

 <p>INNOVATIVE JOURNAL IÖNKIVT</p>	<p>Contents lists available at www.innovativejournal.in</p> <p>INTERNATIONAL JOURNAL OF NURSING DIDACTICS</p> <p>Homepage: http://innovativejournal.in/index.php/ijnd</p>	 <p>IJND ISSN: 2231-5454</p>
---	---	---

Effect of Nursing Intervention on Knowledge about Genital Hygienic Practices Regarding Vaginal Infection among Intrauterine Device Users and Non-Users

⁽¹⁾Naeima Mohamed El -Sayed Ahmed ⁽²⁾ Nabila Salem Mohamed

^(1, 2) Lecturer of Obstetrics and Gynecological Nursing, Faculty of Nursing, Zagazig University.

DOI: <https://doi.org/10.15520/ijnd.v9i01.2398>

Abstract: Background: Vaginal infection is a part of reproductive tract infection recognized as a major problem for women's health. **Aim of the study:** To evaluate the effect of nursing intervention on knowledge about genital hygienic practices regarding vaginal infection among intrauterine device users and non-users.

Methods: A quasi experimental interventional research design with pre/post-tests. The study was conducted at the family planning outpatient clinics in Zagazig university hospital. **Sample:** A purposive sample of a total of 90 women who was recruited according certain inclusion criteria. The study sample was divided into two groups; first group women who used intrauterine device (48) and the second group women who used other contraceptive methods (non IUD users (42)). **Two tools** were used: **Tool I:** A structured interview schedule; it consisted of three parts: First part: deals with socio-demographic characteristics of respondents, the second part: current contraceptive data while the third part: To assess women's knowledge regarding genital hygienic practices. **Tool II:** High vaginal swab specimen.

Results: The study finding revealed that 79.1% of IUD users complain from vaginal discharge as compared to 54.7% in other methods and Escherichia coli was the most common organism in both groups with a higher percentage in IUD users group than non IUD users (37.5% & 16.6% respectively). Additionally, statistically significant improvements were detected in total knowledge score among the studied sample regarding to their genital hygienic practices through the intervention phase's dimensions as well as in total at the post-intervention phase .p<0.001

Conclusion: Implementation of planned educational intervention was effective as a method to improve the knowledge of studied women as regards genital hygienic practices. **Recommendations:** Health education and training intervention about genital hygienic behavior should be provided to all nurses worked in primary health care services to improve women's knowledge.

Key words: Educational intervention, genital hygiene, vaginal infection, intrauterine device

INTRODUCTION

Vaginal infection (vaginitis) is a part of reproductive tract infection that recognized as a major problem for women's health and ignored by many women. It is associated with a variety of problems at different ages of women life with a negative impact on sexual and family lives (Murry & Mckinney, 2010). Its prevalence tends to increase worldwide where it's considered among the foremost causes that lead women to seek medical attention at obstetrics and gynecology clinics (Ozdemir et al., 2012). The prevalence of vaginal infection among the Egyptian women who attended gynecological clinic at El-manial University Hospital, Cairo University, was 58.8% as reported by (Kamel, 2014).

Vaginitis is refers to any inflammation in the vagina which results when the vaginal wall becomes inflamed or irritated by an irritant substance which disturbs the vaginal PH balance or flora (Gor, 2015). These inflammation was caused by endogenous factors by hormones or exogenous factors by vaginal unhygienic practices in addition to personal unhygienic behavior (American Social Health Association ,ASHA., 2013).

Intrauterine device (IUD) is one of the most popular, effective, reversible, long term and low cost method of contraception; over 100 million women worldwide are using it especially copper IUD, meanwhile the most common

medical reasons for early discontinuation are bleeding, pain and genital tract infection (Teeraganok et al., 2012).

IUD with its tail which extending to vagina leads to foreign cell reaction, bacterial colonization and alteration of female genital system flora (Kaliterna et al., 2011). This alteration may affect vaginal health which causes more vaginal infection that results in pathological vaginal discharge associated itching, soreness, genital pain and burning sensation during urination. Meanwhile, a high prevalence of asymptomatic diseases is a barrier to effective management (Rsbui et al., 2010). So, every woman should be screened by using microbiological methods in additions to the treatment of asymptomatic and abnormal vaginal discharge (Kaliterna et al., 2011).

Genital hygiene is the major element of women's health and very important for the protection of reproductive health and prevention of infection. Furthermore, the genital area must be kept clean and dry. While, excessive cleaning techniques which disturb the vaginal flora should be avoided (Hamed, 2015).

Genital hygienic care may be affected by environmental and personal factors. Socioeconomic status is the most important environmental factor, while, poor hygienic practice and habits as poor hand washing technique, poor menstrual hygiene, and tight nonabsorbent underwear, considered as

personal factors which increase the risk of genital infection (Cankaya & Yilmaz, 2015).

Women with abnormal vaginal discharge don't ask a medical treatment unless its affects on their daily routine life and the reason for this delay may be due to the embarrassment and shame from the male physicians (Khedr et al., 2015). On the same line, (ASHA, 2013) reported that 70.0% of women are self-treated from vaginal infections before seeking a health care provider. So, it is important to confirm the diagnosis through microbiological monitoring and full sexual health screening to exclude concurrent infection especially for women using contraceptive methods like IUD to ascertain its side effect and risk of genital infection (Shoberiri & Nazari, 2014).

Early recognition of vaginal infection, initiation of appropriate treatment and taking necessary precautions are essential in protecting and improving women's health. Additionally, the genital hygienic practice has a key role in the prevention (Hamed, 2015).

Nurses had a critical role in identifying woman complaining of abnormal vaginal discharge, assisting in the prevention of gynecologic infection in addition to ensuring the patient adherence with the suggesting clinical examination and treatment, finding out of unhygienic practices and determining the appropriate technique of practice (Sevil et al., 2013). Furthermore, nurses can assist in managing vaginal infection through providing of health education in order to modify the health behavior and to prevent the occurrence as well as the recurrence of vaginal infection (Ricci & Kyle, 2009).

Significance of the study:

Intrauterine contraceptive devices are considered as a most commonly used contraceptive method and generally well tolerated by women. Meanwhile genital tract infection is considered the primary concern with its utilization (Deveer et al., 2013). In Egypt (Foda & El-Malky, 2012) reported that women using an intrauterine device have a high risk for developing reproductive tract infections. These infection results from a lack of genital hygienic knowledge, incorrect practice and non-systemic health education with the lack of medical examination of the genital health problem (Garg et al., 2012). For these, a study of genital hygienic practice may be contributed to reducing these complaints and improving women's knowledge. Therefore, this study was carried out to determine the effect of nursing intervention on genital hygienic practice on improving women's knowledge regarding vaginal infection among IUD users and non-users.

Aim of the study:

The aim of this study was to evaluate the effect of nursing intervention on knowledge about genital hygienic practices regarding vaginal infection among intrauterine device users and non-users.

This was accomplished through the specific objectives:

- Exploring the relation between the intrauterine device and vaginal infection
- Identifying types of pathogen organisms associated with IUD users and nonusers
- Planning, implementing and evaluating the effectiveness of nursing intervention regarding hygienic

practices for vaginal infection for infected women in both groups (intrauterine users and non-users).

Research hypothesis:

Women who receive educational intervention about hygienic practices will have post total knowledge score better than pre total knowledge score.

SUBJECTS AND METHODS

Research design:-

A quasi-experimental research design with pre/posttest was utilized to fulfill the aim of this study.

Setting:

The study was conducted at family planning in outpatient clinics, Zagazig University Hospital.

Sample:

A purposive sample with a total of 90 women was recruited according to the following inclusion criteria: age ≥ 20 years, all primiparous and multiparous women and women who agreed to participate in the study within a period of 6 months. The study sample was divided into two groups. The first group women who used IUD (48) and the second group women who used other contraceptive methods (non IUD users 42).

The women were excluded if they had the following exclusion criteria:

- Bleeding at the time of sample collection
- Antibiotic use during previous 15 days.
- Diabetic women
- Women who had active pelvic inflammatory diseases
- Women diagnosed with vaginal or cervical cancer

Tools of data collection:

Data collection was carried out by using the following two tools:

Tool I: A structured interview schedule, it consisted of three parts:

First part: Socio-demographic characteristics included data as women's age, education, occupation and duration of their marriage. As well as data related to past obstetrical and gynecological history as parity, previous history of vaginal infection, husband infection or complaint and previous treatment of this infection.

Second part included current contraceptive data as the types of current contraceptive method and duration of its use. In addition, current signs and symptoms of vaginitis as vaginal discharge with its color, odor, and consistency, itching, burning micturition, lower abdominal pain, and painful intercourse.

Third part was designed to assess women's knowledge regarding genital hygienic practices guided by (Nair et al., 2013 & Tarhane and Kasulkar, 2015), it includes 16 items, (3) items for underwear hygiene, (7) items for toilet hygiene and (6) items for menstrual hygiene.

Scoring system:

Each question of knowledge was given a score one for the correct answer and zero for the wrong answer. For each area of knowledge, the scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part. The total score of knowledge was

(0-16) points. These scores were converted into percent scores. Knowledge was considered poor if < 50%, average 50-75% and good knowledge >75%.

Tool II: High vaginal swab specimen for culture using a sterile cotton swab to determine the type of microorganism for the woman. This swab was obtained by the on-duty physician while woman was undergoing speculum examination. The swab was inserted in the posterior vaginal fornix and pulled around for 60 seconds and then transported to lab test. In the lab, the specimen was tested by VITEK MS, which is an automated microbial identification system that provides identification results in minutes using an innovative mass spectrometry technology.

Tools validity & reliability:

Data collection tools and booklet content were established and revised by the jury of five experts in the field of obstetric and gynecologic nursing and medicine. For judgment on clarity, the relevance of sentences, comprehensiveness and appropriateness of content. According to the opinions of the expertises, minor modifications were applied. To assess reliability, the study tool was tested by the pilot subjects at first session and retested after 2 weeks as test-retest reliability for calculating Cronbach's Alpha which was 0.89 and this denoted to high reliability.

Ethical considerations:

An official permission was obtained from the authoritative personnel's in Zagazig University hospitals to obtain their permission for data collection after explaining the aim of the study. The study research was approved by the Research Ethics Committee of the Faculty of Nursing at Zagazig University. All ethical issues were taken into consideration during all phases of the study. Once the women understood the information given to them about the study, written informed consent was obtained from the women who agreed to participate in the study and met the inclusion criteria and they were informed that their participation is voluntary and they have the right to withdraw from the study at any time without any interference with their care. They were also assured that the information obtained during the study will be treated confidentially and used for the research purpose only.

Pilot study:

A pilot study was carried out on 10% of the study sample (10 women) which was excluded from the sample; to assess the clarity, applicability of the data collection tools, arrangements of items, estimate the time needed for each sheet to be filled in, the feasibility of the study and acceptance to be involved in the study. Necessary modifications were undertaken.

Procedure:

Data collection took a period of 6 months from the beginning of December 2015 to end of May 2016. The researchers started the data collection for 3 days per week (Saturdays, Mondays & Wednesdays) from 10.00 a.m. to 1.00 p.m. The execution of the study was done through four phases, namely assessment, planning, implementation, and evaluation.

Assessment phase:

This phase involved the pre-intervention data collection for baseline assessment upon obtaining necessary official permissions and after being revised and tested for general information about the genital hygienic practices. The researchers first introduced themselves and explained the purpose of the research briefly to the Manager of Outpatient Clinic and Chairman of Obstetrics and Gynecologic Department. After that, the researcher read and explained each item of the study questionnaire to the women and recorded her response to each item. The pre-test knowledge questionnaires were distributed and then the same questionnaires were used immediately after the sessions' implementation as post-test. The time consumed for answering the study questionnaires ranged from 15-20 minutes for each one. The data were preliminarily analyzed to provide the basis for designing the intervention sessions.

Planning phase:

Based on the results obtained from assessment phase, the researchers designed the intervention contents according to the identified women's needs and in the view of the related literature. After that, an illustrated brochure was prepared by the researchers and after its content validation; it was distributed to women to be used as a guide for self-learning.

Implementation phase:

The intervention was implemented in one session three days per week for both groups. The duration of the session was ranged from 45-60 minutes; the number of women in each session was 3-5 women. Each woman was given ID number which put on the questionnaire and also on the culture container. Each woman was assessed about the level of knowledge and practices about genital hygienic practices as toilet hygienic practice, menstrual hygienic practice, pre and post-coital hygiene. All women in both groups received the same content using same training methods. The training methods included demonstration-re-demonstration, group discussions, and reinforcement. The sessions were aided by using pictures and educational poster. The researchers together with the on-duty physician started a regular assessment of the woman condition. Per-vaginal and speculum examination were done to obtain pertinent data about vaginal infection. Vaginal infection was diagnosed by the physician. Vaginal discharge and its characteristics such as itching and burning were used as indicators for vaginitis. The severity of infection was evaluated according to the presence of other symptoms such as abdominal pain, dyspareunia, fever, itching and burning. Also, vaginal swab was taken by the on-duty physician for culture and sensitivity test using a sterile cotton swab.

Evaluation phase:

Evaluation of the educational intervention was done immediately after its implementation by comparing the change in women's level of knowledge score by applying the same tools of pretest as posttest.

Statistical analysis:

The collected data were organized, tabulated and statistically analyzed using the statistical Package for the Social Sciences, (SPSS) version 20. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, a comparison between two groups and more was done using Chi-square test (χ^2). Significance was

adopted at $p < 0.05$ for interpretation of results of tests of significance.

RESULTS

Table 1 shows the socio-demographic characteristics of the studied sample. The finding revealed that 72.9% of women in IUD group their age was ranged from >30-40 years old as compared to 40.5% of their in non IUD users with a mean age of 33.18 ± 7.6 and 32.09 ± 5.3 respectively. Additionally, 66.7% and 59.5% respectively of both IUD users and non IUD users had secondary education. Regarding occupation, 79.2% & 50% respectively of subjects in IUD and non IUD groups were a housewife.

Table 2 shows that (70.8% & 28.6% respectively) in IUD users and non IUD users had parity between 3-4 and 83.3% of women in IUD group and 69% of their in non IUD users had history of vaginal infection, while, 66.6% of women in IUD users received medical treatment as compared to 47.6% in non IUD users group, from those, (50% & 55% respectively) of women in both groups received vaginal suppositories and (12.5% and 15% respectively) in both group received vaginal douches. The current table also revealed that, (15.6% and 10% respectively) of women in both groups received medical treatment together with their husbands. Additionally, (56.3% & 26.1% respectively) of women in both groups their husbands complained from signs of infection and from those husbands, (22.9% & 18.1% respectively in both groups complained from redness, (55.5% & 27.5% respectively) in both groups complained from discharge and (70.3% & 45.4% respectively) in both groups their husband complained from itching.

Table 3 reveals the frequency distribution of studied sample according to their current contraceptive data. Results revealed that 77.1% of the study women using copper IUD among IUD users and 64.3% non-users group were used oral contraceptive pills. As regards IUD insertion time, 66.7% of IUD users group were inserted it after delivery and 60.4 of women in IUD users group had a cervicitis before IUD insertion and 75.9% of them receive medical treatment for cervicitis. Moreover, 72.9% of IUD users used it for the first time. Concerning to receiving counseling regarding IUD, only 31.3, 16.6 and 20.8% respectively were received counseling about types, intervention regarding side effect and follow up visit instruction.

Concerning the distribution of studied sample according to clinical examination **table 4** portrays that 79.1% of women in IUD users group was complained from vaginal discharge in clinical examination as compared to 54.7 in non IUD users group and 65.8% of women in IUD users group had yellow frothy discharge as compared to 56.5% in non IUD users group, also, 63.2% of women in IUD users group had heavy discharge as compared to 17.4% in non IUD users group. Women's complaints regarding itching, pruritus in external genitalia followed by lower abdominal pain and backache were the most common complaint among the participant women in IUD users and non IUD users group (86.8%, 84.2%, 71% and 91.3%, 78.2 & 69.5% respectively).

Regarding speculum examination, **table 5** shows that 58.3%, 64.5% and 45.8% of women in IUD users group reported signs of vaginal inflammation, cervical inflammation, and cervical erosion respectively as compared to 16.7%, 9.5% and 4.8% respectively in non IUD users group.

Figure 1 demonstrates the results of microbial examination of vaginal swab among the studied groups. *Escherichia coli* was the most common organism in both groups with a high percentage in IUD users group than non IUD users group (37.5% & 16.6% respectively) followed by *Staphylococcus aureus* present in 33.3% in IUD users group compared to 9.5% in non IUD users group.

Figure 2 illustrates statistically significant improvements in total knowledge score among studied sample regarding their genital hygienic practices through the intervention phases as well as in total at the post-intervention phase ($p < 0.001$). The improvement was more evident in post-intervention phase where 85.3% of the study sample shows a good level of knowledge score as compared to 42.6% in pre-intervention. Moreover, 58.2% of the study sample shows poor level of knowledge score in pre-intervention phase compared to 6.2% in pre intervention.

Table 6 shows the relationship between socio-demographic characteristics and the total level of knowledge. Statistically significant relations were observed between level of knowledge and women's age, education and occupation (< 0.001).

DISCUSSION

The aim of the current study was to evaluate the effect of nursing intervention on knowledge about genital hygienic practices regarding vaginal infection among intrauterine device users and non-users and the findings were answered the research hypothesis which is women who receive educational intervention about hygienic practices will have post total knowledge score better than pre total knowledge score.

A variety of factors are known to affect the practices and behaviors as age, culture, and awareness. Regarding the association of socio-demographic factors on the occurrence of vaginal infection of the studied women, it revealed that less than three quarter of IUD studied women, belong to the age of 30 -40 years old and more compared to nearly two fifths in non IUD users with a mean age of (33.18 ± 7.6 and 32.09 ± 5.3 respectively). This finding is consistent with the study conducted by *Deveer et al., (2013)* in Turkey, who mentioned that the mean age of their women was 33.29 ± 7.75 in IUD group and 33.12 ± 8.50 in the control group. On the same line, *Kaliterna et al., (2011)* found that the median age of IUD users was 37.0 years and 32.2 in other contraceptive methods.

The results of the current study are in contrary with the study finding done by *Musmar et al., (2004)* who reported that more than half of the studied sample was in the 20-30 age group, comprising 52.2% of IUD users and 66.6% of non-users. The difficulty in distinguishing for the age distribution pattern may be due to various behavioral, physiological and immunological interactions.

The educational status of the studied women revealed that in the two groups' user and nonuser more than two third and most three fifth had a secondary school education in addition the majority of IUD users and half of nonusers were housewives. These results are in agreement with *Philip et al., (2015)* in Alex, Egypt, where 50% and 84.4% respectively of their participant women were technical diploma and were not working. This finding is in partially agreement with that of a study done in India by *Shobeiri and Nazari., (2014)* who reported that the majority of women in IUD users and non-users were housewives (96.0% & 60.0%) respectively. Additionally, *Madden et al., (2012)* found that 69.7% in IUD and 58.6% in combined hormonal contraceptives had a high school education.

Concerning to past obstetric and gynecologic history the current study demonstrated that more than two-third of IUD users and less than one- third of other methods were multiparous women. These findings were supported by *Musamar et al., (2004)* who stated that the national policy of the family planning program in maternity centers doesn't prefer to apply the IUD to nulliparous women or young age. On the same line, *Teeranganok et al., (2012)* reported that 58.7% of IUD users and 45.3% of non-users had 3 and more children. These findings are incongruent with *Nayak et al., (2007)* and *Patankar & Wakankar.,(2015)* who found that 75% and 73.1 % respectively of their study subject belong to par1.

Regarding previous history of vaginal infection, it was clear from the present study that a high percentage of studied women had recurrent vaginal infection, meanwhile a higher level was found among IUD users than non-users. In addition IUD is considered a greater risk factor for vaginal infection, genital unhygienic practices, infected partner, the lack of follow up care and the use of non-prescribed medication or home remedies without medical advice, all of these previously mentioned factors expose the women to reinfection. This finding is supported by previous studies done by *Pant et al., (2008)*; *Hamed, (2015)* & *Mohamed et al., (2015)* in Egypt who reported that more than half of their participants with vaginal infection were users of IUD.

As for the usage of the current contraceptive method, the present study result revealed that more than three quarter of IUD users were using copper IUD, meanwhile, less two third of non IUD users were using oral contraceptive pills. Concerning to the duration of IUD usage, the present results demonstrated that the mean duration of IUD was 2.4 ± 1.6 years. These findings agreed with those of a study conducted by *Shobeiri and Nazari (2014)* in Iran who found that the mean duration of IUD was 3.8 ± 1.9 years. Similarly results was in accordance with what has been reported by *Deever et al ., (2013)* in their study about infection frequency among intrauterine copper T- 380 A contraceptive users who found that IUD was used from one month to ten years with the average time of 1.5 years.

For previous finding was supported by *Pal et al., (2005)* who established that a longer period of intrauterine devices use carries the risk of genital infection as well as a great possibility of bacteria isolation with a large number of inflammatory cells.

As regards contraceptive counseling, the present study results indicated that nearly one third of IUD users were counseled regarding the types, risks, benefits and only less than one fifth was counseled regarding dealing with IUD side effects and slightly more than one fifth with follow up instruction. This finding was supported by *Patankar and Wakankar (2015)* who focused on the importance of regular counseling women about side effects and their proper management of IUD, which should be done to deal with the gynecological problems associated with IUD device.

One of the main objectives of the current study was the assessment of the relation between the intrauterine device and vaginal infection. The present study revealed that a significant proportion of studied women using IUD had some of gynecological symptoms. For the symptom of vaginitis, it was clear from the current study that nearly more than three quarter of IUD users complains from vaginal discharge as a chief complaint compared to more than half in non IUD users followed by itching, lower abdominal pain and backache. This finding supports that IUD facilitates changes in vaginal ecosystem.

The above-mentioned findings was in consistent with those of study carried by *Patankar and Wakankar (2015)* who found that vaginal discharge, pain in lower abdomen and backache (41%, 33% & 18% respectively) were considered as a main clinical complaints among the studied women using IUD. Additionally *Ihsan and Jabuk (2014)* in Iraq in their study about "prevalence of aerobic bacterial vaginosis among intrauterine contraceptive device user's women" reported that abnormal vaginal discharge and burning (36% & 30% respectively) were the most frequent complaint among the women.

Foreign body response of IUD and constant irritation of the IUD threads or strings may be responsible for excessive vaginal discharge, cervical infection and erosion. On per speculum examination, the foregoing study demonstrated that there are relations between IUD using and the occurrence of vaginitis, cervical infection and erosion where more than half of IUD users had vaginitis, cervical infection and erosion than the other methods. These above mentioned results are in some extent in accordance with those of *Shobeiri and Nazari . (2014)* who found that 68.0% of IUD users in their study had cervical erosion compared to 21.2% on other methods. On the same line, *Ocak et al., (2007)* had reported that cervical erosion was found in 20% of the IUD users.

Microbial and cytopathological monitoring of women using contraceptive methods especially intrauterine device were important to ascertain the risk of genital tract infection. According to the results of microbiological swab from the vaginal fornix, the current study revealed that the most frequently isolated bacteria was *Escherichia coli* and *Staphylococcus aureus* in both groups with a significant higher rate in IUD users.

The current study results are consistent with *levsky & Herkovits, (2005)*, *Ihsan & Jabuk., (2014)* who found that *E-coli* and *staphylococcus* were the most common microorganisms isolated from cervical canal and ectocervix.

Similarly, this finding in partial agreement with *Kaliterna et al., (2011)* who reported that *Escherichia coli* and *ureaplasma urealyticum* were the most common organisms among both groups (IUD users and non-users) with a high rate of IUD group. Incongruent with this finding, *Deever et al., (2013)* found that *ureaplasma urealyticum* and *mycoplasma hominis* were the most isolated pathogens in both groups with a significantly higher rate in IUD users. Because of differences in the population studied and in diagnostic tests used it's not surprising the variation in types of microorganisms from this study.

The initiation of any meaningful preventive measures to control of vaginal infection there is a need to create awareness and improve knowledge and practices in the subjects in relation to knowledge of the study subjects regarding their practices toward genital hygienic, the present study results has also hypothesized that women who receive educational intervention about hygienic practices will have post total knowledge score better than pre total knowledge score. The results of the study led to justify of this hypothesis since significant improvement of the studied knowledge.

As regards total knowledge score level at pre- post-test, the current study finding reported that more than half of the studied women had poor knowledge related vaginitis and its hygienic practice in pretest, which changed to less than one fifth at posttest. Meanwhile the great majority of them had good knowledge in posttest with a statistically significant difference. Hence, this could be interpreted planned teaching intervention regarding genital hygienic practice was effective in increasing the level of women's knowledge.

These results were to some extent in a harmony with that of a study conducted in Egypt by *Youness and Masoud. (2017)*, who found that more than two-thirds of their studied sample had inadequate knowledge related to vaginitis and its preventive measures in pretest. Meanwhile, the great majority of them had satisfactory knowledge of post-test. On the same line, the findings reported by *Yarmohammadi et al. (2015)* in Iran, who studied the effect of education on knowledge, attitudes, and practices of patients with vaginitis, indicated a significant increase in the mean score of knowledge, attitudes, and practices of patients in the intervention group.

According to the current study findings, there was a statistically significant relation between women's total score

of pretest knowledge as regards genital hygienic practice with their age, education, and occupation ($P < 0.001$), which interpreted the association between demographic variables with pretest knowledge score could be attributed to program on the level of knowledge of the studied women. However, these findings were incongruent with the findings of *Salini & Devi., (2010)* who studied the effect of a planned educational program about vaginal infection and found that there was no association between pretest knowledge score and selected demographic variables. Based on the study results, the variety and prevalence of vaginal practices suggest a need to consider the importance of early screening, prevention of recurrent infection, importance of IUD follow up and avoidance of practices that are harmful which changed by the health education and nursing interventions.

CONCLUSION

Based on the findings of the current study and research hypothesis, it was concluded that: The implementation of planned educational intervention was effective as a method to improve the knowledge of studied women as regards genital hygienic practices, where, there was found a statistically significant difference between pre and posttest knowledge level score. $p = < 0.0001$

RECOMMENDATIONS

On the basis of the current study findings, the following recommendations were suggested:

1. Continuous health education and training intervention about ideal genital hygienic behavior should be provided to all nurses working in primary health care services to improve women's knowledge. Furthermore, infected women should recognize the adverse effects of recurrent infections, the importance of early screening and treatment, as well as the treatment of their husbands and follow up.
2. Women need to be educated about the importance of follow up regarding IUD to decrease the rate of vaginal infection.
3. Before IUD insertion, all women should be screened and treated for asymptomatic vaginal infections to prevent any possible IUD associated infection.
4. Further studies and more interventions regarding genital hygienic practices must be explored to improve women health, avoid genital tract infection, detect any relation between the intrauterine device and vaginal infection.

Table 1: Frequency Distribution of Studied Sample According to their Demographic Characteristics.

Items	IUD (n= 48)		Other methods (n=42)	
	N	%	N	%
age (years) :				
20-30	7	14.6	6	14.3
>30-40	35	72.9	17	40.5
>40	6	12.5	19	45.2
Mean ± SD (years)	33.18±7.6		32.09±5.3	
Education				
Illiterate	3	6.3	1	2.4
Primary	9	18.8	4	9.5
Secondary	32	66.7	25	59.5
University	2	4.1	4	9.5
Post graduate	2	4.1	8	19
Occupation				
House wife	38	79.2	21	50
Employee	10	20.8	21	50
Duration of marriage	11.8±6.2			

Table 2: Frequency Distribution of Studied Sample According to Their past Obstetrical and Gynecological history

Items	IUD users (n= 48)		Non IUD users (n=42)	
	N	%	N	%
Parity				
1-2	14	29.2	30	71.4
3-4	34	70.8	12	28.6
Previous history of vaginal infection:				
• Yes	40	83.3	29	69
Medical treatment for this infection:				
• Yes	32	66.6	20	47.6
Type of treatment of this infection:				
• Vaginal suppositories	16	50	11	55
• Vaginal douching	4	12.5	3	15
• Mixing of them	12	37.5	6	30
Both couple take medical treatment at same time:				
• Yes	5	15.6	2	10
Husband complain:				
• Yes	27	56.3	11	26.1
• No	21	43.7	31	73.9
©Type of husband complain:				
• Redness	6	22.2	2	18.1
• Discharge	15	55.5	3	27.2
• Itching	19	70.3	5	45.4
• More than one complain	10	37	4	36.5
Medical treatment for this complain				
• Yes	18	66.6	5	45.4
Long of recurrent of infection after treatment per month:	3.2±2.8			

©Total not mutually exclusive (some husband had more than one complain at the same time)

Table 3: Distribution of the Studied Sample According to Current Contraceptive Data

Items	No	%
Types of contraception		
Intrauterine contraceptive device "IUCD" group (n = 48)		
• Copper	37	77.1
• Hormonal	11	22.9
Non IUD users group (n = 42)		
Types:		
• Oral contraceptive	27	64.3
• Implanon	10	23.8
• Natural	5	11.9
Insertion time for IUD (n = 48)		
• After abortion	16	33.3
• After delivery	32	66.7
Did you have cervicitis before insertion (n = 48)		
• Yes	29	60.4
Medical treatment for this cervicitis (n =29)		
• Yes	22	75.9
Type of treatment (n = 22)		
• Medical	16	72.7
• Cautery	6	27.3
Use the current IUD after treatment /months		
	.9±1.5	
Is the first time to use IUD(n= 48)		
• Yes	35	72.9
• No	13	27.1
Duration of IUD using / per year 2.4±1.6		
Counseling regarding IUD: (n = 48)		
• Information about types , risks and benefits	15	31.3
• Intervention regarding side effect	8	16.7
• Follow up visit instruction	10	20.8
• No counseling	15	31.3

Table 4: Frequency Distribution of Studied Sample According to Their Current Clinical Examination and Their Symptoms of Vaginitis

Symptoms of vaginitis:	IUD users (n= 48)		Non IUD users (n=42)	
	N	%	N	%
Presence of vaginal discharge				
• Yes	38	79.1	23	54.7
Color of vaginal discharge:				
• White "cottage cheese-like"	10	26.3	8	34.8
• Yellow, frothy discharge	25	65.8	13	56.5
• Thin, white "milky"	3	7.9	2	8.7
Odor of discharge:				
• odor less	8	21.1	13	56.5
• Mal-odor/ Foul odor	30	78.9	10	43.5
Amount of discharge:				
• Little	6	15.8	8	34.8
• Average	8	21.0	11	47.8
• Heavy	24	63.2	4	17.4
© Women symptoms:				
• Dyspareunia	23	60.5	15	65.2
• Foul odor during intercourse	11	28.9	4	17.3
• Post coital vaginal hemorrhagic spots	6	15.8	1	4.3
• Back ache	27	71	16	69.5
• lower abdominal pain	32	84.2	18	78.2
• Itching, pruritus in external genitalia	33	86.8	21	91.3
• Burning micturition	26	68.4	8	34.7

©Total not mutually exclusive (some women had more than one symptom at the same time)

Table 5: Frequency Distribution of Studied Sample According to The Results of their Gynecological Examination (speculum examination):

@Signs of vaginitis:	IUD users (n= 48)		Non IUD users (n = 42)	
	N	%	N	%
Signs of vaginal inflammation	28	58.3	7	16.7
Signs of cervical inflammation	31	64.9	4	9.5
Presence of cervical erosion	22	45.8	2	4.8

® Total not exclusive (some women had more than one signs at the same time)

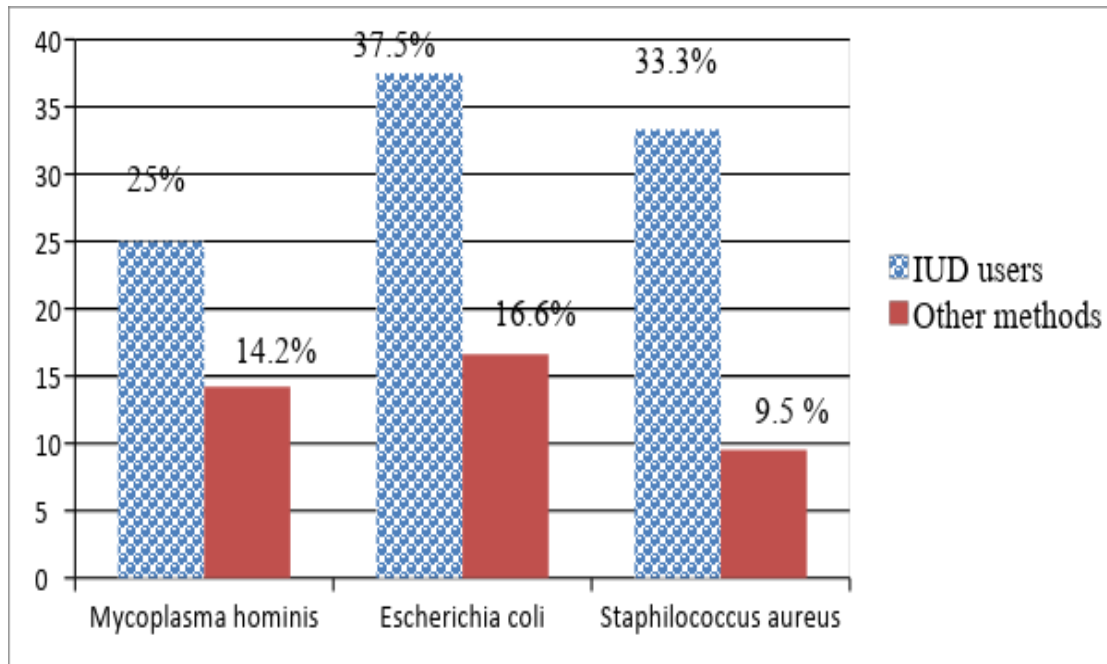


Figure 1: Distribution of Studied Sample According to Their Results of Microbiological Results

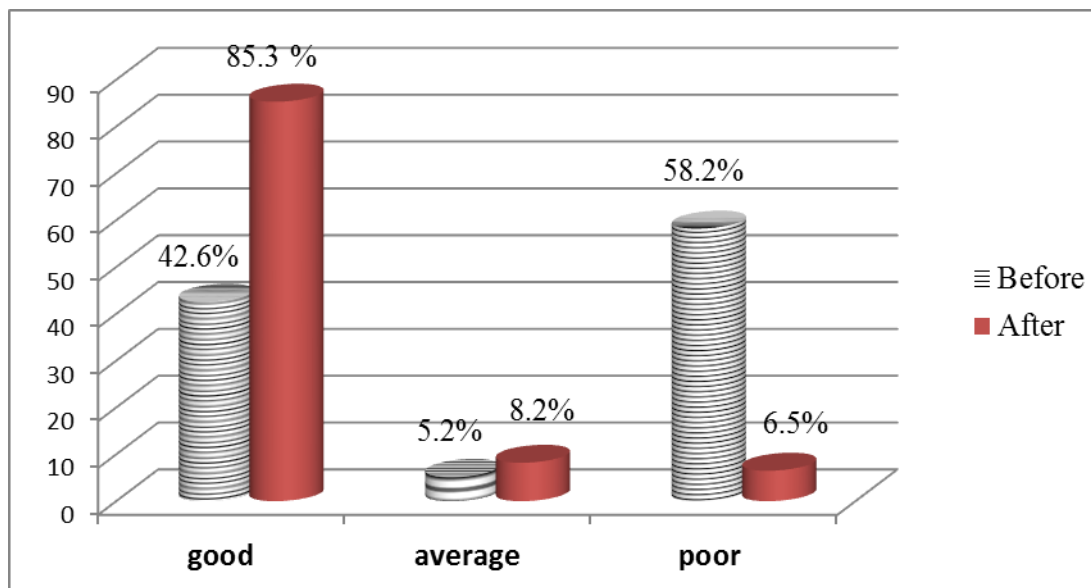


Figure 2: Total Knowledge Score among Studied Sample Regarding their Genital Hygienic Practice Through the Intervention Phases (n=62).

Table 6: Relation between Socio-demographic Characteristics and Total Level of Knowledge Regarding Genital Hygienic Practice among the Infected Women for Both Group (n= 62).

Items	Before program			After program			X ²	P value
	Good (%)	Average (%)	Poor (%)	Good (%)	Average (%)	Poor (%)		
Age (years)								
20-30	2.0	20.5	77.5	55.3	35.0	9.7	22.6	0.001*
>30-40	48.8	28.7	22.5	70.2	22.0	7.9		
>40	14.5	27.8	57.7	95.2	2.2	2.6		
Education								
Illiterate	5.2	3.1	91.7	57.5	31.0	11.5	33.1	.0001*
Primary	20.2	10.2	69.6	55.1	40.9	4.0		
Secondary	22.2	12.2	65.6	59.5	27.8	12.7		
University	50.1	20.2	29.7	89.2	8.8	2.0		
Post graduate	55.0	25.6	19.4	100	0.0	0.0		
Occupation								
Housewife	35.9	56.2	7.9	49.9	33.2	16.2	20.8	0.001*
Employee	65.6	12.9	21.9	92.8	5.5	1.7		

* Statistically Significance

REFERENCES

- [1]. American Social Health Association,(ASHA).,(2013):Vaginitis Menlo Research Triangle Park. Available at: ASHA, creating asexual health nation at: www.ashasexualhealth.org. Accessed on: April 2016.
- [2]. Cankaya,S.,& Yilmaz,D.(2015): Factors Associated With Genital Hygiene Behaviours in Pregnant and Non- pregnant Women in Turkey. International Journal of Women Sciences, 12(1): 920-32.
- [3]. Deveer,R., Deveer,M.,&Sozen,H.(2013):Infection Frequency Among Intrauterine Copper T-380A Contraceptive users. Acta Medica Mediterranea; 29: 489.
- [4]. Foda A., & El-Malky M. (2012): Prevalence of genital tract infection with Entamoeba gingivalis among copper T 380A intrauterine device users in Egypt. 85(1):108-12.
- [5]. Garg, R., Goyal, S, &Gupta,S.,(2012):India Moves Toward Menstrual Hygiene: Subsidized Sanitary Napkins for Rural Adolescent Girls-Issues and Challenges. Maternal Child Health. J; 16(4): 767-774.
- [6]. Gor,H. (2015):Vaginitis, Background, Pathophysiology, Etiology: Available at: http://emedicine.medscape.com/article/257. Last accessed 2016 November.
- [7]. Hamed,A.(2015): The Impact of Genital Hygiene Practices on the Occurrence of Vaginal Infection and The Development of a Nursing Fact Sheet as Prevention Massage for Vulnerable Women. IOSR Journal of Nursing and Health Science (IOSR-JNHS), Volume 4, Issue 6 Ver. V (Nov. Dec. 2015), PP 55-64.
- [8]. Ihsan,S.,&Jabuk,A.,(2014):Prevalence of Anerobic Bacterial Vaginosis Among Intrauterine Contraceptive Device User's Women in Hilla City. Journal of Babylon university /Pure and applied science; 22(9): 2424-31.
- [9]. Kaliterna V., Kucisec-Tepes, N., PejkoVIC L. (2011): An Intrauterine Device as a Possible Cause of Change in the Microbial Flora of the Female Genital System. J. Obstet. Gynaecol. Res., 37, (8): 1035–1040.
- [10]. Kaliterna,V, Kucišec, N., & PejkoVIC,L., (2011):An Intrauterine Device as a Possible Cause of Change in The Microbial Flora of The Female Genital System. J. Obstet. Gynaecol. Res; 37 (8): 1035–1040.
- [11]. Kamel, A.D., (2014): Assessment of Common Types of Vaginal Infections among Women Attending Gynecological Clinics at El-Manial University Hospital: 2014.A Proposed Plan of Action. Available at http://scholar.cu.edu.eg/?q=msc/files/cu-pdf_3.pdf accessed on 12 March 2017.
- [12]. Khedr,F., Awad, H., & Al- Wehedy A.,(2015): Vaginal Secretions Among Students in the Egyptian Universities: Prevalence, Knowledge and Practices. World Journal of Nursing Sciences; 1 (3): 68-75.
- [13]. Levsky,J.,& Herkovits,M.,(2005):Incidental Detection of a Transmigrated Intrauterine Device. Emerg Radiol; 11(5): 312-14.
- [14]. Madden,T., Grentzer,J., &Secura,G.,(2012): Risk of Bacterial Vaginosis in Users of The Intrauterine Device: A Longitudinal Study ,Sex Transm Dis; 39(3): 217–222.
- [15]. Mohamed,H., Shalaby,N.,Maraghy,N.,&Baraia,Z.,(2015):Prevalence of Vaginal Infection and Associated Risk Health Behaviors Among Married Women in Ismailia City. International Journal of Current Microbiology and Applied Science; 4(5): 555-567.
- [16]. Murry, S. &Mckinney, E., (2010): Vaginitis Foundation of Maternal Newborn and Women Health Nursing. 5th edition. Evolve Learning System. 921-2.
- [17]. Musmar,S., Musmar, M.,& Ismael,M., (2004): Effect of IUD (Intrauterine Device) on Reproductive Tract Infection

- (RTI) in The Northern West Bank. *Middle East Journal of Family Medicine*; 5: 5.
- [18]. Nair, M. K., Leena, M. L., Thankachi, Y., George, B., Russell, P. S.(2013): ARSH 1: Reproductive and sexual health problems of adolescents and young adults: a cross sectional community survey on knowledge, attitude and practice. *Indian J Pediatr*; 80 (2): 192-8.
- [19]. Nayak, S., Chaitanya, P. & Radhika, P., (2007): Clinicocytological Study in Copper T users. *J Obstet Gynecol India*; 57(3): 23-25.
- [20]. Ocak,S.,Cetin,M.,&Hakverdi,S.(2007):Effects of Intrauterine Device and Oral Contraceptive on Vaginal Flora and Epithelium. *Saudi Medical Journal*; 28: 727-31.
- [21]. Özdemiř,S.T. Ortařađ, B. Tosun,O,&Özdemiř H.B.,(2012): Assessment of the Knowledge Level and Behaviors of Students in School of Nursing about Genital Hygiene. *Gulhane Med. J*; 54(2): 120-128.
- [22]. Pal,Z., Urban,E.,& Dosa, E.,(2005): Biofilm Formation on Intrauterine Devices in Relation to Duration of Use. *J Med Microbiol*; 54: 1-5.
- [23]. Pant,B.,Singh, J.,Bhatnagar,M.,&Garg, S.,(2008):Social Correlates in Reproductive Tract Infections Among Married Women in Rural Area of Meerut. *J. Indian Journal of Community Medicine*; 33 (1):52.
- [24]. Patankar,A., & Wakankar, R.,(2015): Microbial and Clinic Cytological Study in Copper-TUsers. *J of Evolution of Med and Dent Sci*; 4(47): 8143-52.
- [25]. Pektas k.,Ozat M.,&Gungor T.,(2008):The Effect of TCc-380 on Cervicovaginal Flora. *Arch Gynecol Obstet* ; 277:429-32.
- [26]. Philip, A., Shouman, E., Dewedar,S,&Boulos,D., (2015):Prevalence of The Most Common Reproductive Tract Infections Among Women Attending Family Planning Clinics in Montazah ,Alexandria.
- [27]. Ricci,S.,& Kyle,T.,(2009): *Sexual Transmitted Infections, Maternity and pediatric Nursing*, 4th edition. Wolters Kluwer Health/ Lippincott Williams and Wilkins; 5:143-151.
- [28]. Rsbu K., Adeniyi A., Akinlusi F & Akinola O.,(2010): Female Reproductive Tract Infection: Understanding and Care Seeking Behavior among Women of Reproductive age in Iagos, Nigeria. *BMC women health*; 10(8):1-7.
- [29]. Salini R & Devi R.,(2010):Effectiveness of Planned Teaching Program on Vaginitis and its Prevention Among Adolescents of Selected Pupil Colleges in Mangalore, published master thesis. Accessed in August 2016.
- [30]. Sevil,S., Kevser,O.,& AleattinU.,(2013):An Evaluation of The Relationship between Genital Hygiene Practices. *Genital Infection Gynecol. Obstet.*, 3(6): 2161-0932.
- [31]. Shoberiri,F.,& Nazari, M.,(2014):Vaginitis in Intrauterine Contraceptive Device Users. *Health*.6, 1218-1223.available at:<http://.scrip.org/journal/health>. Accessed on: January 2016
- [32]. Tarhane,S.,& Kasulkar,A ,(2015) :Awareness of Adolescent Girls Regarding Menstruation and Practices During Menstrual Cycle. *Panacea Journal of Medical Science*; 5(1); 29-32.
- [33]. TeeraganokT.,ManoniJ.,&Chongtrakool P (2012): Vaginal Health in Copper Intrauterine Devices Users and Non-users. *Thai Journal of Obstetrics and Gynecology*. 20(1): 48-53.
- [34]. Yarmohammadi,S.,Taheri,G.,Mousavi,S.,&Hashemian.,A(2015):The Effect of Education on Knowledge, Attitude and Practice of Patients with Vaginitis. *Advances in Biological Research*; 9(3):196–200.
- [35]. Youness, E., Omar, A., (2017): Effectiveness of Planned Educational Program on Vaginitis and Its Preventive Measures on Adolescent Female Nursing Student’s Knowledge. *Egyptian Nursing Journal*; 14:1-8.