

Effectiveness of Training Program on Female's Students' Knowledge Regarding Vulvitis and its Preventive Measures: A Quasi-Experimental Study

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Abstract: Equipping adolescent females with required information on genital tract infections and their preventive measures will help empower them with the knowledge to augment both their wellbeing and academic performance.

Aim: To evaluate the effectiveness of a training program toward external genital organs' infections (vulvitis) and its reported preventive measures among female students.

Methods: A quasi-experimental one group pre- post-test design was applied on 100 students at Port-Said University, Egypt. A training program was developed and implemented on female students in the first years from four faculties; the recruitment of students from each faculty was by convenience sampling. A self-administered questionnaire schedule was used to collect necessary information.

Results: Statistically significant improvements were found in post-intervention knowledge of studied students in all tested items regarding external genital tract infection and its preventive measures ($P < 0.001$). Students with adequate reported practices to prevent vulvitis rose in all the areas after the program and demonstrated statistically significant improvements. Slightly more than one third of student who gained good level of knowledge aged ≥ 20 years.

Conclusion: The study concluded that training of university female adolescent students on external genital tract infection and its preventive measures had a positive impact on their related knowledge and practices.

Recommendations: The training program should be implemented in all faculties and in different similar settings. Further researches are suggested using different design.

Keywords: Adolescent; genital tract infection; female; Quasi-experimental study.

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I. 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, it's linked with several practices which sometimes may result in adverse outcome⁽¹⁾. It is a transitional stage of physical and psychological development that generally occurs during the period from puberty to adulthood^(2,3) and its is usually associated with the teenage years^(3,4,5,6), 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^(4,7,8,9,10).

Genital tract infections (GTIs), generally seen as a silent epidemic, is one of the major public health problems causing a considerable proportion of gynecological morbidity and maternal mortality in the developing countries. Vulvitis is the most common gynecological problem among adolescent girls as it was found to affect all preparatory, secondary school students and faculties' students⁽⁶⁾. In 2013, external genital organ infection (vulvitis) rates among 15-19 year-old female were considerably high⁽⁷⁾. The reproductive health issues of adolescents are not often distinguished from the health concerns of younger children; it is therefore critical⁽¹¹⁾.

In the Egyptian society, adolescent females represent a broad sector of population and the vast majority of them attached different educational levels (primary, preparatory, secondary and university education), and they use a public toilets in their learning setting which it makes them more susceptible to infection of the vulva (vulvitis). Although, vulvitis may be caused by contact dermatitis that is where there is itching and burning but no infection. This occurs when the skin becomes inflamed by contact with irritants such as; female hygiene

products, soaps and bubble baths⁽¹²⁾. It is important as adolescents begin to take responsibility for their own health, teaching them preventive health care about reproductive tract infections. In addition, providing health education regarding specific health care needs to adolescents, require special consideration and effort to ensure understanding and encourage compliance⁽¹³⁾.

External genital tract infections are recognized as a public health problem affecting adolescent females; they are responsible for devastating consequences. Therefore the current study aimed to evaluate the effectiveness of a training program on university female students' knowledge and its preventive measures toward external genital organs infection (vulvitis).

Significance of the study: In developing countries, incidence and prevalence of genital tract infections (GTIs) are very high, they rank second as the cause of morbidities among women of reproductive age, next to maternal morbidity and mortality related causes⁽¹⁴⁾. Adolescent girls are especially susceptible to genital tract infection because the weakness of mucosal defines mechanism; immature lining of the cervix give low barrier against infections also; and relatively low level of vaginal acidity leading to reproductive tract infection⁽¹⁵⁾. As well, Egyptian females university students do not receive sufficient education about reproductive health through their formal education in schools and university system⁽¹⁶⁾.

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. Therefore, through this study, the researchers tried to highlight the state of their knowledge and its preventive measures regarding external genital tract infections.

Aim of the study: To evaluate the effectiveness of a training program toward external genital organs' infection (vulvitis) and its reported preventive measures among female students of Port Said University.

Research hypotheses

H₁: The mean knowledge and practice score of university adolescent students about vulvitis and its preventive measures post-test will be higher than pre test.

H₀: There will be no significant association between the post test knowledge score and demographic variables of university adolescent students.

II. Subjects and Methods

Study Design: A quasi-experimental design was used to conduct this study. One group pre/post test research design was utilized in this study.

Research setting: The study was conducted in Port-Said University, at non medical/ paramedical faculties (Sciences, Education, Engineering & Law). The faculties were randomly selected (simple random sample), the researchers wrote the number of the faculties on bits of paper, put them in a box mixed up thoroughly and picked up the specified number from this box by method of lottery through mixing of identical bits of paper would ensure equal chance of selection of any of them.

Sample size: Any student enrolled in the first grade of the aforementioned faculties was eligible for inclusion in the study sample and 100 female students in the first year from these four previously selected faculties and accepted to participate in the study were planned to be included as study sample. The recruitment of students from each faculty was by convenience sampling.

Exclusion criteria: Married; medical and paramedical students were excluded.

Tools of data collection: Based on the literature review, a self-administered structured questionnaire was developed by the researchers to assess present knowledge, and ascertain practices adopted by university adolescent female regarding reproductive health with special emphasis on external genital tract infection and comparison with post-intervention data for the purpose of the current study. It consisted of three parts, the first part involved biosocial data about adolescent; age, type of the study and residence. Part two was designed to assess knowledge of the students regarding external genital organs' infections (definition, symptoms, causes, complications, treatment etc.). Third part was developed after reviewing related literature^(17, 18, 19), and was used to assess adolescent female reported practices to prevent external genital organs' infections, it included 22 items about personal hygiene and hygienic practices during menstruation. It was written in simple Arabic language in the form of close and open ended questions. A jury from experts in the nursing field tested the comprehensiveness of applicability and content validity that were done mainly in the form of rephrasing of some sentences and changing some items.

Scoring system: For the knowledge items, a correct response was scored one and the incorrect zero. For each area of knowledge, the scores of items were summed-up and the total divided by the number of items, giving a mean score for each area. These scores were converted into a percent score. The maximum score is above 75(100%) and the least is zero (0.00%). Whereas poor knowledge scored < 50% grades; average knowledge scored 50-75% grades and >75% grade was considered good. The practical correct response was scored one and the incorrect zero. For each area,

the scores were summed up and divided by the number of items giving a mean score. These scores were converted into a percent score. Regarding practical items, score < 60% was evaluated unsatisfactory, while score $\geq 60\%$ was considered satisfactory.

Pilot study: A pilot study was carried out on 10% of the total number of the sample. It is designated to identify clarity and feasibility of the study and to determine the time consumed for filling in the questionnaire sheet. Data obtained from the pilot study were analyzed, and accordingly necessary modifications were done such as rephrasing of some sentences. The piloted adolescent females were excluded from the main study sample.

Ethical considerations: The study protocol was approved by pertinent responsible in the University. Oral consent was obtained from each student who agreed to participate in the study after explaining the aim of the study. Each student was informed about her right to withdraw at any time without giving any reason, data collection tools were anonymous and that data will be collected and treated confidentially.

Field work: An educational program was designed based on the most recent pertinent literature and was conducted through three phases, planning, implementation, and evaluation. Since it was difficult to include all the study students at the same time in the program, the program was implemented for groups of 10-15 female adolescents in 3 sessions. Each session took about one hour. Different teaching methods as short lecture and group discussion were used. Also, different audio-visual materials were used as pamphlets, small books and diagrams, pictures. These were used to facilitate teaching of each topic.

The same study tools were used to evaluate the effect of the program on the adolescent female's knowledge, practices, by comparing the results before program with those after implementation of the program.

Statistical analysis: Data were verified prior to computerized entry. The Statistical Package for Social Sciences (SPSS) version 20.0 was used. Descriptive statistics were applied (e.g., mean, standard deviation, frequency and percentages). Test of significance (Chi square and paired t-test) were applied to test the study hypothesis. Correlation coefficient was calculated between knowledge, and practice scores. A statistically significant difference was considered at p-value $p \leq 0.05$, and a highly statistically significant difference was considered at p-value $p \leq 0.001$.

III. Results

The study sample consisted of 100 university female students with no dropout (response rate 100%). Regarding socio-demographic characteristics, figure (1) displays the study sample distribution by faculty; the highest percentage (40.0%) of students was from the Faculty of Education.

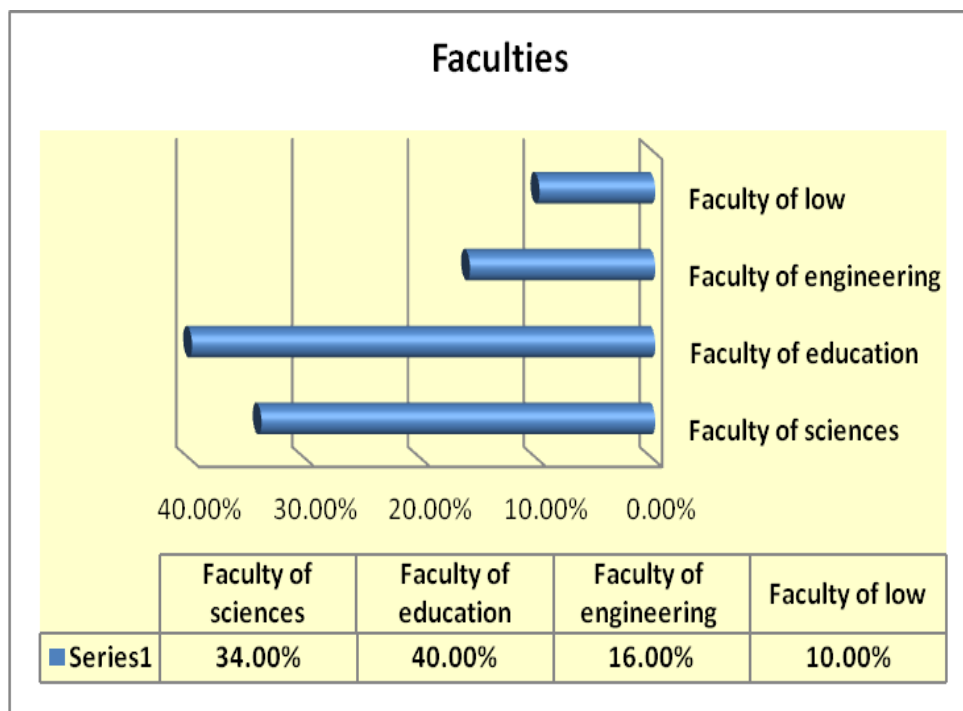


Fig.1. Students' Distribution by Faculty (n=100)

Concerning students' socio-demographic characteristics, fig. (2) illustrates that the highest percentage of students (64.0%) was more than or equal 20 years old . As regards residence, the majority of students (85.0%) were living in urban areas (fig. 3).

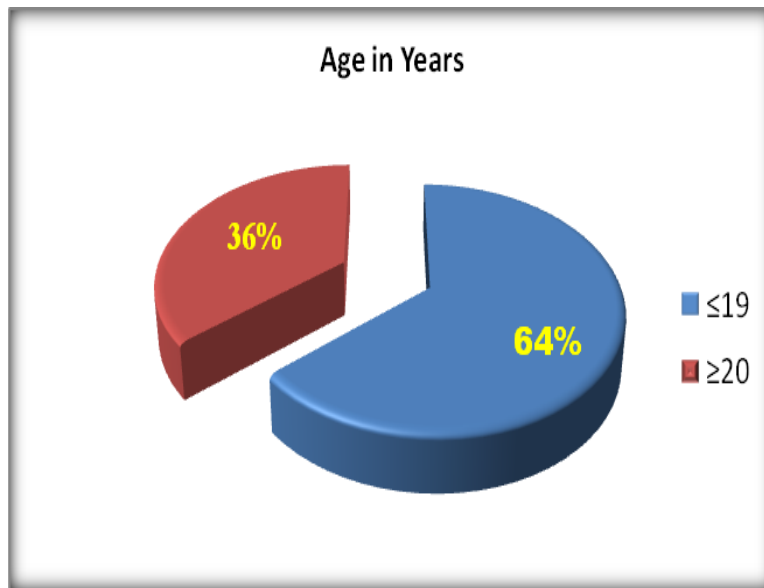


Fig. 2 Sample Distribution by Age (n=100).

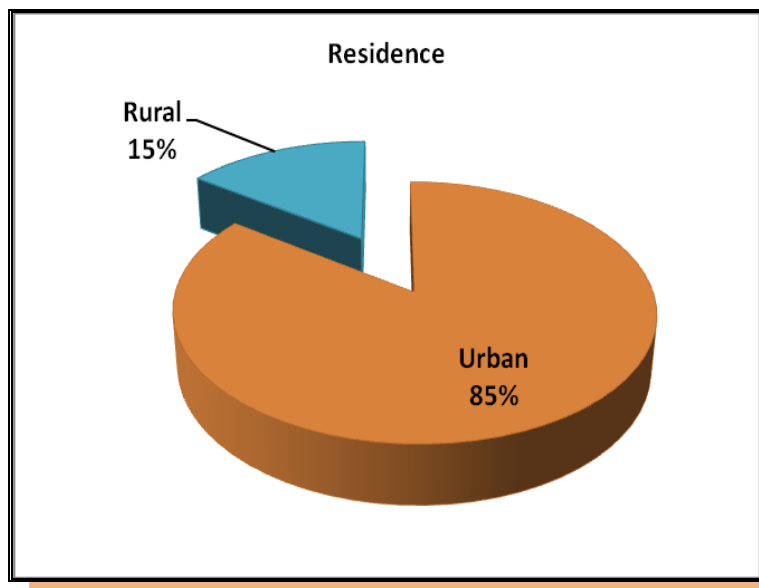


Fig. 3 Sample Distribution by Residence (n=100).

Students' knowledge of vulvitis was very low(poor) before implementation of the program (Table 1), meanwhile, improvements were detected after the program in all tested elements ($p < 0.001$). **table (1)** indicates that 11.0% of the students had knowledge related to definition of vulvitis compared to 57.0% after implementation of the program. Also, improvement was more evident regarding the complication and preventive measures for vulvitis and the difference was highly statistically significant ($t = 30.20$ & 28.26 respectively at $p < 0.001$).

Table (1): Distribution of the Studied Students According to Their Knowledge Regarding Vulvitis (n=100)

Items	Correct answer (Pre- program)	Correct answer (Post-program)	Significance
	%	%	
Definitions			
Meaning of genital tract infection	43.0	89.0	$X^2=47.15$ $P<0.001^*$
Definition of Vulvitis	11.0	57.0	
Symptoms of vulvitis			
Persistent discomfort, itching and/ or pain	21.0	29.0	$X^2=40.36$ $P<0.001^*$
Redness and/ or swelling in the vulva	11.0	22.0	
Soreness, or white patches on the vulva	44.0	50.0	
Vaginal discharge	10.0	12.0	
Small skin crack	0.0	1.0	
Causes and risk factors of vulvitis			
Irritants and hygiene habits			
Using products made with irritating materials and perfumed sanitary napkins.	25.0	53.0	$X^2=19.18$ $P<0.001^*$
Using of public bathes	15.0	20.0	
Not changing a pad or underwear frequently during menstruation	26.0	42.0	
Prolonged moisture around the vulva and not wiping or drying properly.	49.0	75.0	
Infection: Genital herpes and fungal infection	85.0	97.0	
Autoimmune disorders: Low in immune system	4.0	28.0	
Complication of vulvitis			
Occurrence of lump	5.0	10.0	$t=30.20$ $P<0.001^*$
Dystrophy on the vulva	2.0	13.0	
Infertility/ sterility	26.0	42.0	
Malignant tumour in external genital organ	15.0	20.0	
Upper genital tract infection	25.0	53.0	
Preventive measures for vulvitis			
Apply hygienic care especially menstrual hygienic practices	60.0	86.0	$t=28.26$ $P<0.001^*$
Avoidance of using of public bathes	36.0	63.0	
Cleaning and dryness the vulva after each toilet	25.0	56.0	
Wearing white cotton under pants	28	66.0	
Avoidance of using of irritated removal hair cream	32.0	85.0	

*. Highly statistically significant relation at $P< 0.001$

Table (2): Distribution of the Studied Sample in the Pre and Post Program Regarding Their Reported Practice to Prevent Vulvitis (n=100)

Practice	Pre - program	Post-program	P-Value
	%	%	
Keep vulvar area clean and dry after each toilet or bathing	92.0	96.0	<0.001*
Avoid rubbing of vulvar area with wash cloths or towels	63.0	90.0	
Wearing cotton underwear	44.0	89.0	
Avoiding excessively tight pants (wearing loose underwear)	20.0	33.0	
Changing out of wet underwear promptly	74.0	88.0	
Using chlorine for washing underwear clothes	6.0	17.0	
Removing the hair of vulvar area	9.0	11.0	
Exposing underwear to sun rays	35.0	94.0	
Washing hands before and after bathing	38.0	89.0	

*. Highly statistically significant relation at $P< 0.001$

As for studied students' practices, table (2) shows that the preventive measures most commonly used pre and post intervention as reported by students' were "keep vulvar area clean and dry after each toilet or bathing". Meanwhile, removing the hair of vulvar area was slightly high (11.0%) post intervention compared to 9.0% pre intervention. Overall, the students with adequate reported practices to prevent vulvitis rose in all the areas after the intervention phase and demonstrated highly statistically significant improvements ($P< 0.001$).

Table (3): Distribution of the Studied Sample According to Level of Knowledge in Relation to Their Personal Characteristics after the Program (n=100)

Variable	Total knowledge score						Significance
	Good N=70		Average N=22		Poor N=8		
	No	%	No	%	No	%	
Age in years							t= 4.06 P=>0.05
≤19	35	50.0	5	22.7	2	25.0	
≥20	35	50.0	17	77.3	6	75.0	
Residence							t=1.14 P= >0.05
Urban	25	35.7	14	63.6	2	25.0	
Rural	45	64.3	8	36.4	6	75.0	
Faculty							F. test=2.28 P=<0.001*
Faculty of Sciences	30	42.9	14	63.6	2	25.0	
Faculty of Education	12	17.1	2	9.2	3	37.5	
Faculty of Engineering	17	24.3	3	13.6	2	25.0	
Faculty of Law	11	15.7	3	13.6	1	12.5	

*. *Highly statistical significant relation at P< 0.001

Table (3) shows the relationship between students' knowledge level about vulvitis and their personal characteristics, half (50.0%) of the study subjects who gained good level of knowledge aged ≥21. No statistically significant difference relation were found between total knowledge score about vulvitis, and age and residence, (t=4.06 & 1.14 respectively) at (p <0.05). However, 42.9% of the studied sample have good knowledge about vulvitis at Faculty of Sciences compared to 15.7% of students at Faculty of Low, with highly statistically significant difference (p <0.001) in relation to types of faculties.

Table (4): Mean Score of Knowledge and Practices Regarding Vulvitis Before and After Intervention

Total score (Mean ±SD)	Total knowledge & practice scores		Significance
	Pre-program N= 100	Post - program N=100	
Knowledge scores related to personal characteristics	3.3±1.8	8.2±1.3	t= 9.23 P=<0.001**
Knowledge's scores related to menstrual hygienic practices	6.8±1.5	4.3±1.6	t=11.44 P=<0.001*
Satisfactory practices	61.8 ±13.0	73.7±11.9	t=2.82 P= < 0.005*
Unsatisfactory practices	79.5±9.9	68.6±7.0	t=3.24 P=<0.001**

*Statistically significant at p<0.05

**Highly statistically significant at p<0.001

Table (4) shows that there are a statistically significant relations between the studied students' total scores (Mean ±SD) in the pre and post-tests according to their knowledge scores related to personal characteristics, menstrual hygienic, practices satisfactory practices, and unsatisfactory practices as regards vulvitis (3.3±1.8 vs. 8.2±1.3; 6.8±1.5 vs. 4.3±1.6; 61.8 ±13.0 vs.73.7±11.9 and 79.5±9.9 vs. 68.6±7.0 respectively). Differences observed are also highly statistically significant at P <0.001.

On investigating the source of previous information related to the external genital organ infection (vulvitis), the present findings revealed that more than half (55.0%) of the students mentioned from mass media, while 34.5% and 10.5% of the studied students preferred to consult their mothers and friends respectively about vulvitis (Fig. 4).

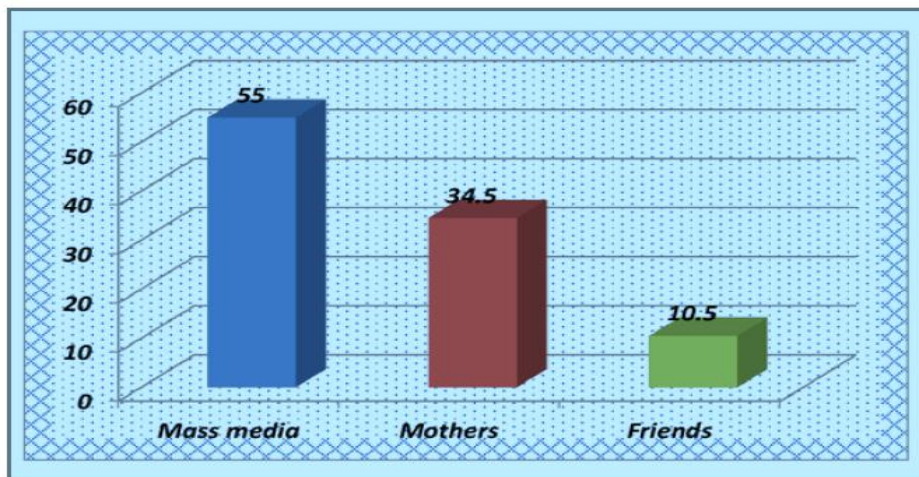


Figure (4): Percentage Distribution of Studied Students Regarding Their Source of Information

IV. Discussion

Reproductive tract infections (RTIs) are preventable, and may be treated well, the burden of un treating them is especially heavy for adolescent girls because these infections are often asymptomatic or the symptoms are not recognizable. Proper education about RTIs may ends up confusion and anxiety for girls. Therefore, correct, authentic and accurate information regarding vulvitis should be available to all women including adolescent girls. The current study was carried out to test the research hypothesis that the implementation of a training program will improve students' knowledge regarding vulvitis.

Goudia et al.,⁽¹⁷⁾ in their very recent study, reported that the instructional program had a positive effect on knowledge regarding vulvovaginal candidiasis among female university students.

According to the current study findings, the implementation of training program led to statistically significant improvements in students' knowledge about vulvitis and its preventive measures ($P < 0.001$). The improvement was detected in all areas of knowledge. This improvement indicates that the implemented program justified the first research hypothesis and the current study results are in agreement with the findings reported by similar training programs in Egypt⁽¹⁸⁾, in Iran⁽¹⁹⁾ and in India⁽²⁰⁾ which almost have the same results. Another study conducted in Egypt by Ahmed and Omar⁽²¹⁾ who studied effectiveness of planned educational program on vaginitis and its preventive measures on female nursing students' knowledge, found that the great majority of students had adequate knowledge in post-test with a statistically significant difference ($P < 0.001$).

The aim of improving the knowledge is to transfer this knowledge to practice⁽²²⁾, when knowledge improves, practice tend to be healthier⁽²³⁾, as well as teaching program about health can increase the level of knowledge and change attitude into better practices^(19,24,25). This was actually the second part of first research hypothesis, which assumed that improving students' knowledge will have a change in their practices regarding preventive measures of vulvitis.

The current study findings revealed that students' self-reported practices regarding preventive measures of vulvitis have statistically significant improvement after program ($P < 0.001$), but some areas demonstrated better improvements than others. As well, the present study results revealed that, keeping vulvar area clean and dry after each toilet or bathing was the practice widely used by most students pre and post intervention as a preventive measure of vulvitis. Hence, this could be interpreted that the training program was effective on students' practices about preventive measures of vulvitis.

The present study finding goes in line with that of Yarmohammadi et al.,⁽¹⁹⁾ who examined the effect of educational program on practices of patients with vaginitis and observed that it had a significant increase in mean score of practice in the intervention group. A well, the current findings are congruent with that of Abd El-Salamm et al.⁽¹⁸⁾ who carried out a similar study in Egypt and reported that there was a positive correlation between students who are having satisfactory knowledge and their health practices in pre and post intervention. According to the present study findings, there was a highly statistically significant relationship between students' total score of knowledge post intervention as regards vulvitis and their types of faculties ($p < 0.001$). While there is no statistically significant difference was found between knowledge level and the students' age and residence. However, these findings were incongruent with the findings of similar educational program⁽²⁰⁾, who found that there was no association between total knowledge score preprogram and selected socio-demographic variables.

Concerning source of prior information on vulvitis, more than half of students reported that mass media was the main source of information; followed by their mothers and friends. The present study finding agreed with that of a previous study done by Ahmed and Yesmin⁽¹²⁾ who found that the students gained their information regarding vaginitis from their friends and their family members. Moreover, the present study results revealed that none of students had prior information on vulvitis from health team, therefore, health professionals need to work on establishing a solid partnership of trust with adolescent girls and make them feel more comfortable with disclosing intimate concerns. As well, the current study finding reflected the importance of trusted source of gaining information (given by formal health care providers) to youth. In addition, maternity nurses should reach out to adolescent girls and need to support and educate parents, peers so that they can have a positive effect on female adolescents' health.

V. Conclusion and Recommendations

The study findings led to the conclusion that total score knowledge and practices of the studied students toward vulvitis and its preventive measures have a statistically significant difference before and after intervention, improvement revealed at the post phase.

Since university female students can implement these simple and inexpensive practices independently, it is recommended that similar training be implemented in similar settings. Further researches are suggested, using different designs (qualitative), and more objective methods such as direct observation.

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