hygiene amongst Rural and Urban Adolescent Girls" .Their findings illustrated that poor knowledge about female reproductive system and menstrual hygiene among rural adolescent girls. In addition, Abdelnaem, Mohasib & Mohamed., (2019) performed their studies regarding "Effect of self-care guidelines on knowledge and attitudes among faculty of nursing students with vulval infection" in Egypt. Their findings revealed that there was a

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highly statistically significant relation between the students' total attitudes score and their residence. On the contrary; these findings were inconsistent with Renju, (2019) who investigated a study about "The impact of planned preventive program on female student's knowledge and attitudes regarding vulvovaginitis and its prevention" in Karnataka, India. His findings reported that there was a significant association between total score level of students' self-care practice regarding vulvovaginitis and selected demographic variables such as age and mother's education. This might also be explained that increasing students' age may lead to increase awareness about proper hygienic practices. Also, mothers who had high educational level could educate their girls about healthy practices.

The current study aimed to evaluate the effectiveness of an instructional module on vulvitis prevention among adolescent girls. This goal was achieved via the current study findings, which revealed that the study group had higher scores of good knowledge and higher scores of practices post intervention compared to the control group as well as the study group was strongly satisfied with the instructional module. Consequently, the study hypotheses were achieved, supported and accepted.

Conclusion

Therefore, the study hypotheses are accepted. Based on the present study findings that evaluated the effectiveness of an instructional module on vulvitis prevention among adolescent girls, it can be concluded that: Instructional module was effective and had positive effects on enhancing of adolescent girls' knowledge and practices regarding vulvitis and its preventive measures in the study group compared to the

control group. This supported the first, second study hypotheses. Also, the majority of adolescent girls in the study group were satisfied with the instructional module implementation. This supported the third study hypothesis.

Recommendations

In the light of the current study findings, the following can be recommended: Instructional module should be included as components adolescence education curriculum as active steps to increase awareness of adolescent girls regarding vulvitis and its preventive measures through schools, community and cultural groups, implementing public health measures to improve recognition and knowledge about vulvitis and its repercussions and developing a special health center for adolescent girls that motivate them to seek prevention, early diagnosis and treatment of vulval infection that may have positive impact on their future reproductive health. Suggestions for further studies: Further studies are needed to evaluate the effectiveness of instructional module regarding vulvitis prevention on other female age groups.

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