

## Effect of Teaching Guideline on Women Knowledge and Practices regarding Leucorrhoea at Reproductive Age

**Madiha Mohamed Tosson (1) , Heba Ahmed Osman Mohamed (2) , Marwa Yehia Moustafa Sweelam (3) , Nahed Mousa Saber(4), Amel Ahmed Elsayed (5), ElSayed Hamdy Nasr Abdelhalim (6)**

1 Assistant Professor of Obstetrics and Gynecology Nursing, Faculty of Nursing, Assuit University, Egypt

2 Obstetric and Gynecological Department, Faculty of Nursing, Assiut University and Assistant Professor of Maternal and Child Health Nursing, Nursing College, Northern Border University, SAUDI ARABIA

3Lecturer of Maternity and Neonate Health Care Nursing, Faculty of Nursing, Fayoum University

4Assistant Professor of Maternal and Newborn, Faculty of Nursing, Beni-Suef University

5Assistant professor of Community Health Nursing, Faculty of Nursing, Mansoura University

6Assistant Professor of Maternity, Obstetrics, and Gynecology Nursing, Faculty of Nursing, Port Said University

### Abstract

**Background:** Leucorrhoea is strictly an excessive normal vaginal/cervical discharge and it is one of the most common complaints of the patients attending the Outpatients' Gynecological clinics. **The aim** of the study was to evaluate the effect of teaching guidelines on women's knowledge and practices regarding leucorrhoea at reproductive age. **Design:** Quasi-experimental research design was used. **Setting:** The current study was conducted at Outpatients' Gynecological clinics at Beni-Suef University Hospital. **Subjects:** A purposive sample of a total of 500 women of reproductive age was recruited for the study. Three tools were used for data collection; Tool (1): A structured interview questionnaire; Tool (2): women's knowledge about leucorrhoea (pre/post), Tool (3): women's practices about leucorrhoea (pre/post). **Results:** The study result revealed that there was a highly statistically significant difference and improvement between the pre-teaching guidelines and post-teaching guidelines regarding women's knowledge and practices about leucorrhoea. There was a statistically significant positive correlation between the total knowledge and total practice scores of the studied women regarding leucorrhoea. There is significant statistical relation between studied women's demographic characteristics and their total score of knowledge and total score of practices. **Conclusion:** Teaching guidelines had a positive effect on improving women's knowledge and practices at reproductive age regarding leucorrhoea. **Recommendations:** Implementing continued teaching guidelines about leucorrhoea should be provided to women of reproductive age according to their needs to improve their knowledge and practices. Proper counseling can be given to women as well as nurse care practices at the time of counseling.

**Keywords:** Leucorrhoea, Knowledge and practices, Teaching guidelines, Women's in reproductive age

### Introduction:

The International Conference on Population and Development (ICPD) in Canada defined reproductive health as a state of complete physical, mental, and social well-being in all matters relating to the reproductive system and its functions and processes, rather than just the absence of sickness or illness. Despite being the ICPD's primary focus,

reproductive health was left out of the advancement objectives (Joshi et al, 2018).

Genital tract infections from one of the major burdens of disease in developing countries, and includes infections caused due to any (or combination) of the three factors: iatrogenic, endogenous, and sexually transmitted. While several symptoms define the disease, the most commonly reported among women is that of abnormal vaginal discharge (or Leucorrhea)

(National Center for Health Statistic, 2020).

The vaginal discharge is characterized by fluid-like secretion from the epithelial cells and Bartholin's glands of the vagina whichever helps to nourish the vaginal microenvironment. However, there are many pathophysiological conditions directly or indirectly associated with quantitative or qualitative alteration of the secretion (Fonseca et al, 2019).

Vaginal discharge (leucorrhoea) may be physiological or pathological. In physiological discharge, normal vaginal flora (lactobacilli) colonizes the vaginal epithelium and may have a role in defense against infection. They maintain the normal vaginal pH between 3.8 and 4.4. But abnormal vaginal discharge often prompts women to seek screening for sexually transmitted infections (Thomas, 2019).

Leucorrhoea is strictly an excessive normal vaginal/cervical discharge and it is one of the most common complaints of the patients attending the obstetrics and gynecology department. The cause for the occurrence of leucorrhoea can be physiological due to an increased estrogen level but it most commonly signifies some underlying pelvic pathology (Wessels et al., 2018).

Leucorrhoea (vaginal discharge) is a condition of persistent and excessive vaginal discharge. It is one of the most common chief complaints in clinical medicine and is recorded for more than 10 million women yearly. Some women are troubled by a discharge that is not profuse whilst others interpret a heavier discharge as normal (National Center for Health Statistic, 2020).

The major pathological causes include bacterial vaginosis, candida, and trichomonas vaginalis.<sup>5-7</sup> A proportion of women is not troubled by a profuse discharge whilst a few interpret normal discharge as heavy. The symptom might appear in any age group including infancy, adolescence, reproductive age group, menopause, and senescence. Symptomatic vaginal discharge needs to be

evaluated at the earliest to give proper treatment at the appropriate time (Prusty et al., 2018).

Moreover, reproductive tract infections (RTI) are more common in countries with poor or low economic status. In particular, in countries like India, RTI is known to be the most common health problem estimated at around 6% (30–35 million) of adult populations and has experienced either one or more episodes in a year. A recent study revealed important risk factors such as age, income, education, and the number of children in association with positive leucorrhoea patients (Fernandopulle, 2019).

The symptom may appear at any age, such as in infancy, in childhood, in the childbearing period, in the menopausal years, and during senescence but it is more common among women in the reproductive age group. The normal vagina is lined by squamous epithelium. It is richly colonized by bacterial flora, predominantly Lactobacillus, and has an acidic pH of <4.5 (Thomas, 2019).

Women may sometimes complain of a clear white or mucoid discharge other than before menses or at mid-cycle. Such discharges may originate from the vagina, ovaries, fallopian tubes, or most commonly the cervix. It represents the desquamation of vaginal epithelial cells because of the effects of estrogen on the vaginal mucosa. A woman who has increased whitish discharge will experience weakness and lethargy. It is seen as a thick and sticky white-colored discharge from the vagina between the periods. It can also be accompanied by headaches for some women. Due to frequent discharge, there may be pain in the calf muscle and the lumbar region (Chance, 2018).

Various community-based studies in developing countries have revealed that this morbidity and general ill health has been endured silently by women, due to various factors like gender inequalities, cultural restrictions, lack of women's autonomy, poor awareness, lack of proper infrastructure, and focused counseling services (Demba et al, 2021).

Complaining of discharge is treated for some or all of the five common reproductive tract infections: Chlamydia trachomatis, gonorrhoea, and trichomoniasis which are sexually transmitted infections, and bacterial vaginosis and candidiasis, which result from a disturbance in the normal bacterial flora of the vagina. The significant level of abnormal vaginal discharge leads to an intensive increment in different gynecological complications. A total health-building scheme is essential for the removal of systemic toxicity, which is primarily responsible for the disease leucorrhoea. Such a scheme should consist of correct dietary habits, proper sleep, exercise, fresh air, and sunshine. Heal leucorrhoea pill a patent formula cleans vaginal infections and astringes discharge with dark color and odor (Thomas, 2019).

#### **Significance of the study:**

The majority of women bear the problems silently without seeking devices and treatment. This is also one of the reasons women are continuously susceptible to leucorrhoea. As stated by WHO estimation as many as 357 million new cases of women aged between 15-49 years was reported with curable four different gynecological conditions including Chlamydia trachomatis, Neisseria gonorrhoeae, syphilis, and Trichomonas vaginalis (Patel & Mazumdar, 2019).

Several studies showed that women often suffer from reproductive morbidities for a long time because of their 'culture of silence' and they believe that it's not a condition for which they should seek medical help. Hence, it is the responsibility of the health care provider to create awareness regarding leucorrhoea, which helps in the early identification of the problem in the initial stage of management (Thomas, 2019).

Some studies about women's awareness of leucorrhoea in developing countries concluded that about (83%) of women who participated in that study had vaginal discharge (Kala & Jayabharathi, 2019). Hence, the investigator has decided to evaluate the effect of teaching guidelines regarding leucorrhoea on women's

performance at reproductive age.

#### **Aim of the study:**

The study was aim to evaluate the effect of teaching guidelines on women's knowledge and practices regarding leucorrhoea at reproductive age through:

- Assessing women with vaginal discharge.
- Designing and implementing teaching guidelines regarding leucorrhoea for women reproductive age based on their needs.
- Evaluating the effect of applying teaching guidelines on women's knowledge and practices regarding leucorrhoea at reproductive age

#### **Research Hypotheses:**

H1; teaching guideline will have a positive effect on women' knowledge & practices regarding Leucorrhoea at reproductive age.

H2; There is a positive correlation between women' knowledge and practices regarding Leucorrhoea at reproductive age.

#### **Subjects & Method**

##### **I-Technical Design:**

The technical design of the study includes research design, setting, subjects, and tools for data collection.

##### **Research design:**

A quasi-experimental design was used to achieve the aim of this study.

**Setting:** The current study was conducted at Outpatients' Gynecological clinics at Beni-Suef University Hospital. This setting was selected due to the high prevalence of patients in the selected setting, and also it serves the biggest region of the population.

**Sample:** A purposive sample of a total of 500 women of reproductive age was recruited for the study.

**Sample calculation:** The sample size calculation equation revealed that 500 women were determined by using the equation similar in a study by (Brown & Hollander, 1977) who found that 500 women were enough sample.

**Inclusion criteria:**

1. Their age ranged from 18 to 45 years old.
2. Agree to participate in the study.
3. Presence of discharge, any associated symptoms

**Exclusion criteria - :**

1. Refuse to participate in the study.
2. History of chronic diseases

**Tools for Data Collection:**

Three tools were used for data collection through;

**Tool (1):** A structured interview questionnaire (pre and post-test format) was developed by the researchers after reviewing the related literature and research studies. It included the following two parts:

**Part I: Women's demographic characteristics:** It consists of six questions related to demographic characteristics of the women including age, education, occupation, residence, marital status, and age of menses.

**Part II: Current history & or complaints of vaginal discharge assessment sheet:**

It included current history and characteristics of reported vaginal discharge as color, consistency, odor, volume, time of marked increase volume and associated symptoms as (genital itching, redness, dysuria, abdominal pain, back pain, swelling of vulva and also pelvic congestion).

**Tool (2): Women's knowledge about leucorrhoea (pre/post):**

It is used to assess women's knowledge. It was developed by the researcher after

reviewing the literature and expertise' opinions (Kala & Jayabharathi, 2019, Patel & Mazumdar, 2019, *National Center for Health Statistic, 2020*). It involved twelve questions of closed-ended questions related to the following items: Leucorrhoea meaning, types, causes, amount, the character of these symptoms, associated symptoms, and women's practical care toward these symptoms.

**Scoring system:**

For the knowledge items, a correct response was scored 1 and an incorrect zero. The scores of the items were summed up and the total was divided by the number of the items, giving a mean score for the part. These scores were converted into a percent score, and means and standard deviations were computed. Knowledge was considered unsatisfactory if the percent score was 60% or less and considered satisfactory if knowledge was 60% or more.

**Tool (3): Women's practices about leucorrhoea (pre/post):**

It is used to assess women's practices regarding leucorrhoea. It was developed by the researcher after reviewing the literature and expertise' opinions (Kala & Jayabharathi, 2019, Patel & Mazumdar, 2019, *National Center for Health Statistic, 2020, Demba et al, 2021*). It consisted of fourteen questions related to the following items as (Technique of cleaning the vagina, the direction of cleaning the vagina after the bath, underpants clothes types and using the pad for vaginal discharge how long they responded, nature of the response, performing traditional practices), seeking medical advice, time of seeking medical advice, type of medication prescribed, complete the course of medication and causes of not complete, following up after the treatment in addition to the resource persons for their response.

**Scoring system**

For the women's practices regarding leucorrhoea, a correct response was scored 1 and the incorrect zero. The scores of the items

were summed up and the total was divided by the number of items, giving a mean score for the part. These scores were converted into a percent score, and means and standard deviations were computed. Women's practices were considered adequate if the percent score was 60% or less and considered satisfactory if women's practices were 60% or more.

## II- Operational Design:

The operational design included a preparatory phase, content validity, reliability, pilot study, and fieldwork.

**A-Preparatory phase:** It includes reviewing the literature, different studies, and theoretical knowledge of various aspects of the problems using books, articles, the internet, periodicals, and magazines.

**B-Content and face validity:** It was ascertained by a jury consisting of five expert professors, three professors in the field of obstetric nursing, and two professors in the field of medical obstetrics, and change was done based on their opinion modifications.

**C- Test of reliability:** Cronbach alpha coefficient was calculated to assess the reliability of the developed tools through their internal consistency. The alpha reliability of tool 2 (knowledge) was 0.879, and the reliability of tool 3 (practices) was 0.894.

### Pilot Study:

A pilot study was conducted on 10 % of the study subjects (50 women) to test the applicability & feasibility of the tools of data collection, and to estimate the time required for filling the required forms. As needed modifications were done and women were presented involved in the pilot study was included in study.

### Ethical considerations:

---

Explain the aim of the study to the director of the hospital to take his permission to do this study, and explain the aim of the study

to each participant to ensure their consent to be involved in the study. Oral consent was obtained from the women after an explanation of the study's purpose and before starting the study. The researchers informed them that the information obtained would be used for study purposes only. They also were informed that they could refuse to participate in the study, to withdraw from it at any time.

### Field Work:

The data collection was started from the beginning of March 2021 and at the end of August 2021 two days weekly at the previously selected setting for two days per week in the morning shift.

The data collection tools were distributed to the studied women twice; (1) pre-test to assess their knowledge and practices before implementing teaching guidelines.

The simplified booklet was used as a supportive material and given to women in the Arabic language to cover all items regarding the knowledge and practice of leucorrhoea after reviewing the related literature based on the assessment of the actual needs of the studied women. Different teaching methods such as lectures, discussion, pictures, and posters were used.

The researchers designed and implemented the teaching guidelines regarding leucorrhoea in the form of a theoretical part and a practical part. The theoretical part included women's knowledge regarding leucorrhoea. It was implemented through lectures, posters, educational films, scenarios, and role-plays. An educational booklet written in simple Arabic language and illustrative pictures were prepared by the researchers and was given to the studied women regarding leucorrhoea.

The subject contents have been sequenced through five sessions (3 sessions for the theoretical part and 2 sessions for the practical part), each session takes 1 hour to discuss the content and 15 minutes to conclude and ask questions. The total time was 2 hours

for each one. At the beginning of the first session, an introduction to the teaching guidelines regarding leucorrhoea was given and each session started with summary feedback about the previous session.

#### **Teaching Guidelines included knowledge regarding leucorrhoea as follows:**

- Leucorrhoea meaning
- Types of leucorrhoea
- Causes of leucorrhoea
- Amount and character of these symptoms of leucorrhoea
- Associated symptoms of leucorrhoea
- Women's practical care toward these symptoms of leucorrhoea

#### **Teaching Guidelines included practices regarding leucorrhoea as follow**

- The technique of cleaning the vagina
- The direction of cleaning the vagina after the bath
- Underpants clothes types
- Using a pad for vaginal discharge how long they responded, nature of the response
- Performing traditional practices), seeking medical advice, time of seeking medical advice
- Type of medication prescribed, complete the course of medication, and causes of not complete
- Following up after the treatment in addition to the resource persons for their response.

#### **Explanation was done through five sessions as follow:**

- **The first session:** Teach women an overview of leucorrhoea meaning, types of leucorrhoea, and causes of leucorrhoea
- **The second session:** teach women about amount and character of these symptoms of leucorrhoea and associated symptoms of leucorrhoea.
- **The third session:** teach women about women's care toward these symptoms of leucorrhoea

- **The fourth session:** teach women about the technique of cleaning the vagina, the direction of cleaning the vagina after the bath, underpants clothes types, and using a pad for vaginal discharge how long they responded, nature of the response.

- **The fifth session:** teach women about performing traditional practices), seeking medical advice, time of seeking medical advice, type of medication prescribed, complete the course of medication, and causes of not complete, and following up after the treatment in addition to the resource persons for their response.

#### **III-Evaluation phase:**

The evaluation was conducted by interviewing women at the outpatients' clinic post one month by using the same tools to evaluate the effect of teaching guidelines regarding leucorrhoea on women's performance at reproductive age.

#### **III-Administrative Design:**

For the conduction of the study, written permission was taken from the Dean of the Faculty of Nursing, Beni-Suef University, and an official letter was sent to the selected area of the study. The director of the hospital was informed to obtain permission to include the patients in the present research.

#### **IV-Statistical Design**

Data were coded and transferred into specially designed formats for data entry then data were analyzed and computed. The collected data were done using SPSS 20.0 statistical packages for social science. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. Qualitative variables were compared using the person chi-square test and non-parametric chi-square test. Statistical significance was considered at a p-value <0.05.

**Results:**

**Table (1)** shows that (54%) of the studied women were between 30 to less than 40 years old with a mean age was  $31.08 \pm 6.07$ , and a high percentage of them (33%) were secondary level. As regard occupation (57%) of the studied women was housewives and 63% of them were from rural areas. Concerning marital status, 95% of the studied women were married. The same table denotes that the age of menses among (98%) of them at < 14.

**Table (2)** shows distribution of the studied women regarding to their current history of vaginal discharge. It shows that all (100%) of them had vaginal discharge. About 55% of women complained from vaginal discharge since more than two weeks ago. As regard to color of vaginal discharge, it is found that (80%) of them had white discharge. Regarding the consistency of vaginal discharge 38% of them had liquid such as creamy discharge. Regarding the odor of vaginal discharge (48%) of the studied women had unpleasant odor. As regards to amount of vaginal discharge, it is found that (40%) of them had few discharge. Concerning time of marked increase volume of discharge 30% reported was increased before menstruation.

**Figure (1)** shows distribution of the studied women regarding to their associated symptoms with vaginal discharge. It clarifies that, the majority (88%) of them reported symptoms were itching in the genitalia followed by redness 42%, lower abdominal pain 38%, dysuria 38%, backache 32% and swelling of vulva (8%). Additionally pelvic congestion is mentioned by 6%.

**Figure (2):** Portrayed that 60% of the studied women reported that their main source

of information about knowledge regarding leucorrhoea was doctors.

**Table (3):** Illustrates that there were highly statistically significant differences found between women's knowledge of pre/post-teaching guidelines regarding leucorrhoea ( $P < 0.001$ ).

**Figure (3):** Demonstrates that (27%) of the studied women had satisfactory knowledge regarding leucorrhoea pre-teaching guidelines which improved post-teaching guidelines and become 87% of them had satisfactory knowledge. There was a highly statistically significant difference and improvement between the pre-and post- teaching guidelines regarding women's knowledge about leucorrhoea with ( $P < 0.001$ ).

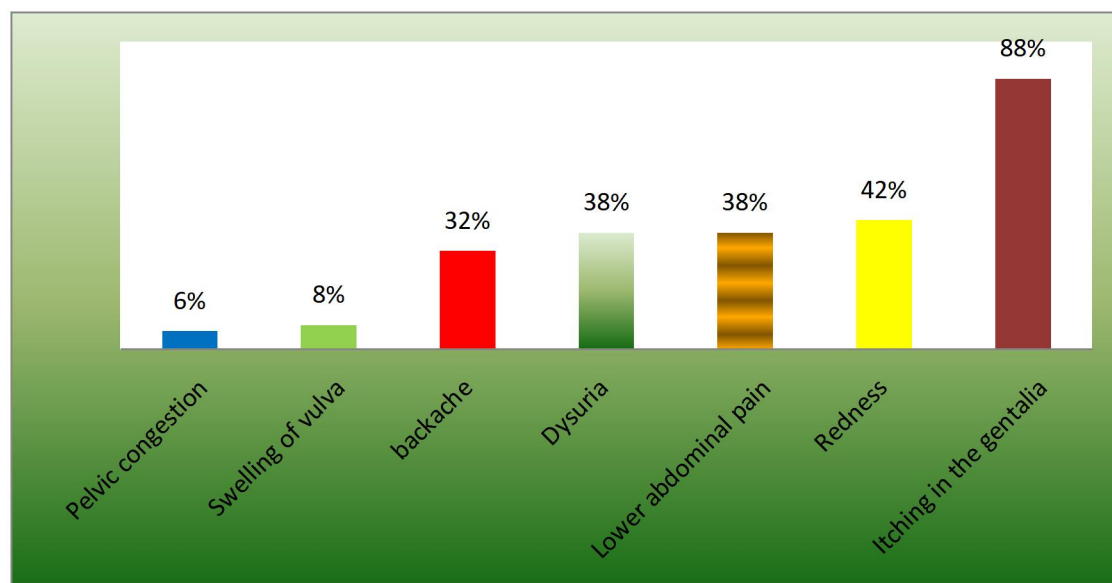
In the comparison of the studied women's practices regarding leucorrhoea **table (4)** illustrated that there were highly statistically significant differences between women's practices at pre and post-teaching guidelines with ( $p < 0.001$ )

**Figure (4):** Portrays the women's total practices regarding leucorrhoea pre-and post-teaching guidelines, and indicated that (83%) of the studied women had an inadequate level of practice pre-teaching guidelines, but post-teaching guidelines (87%) of them had an adequate level of practice. There was a highly statistically significant difference and improvement between the pre-and post-teaching guidelines regarding women's practices about leucorrhoea.

**Table (5)** presents that there was a statistically significant positive correlation between the total knowledge and total practices scores of the studied women regarding leucorrhoea pre-and post- teaching guidelines with ( $p < 0.001$ ).

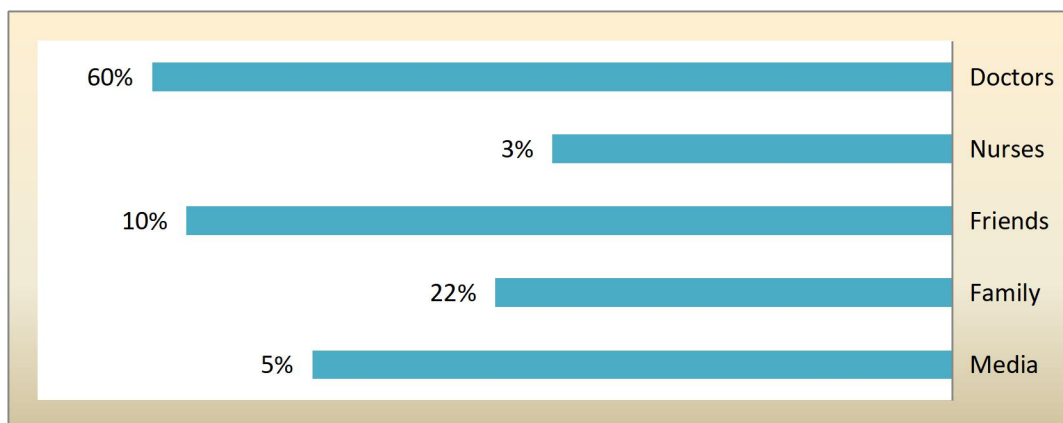
**Table (1): Frequency and percentage distribution of the studied women regarding their demographic characteristics**

Demographic characteristics	The Studied women (n=500)	
	N	%
<b>Age :</b>		
• 18 < 30	270	54.0
• 30 < 40	130	26.0
• ≥45	100	20.0
<b>(Mean ±SD):</b> 31.08±6.07		
<b>Education:</b>		
• Illiterate	135	27.0
• Read and write	100	20.0
• Secondary education	165	33.0
• High education	100	20.0
<b>Occupation:</b>		
• Working.	215	43.0
• Housewives	285	57.0
<b>Residence:</b>		
• Urban	185	37.0
• Rural	315	63.0
<b>Marital status</b>		
• Married	475	95.0
• Single	25	5.0
<b>Age of menses:</b>		
• < 14	490	98.0
• >14	10	2.0

**Figure (1): Distribution of the studied women regarding to their associated symptoms with vaginal discharge (n = 300)**



**Figure (2):** Percentage distribution of the studied women regarding their source of knowledge about leucorrhoea



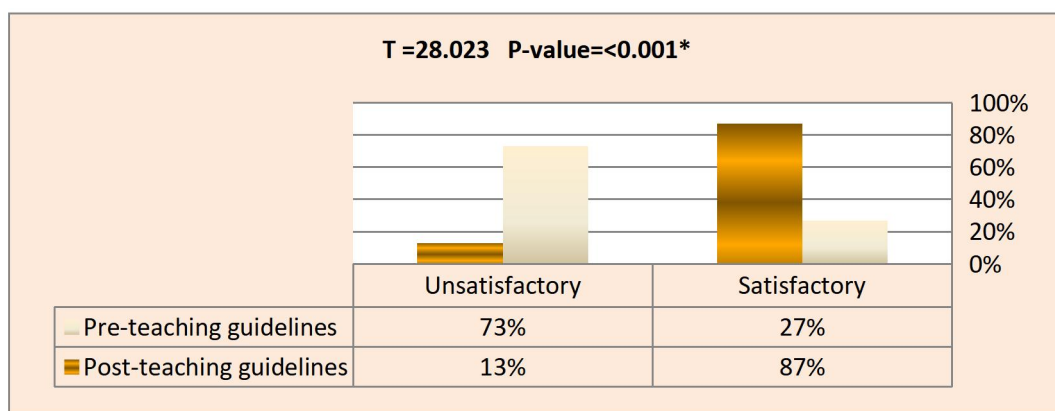
**Table (2):** Frequency and percentage distribution of the studied women regarding their current history and complaints of vaginal discharge (500)

Current history and characteristics of reported vaginal discharge	No	%
<b>Complaints of vaginal discharge</b>		
yes	500	100.0
no	0	0.0
<b>The beginning time of discharge from</b>		
one week	100	20.0
two weeks	125	25.0
more than two weeks	275	55.0
<b>Characteristics of reported vaginal discharge</b>		
<b>Color of vaginal discharge</b>		
Yellow	60	12.0
Yellow tended to gray	30	6.0
Brown	10	2.0
Red	0	0.0
White	400	80.0
<b>Consistency of vaginal discharge</b>		
Thick like cheese 47 33.3	150	30.0
Thin secretions 46 34.1	160	32.0
Liquid such as creamy	190	38.0
<b>Odor of discharge</b>		
Unpleasant	240	48.0
Offensive	85	17.0
Odorless	175	35.0
<b>Volume of vaginal discharge</b>		
Few	200	40.0
Moderate	175	35.0
Heavy	125	25.0
<b>Time of marked increase volume</b>		
Before menstruation	150	30.0
After menstruation	135	27.0
In the middle of the month	145	29.0
All days of the month	70	14.0

**Table (3) Comparison of women's Knowledge related to leucorrhoea Pre and Post teaching guidelines (N-500)**

Knowledge items	Pre-teaching guidelines		Post-teaching guidelines		X <sup>2</sup>	P-value
	N	%	N	%		
- Leucorrhea meaning	200	40	500	100	134.46	<0.001
- Types of leucorrhea	115	23	435	87	160.24	<0.001
- Causes of leucorrhea	130	26	425	85	110.22	<0.001
- Amount and character of these symptoms of leucorrhea	160	32	430	86	130.63	<0.001
- Associated symptoms of leucorrhea	190	38	465	93	80.17	<0.001
- Women's practical care toward these symptoms of leucorrhea	210	42	450	90	54.37	<0.001

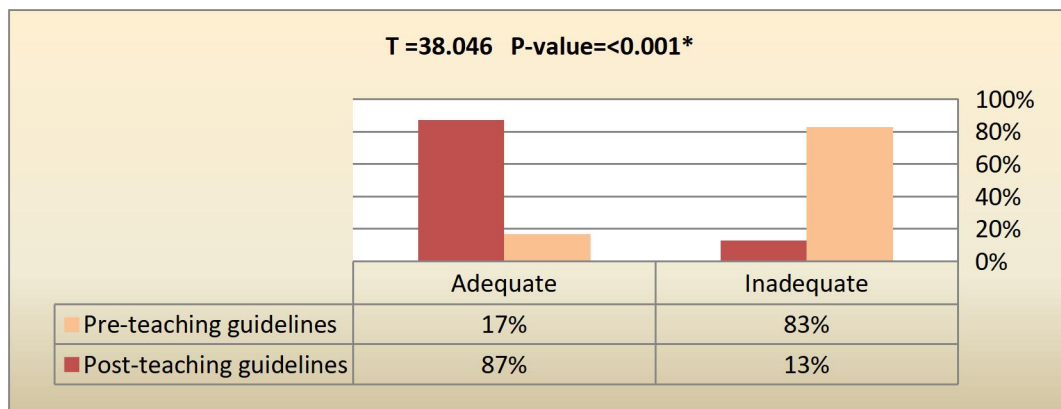
**\*Highly significance at <0.001 levels**

**Figure (3): Percentage distribution of the studied women's total knowledge regarding leucorrhoea pre and post-teaching guidelines (N-500)****Table (4) Comparison of women's practices related to leucorrhoea pre and post-teaching guidelines (N-500)**

Practices regarding leucorrhoea	Studied women (n= 500)				X <sup>2</sup>	P-value
	Pre-teaching guidelines		Post-teaching guidelines			
	N	%	N	%		
- The technique of cleaning the vagina	175	35	465	93	63.07	<0.001**
- The direction of cleaning the vagina after the bath	130	26	460	92	101.03	<0.001**
- Underpants clothes types	170	34	380	76	67.45	<0.001**
- Using a pad for vaginal discharge how long they responded, nature of the response	160	32	450	90	87.45	<0.001**
- Performing traditional practices), seeking medical advice, time of seeking medical advice	185	37	435	87	26.72	<0.001**
- Type of medication prescribed, complete the course of medication, and causes of not complete	145	29	440	88	73.84	<0.001**
Following up after the treatment in addition to the resource persons for their response.	95	19	365	73	16.73	<0.001**

**\*Highly significant at <0.001 levels**

Figure (4) differences between women's total practices pre and post-teaching guidelines regarding leucorrhoea (n=500)



\*Highly Significance at P-value 0.0001 levels

Table (5): Correlation between total knowledge and total practice scores of the studied women's pre and postteaching guidelines (n=500).

Variables	Pearson correlation coefficient			
	Total knowledge score			
	Pre- teaching guidelines (n=500)		Post teaching guidelines (n=500)	
	r	P	r	P
Total practices score	.443	0.001**	.637	0.001*

\*\* Correlation is significant at the 0.01 level

## Discussion:

Leucorrhoea is a natural defense mechanism in the vagina which means something white running or flowing down. The incidence of leucorrhoea varies from person to person and depends on various pathophysiological conditions. The alterations in the reproductive physiology of the women are strongly associated with several factors including abnormal vaginal discharge. It particularly disturbs the quality of life of reproductive age group women, especially their mental and sexual health (Ramadhanti & Henna, 2020).

Concerning women's current history of vaginal discharge, the findings of the present study revealed that, all of them had vaginal discharge. The present finding strongly matches with Khedr et al., (2015). They estimated prevalence and explored knowledge and practices concerning vaginal secretions among students in the Egyptian universities. Also,

Hankoon et al., (2017) they assessed women's knowledge and experience of abnormal vaginal discharge in estates in Colombo District. As well as Uwakwe et al., (2018) they assessed the prevalence, pattern and predictors of abnormal vaginal discharge among women attending health care institutions in Imo State, Nigeria and revealed that nearly all the sample had abnormal vaginal discharge.

On contrast, Abd EL-Menim et al., (2018) determined the effect of educational program on vulvitis prevention among nursing students and reported that only one quarter of the sample suffered from vaginal discharge. This difference may be due to embarrassment of female students to participate in their study as it was conducted in Upper Egypt where culture may affect their disclosure of their private information. In addition Shah et al., (2019) assessed knowledge and practice of genital health and hygiene among adolescent girls of Lalitpur Metropolitan City. They revealed that about one third of adolescents reported vaginal discharge. This difference may be due to

differentiation of culture, habits and environmental factors.

In relation to the characteristics of reported vaginal discharge by the studied women, the present study revealed that the majority of them had white normal vaginal discharge. About half of them had unpleasant odor discharge and slightly more than one tenth of them had offensive odor. The present findings match with **Khedr et al., (2015), & Ilankoon et al., (2017)**. They explored why women complain of vaginal discharge in a South Asian community. They reported that the majority of samples had white discharge followed by yellow discharge.

On the contrary **Zaher et al., (2017)** assessed women awareness regarding vaginal discharge, they reported that only half of the subjects had white vaginal discharge, nearly two fifth of them had yellow discharge and more than half of them had thick discharge. Again **Sinan et al., (2020)** who assessed the effectiveness of genital infection awareness training provided to women based on the IMB model. They reported that only one quarter of participants had white discharge and half of them had yellow bad smell discharge.

Results of the current study revealed that three-fifths of the studied women reported that their main source of information about knowledge regarding leucorrhoea was doctors. From the researchers' point of view, women prefer to seek advice from a physician due to correct diagnosis and trust in the opinion of experts.

The findings of the present study are matched with the study conducted by **Sevil et al., (2018)**, who studied "An evaluation of the relationship between genital hygiene practices, genital infection", which revealed that nearly half of the students described that healthcare professionals were their preferred source of information.

Also, the finding is similar to **Sarah et al., (2018)**, who conducted a study about "Attitudes and experience of women to common

vaginal infections", and showed that doctors were their preferred source of information.

The findings of the present study are in contrast with **what Renju, (2019)** found in his study in Mangalore about "Effectiveness of planned teaching program on vaginitis and its prevention among adolescents of selected pupil colleges " that the most common source was mass media,

This result is not in the same line with **Youness et al., (2017)** who studied "Effectiveness of planned educational program on vaginitis and its preventive measures on adolescent female nursing student's knowledge" and found that the most common source of knowledge was their friends and their family members in the majority and about two thirds respectively.

Regarding the women's knowledge about leucorrhoea, the study results showed that there were highly statistically significant differences found between women's knowledge of pre/post-teaching guidelines regarding leucorrhoea. From the researchers' point of view, this result reflects the positive effect of the teaching guidelines, which meets the studied nurses' needs and provides them with sufficient knowledge.

This finding is strongly in line with **Goudia et al., (2019)** who examined the effect of instructional program on knowledge regarding vulvovaginal candidiasis among female university students. They revealed that the total score level of pre-test knowledge was very low which indicated poor knowledge level, while changed after program to good level.

Regarding the distribution of the women according to their total knowledge score about leucorrhoea, the present study results revealed that more than a quarter of them had satisfactory knowledge of pre-teaching guidelines. These findings disagree with **Kaur & Kapoor, (2019)**, in their study in Slum Dwelling South Asian community about perception and knowledge about leucorrhoea, as they claimed that the awareness level about

leucorrhoea was found to be almost universal (97%) of women being aware of it.

The present study results revealed that the majority of women had satisfactory knowledge and their knowledge improved post-teaching guidelines. There was a highly statistically significant difference and improvement between the pre-and post-teaching guidelines regarding women's knowledge about leucorrhoea. This finding interpreted that implementing teaching guidelines regarding leucorrhoea was effective in increasing the level of women's knowledge.

The finding of the current study is in the same line as **Youness et al., (2017)** who revealed that as regards the total knowledge score level; there was a statistically significant difference as regards the pretest and post-test total knowledge score levels among the studied sample. Moreover, the finding of the current study is supported by **Alka, et al., (2018)**, who studied "Effectiveness of a "planned teaching program" on knowledge related to reproductive tract infections among rural women", They found that the mean of post-test knowledge score was higher compared with pretest knowledge score.

Likewise, the findings reported by **Yarmohammadi, et al., (2019)**, who studied "The effect of education on knowledge, attitude, and practices of patients with vaginitis", revealed that the mean post-test knowledge score was higher compared with the mean pretest knowledge score and indicated a significant increase in the mean score of knowledge, attitude, and practice of patients in the intervention group.

The finding of the current study disagree with **Prusty et al., (2018)** in their study about knowledge and health-seeking behaviors among women of the reproductive age group they claimed that treatment-seeking was also poor among the reproductive age group. It could be due to the difference in subject and time of data collection.

Regarding the distribution of the studied

women related to their total practice regarding leucorrhoea, the finding of the current study illustrated that there were highly statistically significant differences between women's practices at pre and post-teaching guidelines. From the researchers' point of view, it reflected the good impact of the teaching guidelines on improving practices. These confirmed the significant modifications in the women's practice that reflected the main goals of the implementation of the teaching guidelines.

The finding of the current study revealed that there was a highly statistically significant difference and improvement between the pre- and post- teaching guidelines regarding women's practices about leucorrhoea. The finding reflected that after implementation of teaching guidelines for the studied women had a positive effect on their practices.

The finding of the current study is in agreement with **Youness et al., (2017)**, who illustrated that the mean post-test score of the studied sample was higher than that of the mean pretest score concerning general hygienic measures. Similarly, **Abd El-Salam et al., (2018)**, who studied "The Efficacy Of Learning Package Regarding Vaginal Infection And Associated Risk Health Behaviors Among Female" revealed that there was a statistically significant difference among female students regarding the preventive measures of genital infection in pre and post-intervention. In addition, the findings of the current study agree with **Soudabeh, (2019)**, who studied "The effect of education on knowledge, attitude and practice of patients with vaginitis" which showed a significant difference in the mean of performance score before and after the intervention.

The finding of the current study showed that there was a statistically significant positive correlation between the total knowledge and total practice scores of the studied women regarding leucorrhoea pre-and post-teaching guidelines. This confirmed that the implementation of teaching guidelines regarding leucorrhoea was effective as a method to improve the knowledge, and practices of the studied women regarding leucorrhoea. These

findings are supported by **Abd El-Salam et al, (2018)** who revealed that there was highly statistically significant deference among the female sample in total post-practice and total post-knowledge score levels regarding post-intervention.

Furthermore, the current study's findings are consistent with those of **Mohamed et al, (2019)**, who discovered a positive correlation between having satisfactory knowledge and healthy practices in their study "The health practices among female students at Benha University as regards the prevention of leucorrhoea" (hygienic).

Furthermore, the current study's findings are consistent with those of **Soudabeh Y., (2019)**, who studied "The effect of education on knowledge, attitude, and practice of patients with vaginitis" and discovered that the mean scores of knowledge and performance of the study group increased after the program, indicating a significant effect on the level of awareness in women's behavior and practice. As a result, educating health recommendations can raise knowledge and attitude, resulting in better practice.

### **Conclusion:**

Based on the findings of the current study, aim, and hypotheses, it was concluded that the teaching guidelines had a positive effect on improving women's knowledge and practices regarding leucorrhoea at reproductive age. There was a positive correlation between women' knowledge and practices regarding Leucorrhoea at reproductive age

### **Recommendations:**

**Based on the findings of the present study, the following recommendations were suggested: -**

- Implementing continued teaching guidelines about leucorrhoea should be provided to women of reproductive age according to their needs to improve their knowledge and practices. Proper counseling can

be given to women as well as nurse care practices at the time of counseling

- Repetition of the current study with a larger sample of women in different settings is required for generalizing the results.

### **References:**

- Abd EL-Menim S., Moursi H., and Sarhan A. (2018):** Effect of educational program on vulvitis prevention among nursing students, American Journal of Nursing Science; 7(6): 254-67.
- Abd El-Salam, A. A., Abeer Mohamed Emaghwery Eldeeb, Fatma Zaki Frahat, (2018):** "The Efficacy Of Learning Package Regarding Vaginal Infection And Associated Risk Health Behaviors Among Female University Students", THE MALAYSIAN JOURNAL OF NURSING | VOL. 9 (4) April, Author's Email: Eldeeb1973@yahoo.com
- Alka Chauhan, Divya Chawla, Garima Saini, Himani Rawat, Kuldeep Pundir, Laxmi Kumar, Piyalee Benjamin, (2018):** "Effectiveness of a Planned Teaching Programme (PTP) on Knowledge Related to Reproductive Tract Infections Among Rural Women", Journal of Nursing and Health Science, Volume 3, Issue 1 Ver. V (Feb.), PP 17-21 www.iosrjournals.org
- Chance C. (2018):** Symptoms Causes and Treatments of Leucorrhea available at URL:.blogspot..com/search/label/Home%20Remedies(6): 155-160.
- Demba E, Morison L, Van der Loeff MS, Awasana AA, Gooding E, Bailey R. (2021):** Bacterial vaginosis, vaginal flora patterns and vaginal hygiene practices in patients presenting with vaginal discharge syndrome in The Gambia, West Africa. BMC Infect Dis; 5:12.
- Fernandopulle R. (2019):** An overview on approach to diagnosis and management of vaginal discharge in gynecological practice. Sri Lanka J Obstet Gynaecol; 34.

- Fonseca TM, Cesar JA, Mendoza-Sassi RA, Schmidt EB. (2019):** Pathological vaginal discharge among pregnant women: pattern of occurrence and association in a population-based survey. *Obstet Gynecol Int*; 590146.
- Goudia A., Eswi A., Hamid A., and Hassan S. 2019;** Effect of instructional program on knowledge regarding vulvovaginal candidiasis among female university students, Indonesian, *Journal of Global Health Research*, 1(1): 47-58.
- Ilancon M., Goonewardena C., Fernandopulle R., and Perera P. (2017):** Women's knowledge and experience of abnormal vaginal discharge living in estates in Colombo district, Sri Lanka, *International Journal of Women's Health and Reproduction Sciences*;5(2): 90-6.
- Joshi A, Dhapola M.& Pelto P. (2018):** Gynecological Problems: Perceptions and Treatment-seeking Behaviors' of Rural Gujarati Women. In: Michael A Koenig, ShireenJejeebhoy, John C Cleland, BelaGanatra., editors. *Reproductive Health journal.in India New Evidence*. Jaipur: Rawat Publications.133-583.
- Kala B, Jayabharathi K. (2019):** Assess the prevalence of leucorrhoea among women in reproductive age group. *Int J Res Pharm Sci*; 10:2742-4.
- Kaur j. & Kapoor A. (2019):** Perceptions and Knowledge about Leucorrhoea in a Slum Dwelling South Asian Community. Available at *Journal of Family and Reproductive Health*. Mar, 8.
- Khedr N., Elmashad H., and AlWehedy A. (2015):** Vaginal secretions among students in the Egyptian universities: prevalence, knowledge and practices, *World Journal of Nursing Sciences*; 1 (3): 68-77.
- Mohamed H. A., Amira A. El-Beih, Abd El-Moniem A. Dawah. Ebtisam M. Abd-ElAal, A. (2019):** "Health Practices among Female University Students Regarding Prevention of Reproductive Tract Infections" conducted in Benha University.
- National Center for Health Statistic (2020):** Retrieved on May,; Available at [www.edc.com/niches/about/major/ahed/ahed1.htm](http://www.edc.com/niches/about/major/ahed/ahed1.htm).
- Patel NJ, & Mazumdar VS. (2019):** The current status of sexually transmitted infections/reproductive tract infections in Vadodara City: Health-care provider perspective. *Indian J Comm Med*; 44:247.
- Prusty R., Unisa S., Hedges S. (2018):** Reproductive Tract Infections and Treatment Seeking Behavior among Married Adolescent Women 15-19 Years in India. *International Journal of MCH and AIDS*.2, :103-10.
- Ramadhanti IP. (2020):** Henna Leaves (*Impatiens Balsamina L*) On Pathological Leukorrhoea In Premarital Women. *BLOSSOM*; 1:24-9
- Renju S (2019):** "Effectiveness of planned teaching program (PTP) on vaginitis and its prevention among adolescents of selected pupil colleges in Mangalore [dissertation], Bangalore, Karnataka, India": Rajiv Gandhi University of Health Sciences.
- Sarah R. Johnson, Heather Griffiths and Fiona J Humberstone (2018):** "Attitudes and Experience of Women to Common Vaginal Infections". Article in *Journal of Lower Genital Tract Disease*. October 2010 DOI: 10.1097/LGT.0b013e3181d85bb7 Source: PubMed. <https://www.researchgate.net/publication/47156806>
- Sevil S, Kevser O, Aleattin U, Dilek A, Tijen N (2018):** "An Evaluation of the Relationship between Genital Hygiene Practices, Genital Infection". *Gynecol Obstet* 3: 187 doi:10.4172/2161-0932.1000187.

- Shah S., Shrestha Sh., Maharjan P., Karki K., Upadhyay A., Subedi S., and Gurung M. (2019):** Knowledge and practice of genital health and hygiene among adolescent girls of Lalitpur Metropolitan city, Nepal, *American Journal of Public Health Research*; 7 ( 4): 151-6.
- Sinan O., Kaplan S., Sahin S., and Peksoy S. (2020):** Assessment of the effectiveness of genital infection awareness training provided to women based on the IMB model, *Nigerian Journal of Clinical Practice*; 23 (3):408-15.
- Soudabeh Yarmohammadi, Giti Taheri, Seyyedeh Samira Mousavi, Mohtaram Sheikhepour, Mohammad Hossein Paykoub, and Amir Hossein Hashemian. (2019):** “The Effect of Education on Knowledge, Attitude, and Practice of Patients with Vaginitis”. *Advances in Biological Research* 9 (3): 196-200.
- Thomas R.(2019):** Chinese herbal medicine, 1<sup>st</sup> edition, Hunter home Inc. publishers,United States University of Delhi, Delhi, India revised and accepted September:132-6.
- Uwakwe K., Iwu A., Obionu C., Duru C., Obiajuru I., and Madubueze U. (2018):** Prevalence, pattern and predictors of abnormal vaginal discharge among women attending health care institutions in Imo state, *Nigeria Journal of Community Medicine and Primary Health Care*;30 (2): 22-35.
- Wessels JM, Felker AM, Dupont HA, Kaushic C. (2018):** The relationship between sex hormones, the vaginal microbiome, and immunity in HIV-1 susceptibility in women. *Dis Model Mech*; 11:dmm035147.
- Yarmohammadi S, Taheri G, Mousavi SS, Sheikhepour M, Paykoub MH, Hashemian AH (2019):** "The effect of education on knowledge, attitude, and practice of patients with vaginitis". *Adv Biol Res* 9:196–200.
- Youness E. M., Ayat Masoud Omar (2017):** “Effectiveness of planned educational program on vaginitis and its preventive measures on adolescent female nursing student’s knowledge”, *Egyptian Nursing Journal | Published by Wolters Kluwer – Medknow, Vol. 14 No. 1, DOI: 10.4103/2090-6021.206938*
- Zaher E., Khedr N., and Elmashad H. (2017):** Awareness of women regarding vaginal discharge, *Journal of Nursing and Health Science*;6( 1): 1-12.