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Effect of Implementing Nursing Intervention Guidelines on Recurrent Vaginitis among Reproductive-Age women

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Abstract:
Aim *of the research was to investigate the effect of implementing nursing intervention guidelines on recurrent vaginitis among reproductive-age women.*
Design: *A quasi-experimental design (time series) was utilized to fulfill the aim of this research.*
Sampling: *A purposive sample of 196 women was recruited and equally allocated into two groups (study group who receive nursing intervention guidelines and a control group who receive routine care) 98 women in each group.*
Setting: *This research was conducted at Obstetrics and gynecology outpatient clinic affiliated to the Benha University Hospital.*
Tools: *Four tools were used for data collection; a structured interviewing questionnaire, women' self-reported hygienic practices sheet, health-promoting lifestyle profile II, and a follow-up sheet.*
Results: *After three and six months of the intervention, three-quarters and less than one-quarter versus more than three quarters and less than one quarter of women in the study and control groups respectively had satisfactory practices regarding recurrent vaginitis. The mean difference score for overall and dimensions of health-promoting lifestyle behaviors in the study group was higher than the control group ($P \leq 0.001$). Less than half of women in the study group had recurrent vaginitis compared to around three quarters of the control group. A significant negative correlation between the frequency of recurrent vaginitis and total hygienic practices as well as, health-promoting lifestyle behavior scores in both groups ($P \leq 0.001$).*
Conclusion: *The implementation of nursing intervention guidelines has a significant effect on improving hygienic practices, and health-promoting lifestyle behaviors regarding vaginitis. Also, recurrent vaginitis episodes were lower among women in the study group than those in the control group.*
Recommendation: *Applying educational intervention to improve women's awareness about hygienic practices to prevent further recurrence of vaginitis.*
Keywords*: Nursing intervention guidelines, recurrent vaginitis, reproductive-age women.*

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I. Introduction

Vaginal infections are an important women's health problem associated with negative impacts on sexual and family lives and tend to increase prevalence worldwide [1]. Vaginitis is an inflammation of the vagina, which can affect women of all ages, particularly among women of reproductive age [2].

Vaginitis is usually characterized by any of the following; vaginal discharge containing many white blood cells, vulvar itching, vulvar irritation, vaginal odor, vaginal erythema, dyspareunia, and dysuria [3]. The three most common etiologies of vaginitis are trichomonas, bacterial vaginosis, and vulvovaginal candidiasis, accounting for an estimated 70% of cases. The remaining 30% may be related to other causes of vaginitis, including atrophic vaginitis, inflammatory desquamative vaginitis, and vaginal erosive disease [4].

According to the Egypt Demographic and Health Survey [5], more than one-third of married women between 15-49 years have abnormal vaginal discharge, genital ulcers, and vaginal infections. Prevalence was higher in rural than in urban areas 33% and 30.2% respectively.

The recurrence of vaginal infection is defined by four or more episodes of infection in a year, common causes of recurrent vaginitis are infectious and non-infectious which include hormonal and allergic. Along with infective organism common factors responsible for recurrent vaginitis are unhygienic practices like douching that disrupt the normal vaginal flora and use of feminine hygiene products, improper care during menstruation, hypersensitivity or allergic reaction to soap, stay in wet clothes for a long time, dressing non cotton underwear, re-infection from an untreated husband and contraceptive methods [6,7].

Vaginitis is a global health problem associated with a significant risk of morbidity in women, if untreated vaginitis can lead to pelvic inflammatory disease, which can cause long-term sequelae, such as tubal infertility, ectopic pregnancy, reproductive dysfunction, and adverse pregnancy outcomes. Also, increased risk of postoperative infection, cervical dysplasia, human immunodeficiency virus and herpes simplex virus [8].

Concern has been raised by the World Health Organization [9] about whether vaginal practices and behavior could have a harmful effect on increasing the susceptibility to vaginitis. Also, recommend more evidence is needed to confirm a correlation between an increased risk of vaginitis and vaginal practices, to discourage harmful practices, which are modifiable through health education and prevention messages.

Furthermore, the necessity for education to promote effective preventive health behaviors is an important topic in sexual and reproductive health. It is necessary to educate women of reproductive age about vaginitis prevention, how to use health services, about self-care behaviors, minimizing the use of harmful substances, improving nutrition, as well modifying sexual behaviors and practices aimed at preventing a recurrence of vaginitis [10,11].

Nursing interventions regarding vaginitis involve teaching, counseling for prevention, and explaining prescribed medications. Educational nursing intervention includes explaining the danger of self- diagnosis of vaginitis and the use of over-the-counter or herbal therapies instead of seeking early diagnosis and therapeutic intervention at the first sign of vaginitis. Educating women to modify the unhealthy hygienic practices and adopting the recommended lifestyle behaviors to prevent the occurrence as well as recurrence of vaginitis to improve quality of life. Additionally, nurses should provide emotional support and therapeutic communication to overcome a woman's embarrassment regarding vaginitis [12, 13].

Significance of the research

Vaginitis is one of the commonest reproductive tract infections associated with significant morbidity. The actual prevalence of vaginitis is uncertain because of the frequency of self-diagnosis and self-treatment of vaginitis. Nearly 10 million women seek gynecologic advice for vaginitis every year worldwide [14]. Bacterial vaginosis accounts for approximately 40–50% of all cases in women of reproductive age, while vulvovaginal candidiasis infections account for 20–25% of all cases and trichomoniasis 15–20% of cases, yet 7-72% of women with vaginitis may remain undiagnosed [15, 16]. While vaginitis is not life-threatening, the symptoms can affect a woman's ability to attend work, limit social and sexual functioning, or harm self-image, and the quality of life [17]. Approximately 40% to 50% of women with the first episode of vaginitis are likely to experience a recurrence and 5% of women with recurrent vaginitis may experience at least three or more episodes per year [8].

The researchers observed from clinical experience, occasionally married women of reproductive age have recurrent vaginitis even after standard medical treatments, lack of information on health practices and lifestyle behaviors towards vaginitis. Hence, women need to provide specific instructions about measures concerning vaginal health, particularly hygienic practices and health-promoting behaviors which can favorable to reduce or avoid recurrence of vaginitis episodes. Therefore, this research was undertaken.

Aim of the research

The research aimed to investigate the effect of implementing nursing intervention guidelines on recurrent vaginitis among reproductive-age women.

The research hypotheses

To fulfill the aim of the current research, the following hypotheses were formulated:

Hypothesis 1: Women who received nursing intervention guidelines will report higher hygienic practices regarding recurrent vaginitis than those who don't.

Hypothesis 2: Women who received nursing intervention guidelines will more engage in health-promoting lifestyle behaviors than those who don't.

Hypothesis 3: Women who received nursing intervention guidelines will have lower episodes of recurrent vaginitis than those who don't.

II. Subjects and Method

Research design:

A quasi-experimental design (time series) was utilized to fulfill the aim of this research.

Setting:

This research was conducted at Obstetrics and gynecology outpatient clinic affiliated to the Benha University Hospital. It is a large hospital in Benha city and attracts clients from Al Qualubia Governorate and other Neighboring Governorates. This clinic provides health care services of obstetrics and gynecological women, as well as family planning.

Sample:

A purposive sample of 196 women was recruited in this research, according to statistical formula [18], where Z = 1.96 for 95% confidence level, p = expected prevalence of recurrent vaginal infection based on a previous study conducted by [19] was 85.5 %, d = precision (Margin of error) = 0.05.

$$n = \frac{Z^2 P(1-P)}{d^2}$$

The sample was divided into two equal groups, ratio 1:1 (study group comprising 98 women who receive nursing intervention guidelines and a control group comprising 98 women who receive routine care).Women were recruited according to **inclusion criteria;** married women in the reproductive age group 20-49 years, clinically diagnosed with recurrent vaginitis by obstetricians, having the recurrence ≥ 4 episodes of vaginitis per year, free from chronic diseases as diabetes mellitus and urinary tract infection, can read and write, willingness to participate in the study. **Exclusion criteria;** pregnant and postpartum women, having used herbs or drugs for the treatment of vaginal infection during the study, women have any gynecological problems as vaginal prolapse and erosion.

Tools of data collection:

Four main tools were used for data collection:-

Tool I: A structured interviewing questionnaire

It was designed by the researchers after reviewing related literature [20, 21], it was written in the Arabic language in the form of close-ended questions and consisted of three parts:

Part 1: Personal characteristics of the studied women included age, residence, educational level, occupation and telephone number. Body weight and height were transformed into the body mass index (kg/m^2).

Part 2: Obstetrical history included gravidity, parity and current contraceptive method used.

Part 3: Data about vaginitis devoted to the type of vaginitis, duration of the current complaint, number of vaginitis recurrence in the last six months and current symptoms.

Tool II: Women' self-reported hygienic practices sheet

The hygienic practices sheet was developed by the researchers after reviewing the literature [22, 23, 24], to assess women's reported hygienic practices. This sheet composed of 20 items with three parts; genital hygiene practices (11 items), menstrual hygiene practices (5 items) and coital hygiene practices (4 items).

Scoring:

Each item assigned based on a three-point scale; 1 (never), 2 (sometimes), 3 (always), the score of unhealthy practice was reversed. The scores of the items in each part were summed up and converted into a total percent score. A possible total score ranged from 1 to 60 and classified as the following; unsatisfactory practice when the total score was < 60% (1-35), and satisfactory practice when the total score was ≥ 60% (36-60).

Tool III: Health-Promoting Lifestyle Profile II (HPLP-II)

The HPLP-II was developed by [25], was translated into Arabic language and was adapted by the researchers to assess the frequency of self-reported health-promoting lifestyle behaviors. The HPLP-II comprised of 52 items divided into six dimensions which focus on different areas of lifestyle behaviors; nutrition (9 items), physical activity (8 items), stress management (8 items), interpersonal relations (9 items), spiritual growth (9 items), and health responsibility (9 items).

Scoring:

The HPLP-II is rated based on a four-point Likert scale for each item; 1 (never), 2 (sometimes), 3 (often), and 4 (routinely). The total score of each dimension is computed by calculating the mean of the responses to that dimensions items. The overall score is obtained by calculating the mean of responses to all the 52 items. Overall HPLP-II score ranged from 52 to 208, higher scores showed more health-promoting behaviors.

Tool IV: Follow-up sheet

This sheet designed by the researchers to assess the frequency of vaginitis recurrence through one question if vaginitis recurrent at three and six months after intervention.

Validity and reliability of the tools:

Content validity of the tools was revised by a panel of five experts included three from Obstetrics and Woman Health Nursing, and two from Obstetrics and Gynecological Medicine, minor modifications were required in formulating sentences. The reliability of the tools was performed to confirm its internal consistency. The Cronbach's alpha coefficient for the tool II was 0.85, for the tool III (HPLP-II and its dimensions) ranged from 0.73 to 0.86, and for the tool IV was 0.74.

Ethical Considerations

Each woman was informed about the purpose and benefits of the research at the beginning of the interview and time throughout the research. Written consent was obtained from each woman before starting data collection. The women were ensured that the data would remain confidential and used for research purposes only. The women's right to autonomy and freedom from harm was ensured. The women were also given an unconditional right of withdrawal at any time. After completing the research, the nursing guidelines booklet was distributed for references to the control group.

Pilot study

The pilot study was carried out on ten percent of the total sample (20 women) to test the clarity and applicability of the research tools and estimate the time required to fill the tools. Since, no modifications have been done, the main sample included women in the pilot.

Procedure

Upon obtaining official permission from the director of Benha University Hospital, the research was conducted through the following phases; interviewing and assessment, planning, implementation, and evaluation phase. These phases were carried out from the beginning of March 2018 and completed at the end of February 2019 covering twelve months. The researchers visited the previously mentioned setting three days/week (Saturday, Monday and Wednesday), from 9.00 Am to 1.00 Pm.

Interviewing and assessment phase:

This phase encompassed interviewing both control and study groups individually. At the beginning of the interview, the researchers introduced themselves to each woman recruit the sample according to eligibility criteria, explained the aim and activities of the research to gain confidence and cooperation, and then obtained the informed written consent to participate in the research. Baseline data were collected by the researchers using the tool I, tool II, and tool III. The time taken to complete the tools was around 25-30 minutes. Average 4-6 women were interviewed per /week.

Planning phase:

Based on the results obtained from the assessment phase and extensively reviewed the relevant literature. The researchers prepared nursing guidelines booklet in a simple Arabic language and illustrated with colored diagrams and pictures to clarify the written information, then revised and modified according to the experts' comments. The guidelines included knowledge about vaginitis, hygienic practices related to genital, menstrual, and coital. As well as, health-promoting behaviors associated with vaginal health to decrease and avoid recurring vaginitis episodes.

Implementation phase:

The intervention was implemented to study group through five instructional sessions, each session lasting 30 to 45 minutes over a period of 20 weeks, the sessions were repeated to each subgroup of (2-4 women/session) at the outpatient clinic's waiting place. The researchers used a simple Arabic language to suit women's level of understanding. Various educational methods and materials were used, including modified lecture, group discussion, role-playing, demonstration and re-demonstration with a model, PowerPoint presentation, video film, and a designed booklet. At the end of each session, women's questions were answered to correct any misinterpretation. The subsequent session started with feedback about the previous session and the objectives of the new session. Designed nursing guidelines booklets have been distributed to all recruited women in the study group. The researchers ensured adherence of the study group to the nursing guidelines via telephone.

The first and second sessions covered general knowledge about the anatomy of the female genital tract, characteristics of normal and abnormal vaginal discharge. Also, knowledge related to vaginitis as definition, prevalence, types, signs and symptoms, behaviors and factors predisposing to recurrent vaginitis, consequences and complications of the recurrent vaginitis, diagnostic measures, preventive measures and management of recurrent vaginitis.

The third session concerned instructions about healthy and unhealthy genital, menstrual and coital hygiene practices. Also, demonstrate and re demonstrate with the model about self perineal care and vaginal medication administration, as well as hand washing training.

The fourth session concerned instructions about health-promoting lifestyle behaviors that support vaginal health and prevent recurrences of vaginitis. Regarding nutrition, women instructed to have a continuously balanced diet, modifying unhealthy nutritional behaviors, strict intake of processed and sugar-rich foods and carbohydrates, increasing intake of fresh vegetables and fruits, increasing dairy intake. As well as, maintaining weight control and reducing obesity. Concerning physical activity, the women taught about walking three times per week at least 30 minutes and doing any regular exercises at least three times/week.

The fifth session concerned stress management, interpersonal relations, spiritual growth, and health responsibility as health-promoting lifestyle behaviors that support vaginal health. Women taught about nursing measures to minimize and cope with stress; regular 7-8 hours for sleeping, performing relaxing activities such as slow and deep breathing exercises, listening to music, social support and maintaining communications with others, overcoming the embarrassment and strengthening talking with the husband about vaginitis symptoms and complaints. As well, discussing with women about overwhelming barriers that prevent seeking treatment. Women in the control group received only the routine clinic care by hospital staff.

Evaluation phase:

The effect of nursing intervention guidelines was evaluated twice, (three and six months) after implementation phase using the format of tools II, III, and IV for both groups. Evaluation started first with control group then with a study group to avoid bias. Each woman was structurally interviewed to refill the previously stated tools, at sometimes the researchers followed women via telephone. During this phase, six participants in the study group were dropped out from the sample and successful replaced of women were done.

Statistical Analysis

Data entry and statistical analysis were done using the Statistical Package for Social Science (SPSS version 22). Descriptive statistics included frequencies and percentages, means and standard deviations. Inferential statistics as Chi-square test, Fisher Exact Test, and independent t-test. Pearson correlation coefficient were used. For all of the statistical tests done, p-value > 0.05 indicated no statistical significant difference, p-value <0.05 indicated a statistical significant difference, and p-value $P \leq 0.001$ indicated a highly statistically significant difference.

Limitations of the research

- Some women felt embarrassed to discuss the research topic.
- A number of women didn't come regularly in follow up which necessitated to follow-up them by telephone.
- Occasionally, the waiting place of the obstetrics and gynecology outpatient clinic was crowded and noisy, which required more time and effort to conduct the sessions.

III. Results

Table 1 shows that the mean age of the study and control groups were 29.63±5.52 and 30.78±6.21 years respectively. More than half of both groups had secondary education. Regarding residence, 86.7% of the study and 79.6% of the control groups live in rural areas. Less than three-quarters of both groups were housewives. Most of both groups had no enough monthly income, whereas only 10.2% of the study group and 16.3% of the control group had enough monthly income. The mean body mass index of the study and control groups was 27.76 ± 3.29 and 28.54 ± 2.55 kg /m^2 respectively. There was no statistically significant difference between both groups regarding personal characteristics and body mass index ($p > 0.05$). The two groups under study were homogeneous.

Table 2 reveals that there was no statistical significant difference between both groups regarding gravidity and parity ($p > 0.05$), more than three quarters of both groups use Intrauterine devices. More than half 55.1% and 63.3% of the study and control groups were diagnosed with bacterial vaginosis, followed by vaginal candidiasis 36.7% and 30.6%, followed by trichomonous 8.2% and 6.1% respectively. Also, 69.4% and 64.3% of the study and control groups respectively had two times of vaginitis recurrence in the last six months. Also, the mean duration of the current complaint of the study and control groups was 6.47 ± 1.91 and 7.82 ± 3.24 days respectively ($p > 0.05$).

Figure 1 illustrates that women in the study and control groups complained of multiple symptoms, 80.6%, and 77.8% complained of itching of genital organ, 74.5% and 71.4% discharge with unpleasant odor, 52.0% and 46.9% burning micturition, 33.7% and 30.6% discomfort during intercourse whereas 36.7% and 29.6% backache and lower abdominal pain respectively.

Table 3 demonstrates that there was no statistically significant difference between the study and control groups regarding all items of genital hygiene practices before intervention ($p >0.05$). However, a high statistical significant improvement was observed in the study group compared with the control group after three and six months of intervention ($p \leq 0.001$).

Table 4 clarifies that there was no statistically significant difference between the study and control groups regarding all items of menstrual hygiene practices before intervention ($p >0.05$). However, a statistically significant improvement was observed in the study group compared with the control group after three and six months of intervention ($p \leq 0.001$).

Table 5 elaborates that there was no statistically significant difference between the study and control groups regarding all items of coital hygiene practices before intervention ($p > 0.05$). However, a highly statistically significant improvement was observed in the study group compared with the control group after three and six months of intervention ($p \leq 0.001$).

Figure 2 shows that 19.4% and 18.3% of women in the study and control groups respectively had satisfactory hygienic practices regarding recurrent vaginitis before intervention. Meanwhile, at three and six months after the intervention, 75.5% and 21.4% versus 79.6% and 23.5% of women in the study and control groups respectively had satisfactory hygienic practices regarding recurrent vaginitis.

Table 6 reveals that there was no statistically significant difference in the mean scores of the overall health-promoting lifestyle behaviors and its dimensions between the two groups before the intervention ($p > 0.05$). However, after three and six months of intervention, the mean difference score for overall and dimensions of health-promoting lifestyle behaviors in the study group was higher than the scores in the control group ($P \leq 0.001$). In the study group, the mean health-promoting lifestyle behaviors before the intervention were 23.63±1.64 in terms of nutrition, 12.37±1.11 in physical activity, and 19.88±1.96 in stress management, 20.79±0.84 in health responsibility, 22.26±1.32 in spiritual growth and 23.14±1.39 in interpersonal relations. After three and six months of the intervention the mean score of health-promoting lifestyle behaviors in its dimensions nutrition, physical activity, stress management, health responsibility, spiritual growth, and interpersonal relationships had increased to 26.79 ± 1.59 & 28.94 ± 0.78, 15.95 ± 1.60 & 16.45 ± 1.20, 23.39 ± 1.18 & 27.17 ± 2.17, 23.67 ± 1.66 & 24.03 ± 2.75, 24.81 ± 0.48 & 27.32 ± 1.06, as well as 25.57± 2.91 & 26.21±3.24 respectively.

Figure 3 illustrates that 42.9% and 34.7% of the study group have recurrent vaginitis compared to 76.5% and 74.5% of the control group after three and six months of intervention respectively.

Table 7 displays that a highly statistically significant negative correlation between frequency of recurrent vaginitis and total hygienic practices as well as health-promoting lifestyle behavior scores in both groups after three and six months of intervention ($P \leq 0.001$).

Table1. Distribution of the studied women according to personal characteristics (n=196)

Groups / Variables	Study group n=98		Control group n=98		X^2/FET	P-value
	No	%	No	%		
Age (years)						
20 < 30	63	64.3	59	60.2	1.496	0.473^{ns}
30 < 40	24	24.5	31	31.6		
40 < 50	11	11.2	8	8.2		
Mean ± SD	29.63 ± 5.52		30.78 ± 6.21		t=1.373	0.171^{ns}
Educational level						
Primary education	3	3.1	5	5.1	0.916$^{€}$	0.636^{ns}
Secondary education	54	55.1	57	58.2		
University education	41	41.8	36	36.7		
Residence						
Urban	13	13.3	20	20.4	1.785	0.181^{ns}
Rural	85	86.7	78	79.6		
Occupation						
Working	29	29.6	26	26.5	0.227	0.633^{ns}
Housewife	69	70.4	72	73.5		
Monthly income						
Enough	10	10.2	16	16.3	1.596	0.206^{ns}
Not enough	88	89.8	82	83.7		
Body Mass Index (kg /m^2)						
Mean ± SD	27.76 ± 3.29		28.54 ± 2.55		t=1.858	0.065^{ns}

^{ns} no statistical significant difference ($p > 0.05$) t= independent t test $^{€}$ Fisher Exact Test

Table 2. Distribution of the studied women according to obstetric history and data about vaginitis (n=196)

Variables \ Groups	Study group n=98		Control group n=98		X^2/FET	P-value
	No	%	No	%		
Gravidity						
1-2	76	77.6	69	70.4	1.500	0.472^{ns}
3-4	15	15.3	18	18.4		
≥ 5	7	7.1	11	11.2		
Parity						
1-2	73	74.5	67	68.4	2.213$^{€}$	0.332^{ns}
3-4	21	21.4	22	22.4		
≥ 5	4	4.1	9	9.2		
Current contraceptive method						
Pills	20	20.4	13	13.3	1.785	0.181^{ns}
Intrauterine devices	78	79.6	85	86.7		
Type of vaginitis						
Bacterial vaginosis	54	55.1	62	63.3	1.383	0.501^{ns}
Vaginal candidiasis	36	36.7	30	30.6		
Trichomonous	8	8.2	6	6.1		
Duration of the current complaint (days)						
Mean ± SD	6.47 ± 1.91		7.82 ± 3.24		t=1.482	0.148^{ns}
Number of vaginitis recurrence in the last six months						
Once	12	12.2	14	14.3	0.575	0.750^{ns}
Two times	68	69.4	63	64.3		
Three times	18	18.4	21	21.4		

^{ns} no statistically significant difference (p > 0.05) t= independent t test $^{€}$ Fisher Exact Test

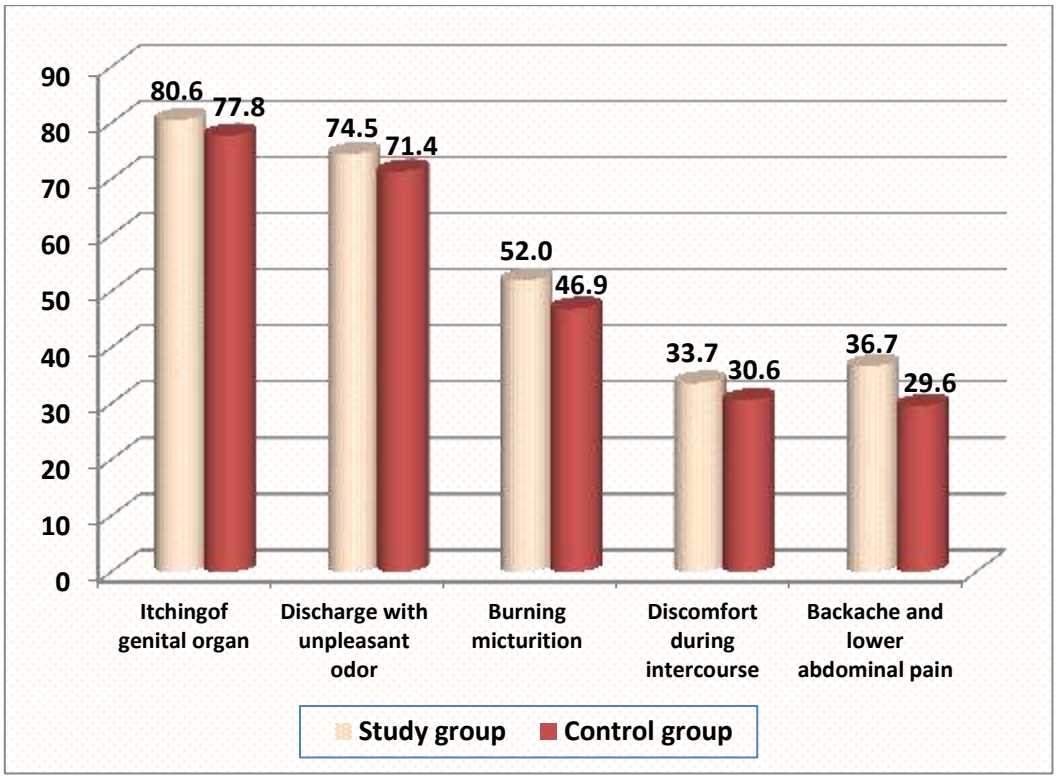

Figure 1. Distribution of the studied women according to symptoms of vaginitis (n=196)

Table 3. Distribution of the studied women according to reported genital hygiene practices through times of assessment (n=196)

Items	Groups	Before intervention	3 months after intervention	6 months after intervention	X^2_1 (P-value)	X^2_2 (P-value)	X^2_3 (P-value)
		Always No. (%)	Always No. (%)	Always No. (%)			
Changing Underwear daily	Study group n= 98	18 (18.4)	65 (66.3)	71 (72.4)	2.165^{ns}	101.266**	90.537**
	Control group n= 98	11(11.2)	12 (12.2)	15 (15.3)			
Washing Underwear with hot water	Study group n= 98	29 (29.6)	73 (74.5)	86 (87.8)	3.017^{ns}	70.988**	56.629**
	Control group n= 98	33 (33.7)	36 (36.7)	38 (38.8)			
Sun drying of underwear and bathing equipment	Study group n= 98	34 (34.7)	87 (88.8)	90 (91.8)	1.835^{ns}	64.134**	59.301**
	Control group n= 98	37 (37.8)	38 (38.8)	42 (42.9)			
Use of naylon and synthetic underwear	Study group n= 98	77 (78.6)	52 (53.1)	41 (41.8)	3.605^{ns}	28.658**	47.292**
	Control group n= 98	75 (76.5)	75 (76.5)	73 (74.5)			
Use of cotton underwear	Study group n= 98	23 (23.5)	48 (49.0)	58 (59.2)	0.207^{ns}	70.792**	68.098**
	Control group n= 98	21 (21.4)	22 (22.4)	24 (24.5)			
Removal of pubic hair	Study group n= 98	40 (40.8)	89 (90.8)	96 (98.0)	4.026^{ns}	45.740**	62.223**
	Control group n= 98	44 (44.9)	46 (46.9)	47 (48.0)			
Cleaning of genital area from front to back	Study group n= 98	33 (33.7)	85 (86.7)	91 (92.9)	1.415^{ns}	64.405**	70.137**
	Control group n= 98	30 (30.6)	31 (31.6)	35 (35.7)			
Drying of genital area after cleanliness	Study group n= 98	26 (26.5)	78 (79.6)	88 (89.8)	3.159^{ns}	85.374**	93.509**
	Control group n= 98	17 (17.3)	21 (21.4)	25 (25.5)			
Wear tight or damp clothing	Study group n= 98	47 (48.0)	42 (42.9)	36 (36.7)	4.151^{ns}	19.987**	26.189**
	Control group n= 98	49 (50.0)	50 (51.0)	48 (49.0)			
Cleansing genital area with hands	Study group n= 98	55 (56.1)	28 (28.6)	16 (16.3)	5.043^{ns}	36.894**	61.983**
	Control group n= 98	59 (60.2)	57 (58.2)	60 (61.2)			
Use feminine products for genital area cleaning	Study group n= 98	37 (37.8)	32 (32.7)	24 (24.5)	5.617^{ns}	26.892**	46.088**
	Control group n= 98	35 (35.7)	38 (38.8)	41 (41.8)			

^{ns} no statistical significant difference ($p > 0.05$) **A high statistical significant difference ($P \leq 0.001$)

$X^2$1 Comparison between the study and control groups before intervention

$X^2$2 Comparison between the study and control groups at 3 months after intervention

$X^2$3 Comparison between the study and control groups at 6 months after intervention

Table 4. Distribution of the studied women according to reported menstrual hygiene practices through times of assessment (n=196)

Items	Groups	Before intervention	3 months after intervention	6 months after intervention	X^2_1 (P-value)	X^2_2 (P-value)	X^2_3 (P-value)
		Always No. (%)	Always No. (%)	Always No. (%)			
Bathing during the menstruation period	Study group n= 98	55 (56.1)	91 (92.9)	95 (96.9)	2.810^{ns}	44.344**	42.695**
	Control group n= 98	52 (53.1)	53 (54.1)	57 (58.2)			
Bathing in standing position	Study group n= 98	10 (10.2)	49 (50.0)	54 (55.1)	2.044^{ns}	43.990**	46.771**
	Control group n= 98	8 (8.2)	9 (9.2)	11 (11.2)			
Genital douching during menstruation period	Study group n= 98	66 (67.3)	35 (35.7)	32 (32.7)	4.944^{ns}	46.381**	48.427**
	Control group n= 98	62 (63.3)	60 (61.2)	60 (61.2)			
Using sanitary pads	Study group n= 98	70 (71.4)	90 (91.8)	94 (95.9)	5.052^{ns}	8.662*	13.890*
	Control group n= 98	74 (75.5)	76 (77.6)	77 (78.6)			
Change sanitary pads frequently	Study group n= 98	51 (52.0)	84 (85.7)	89 (90.8)	3.330^{ns}	24.202**	31.223**
	Control group n= 98	57 (58.2)	54 (55.1)	55 (56.1)			

^{ns} no statistical significant difference ($p > 0.05$) *A statistical significant difference ($P \leq 0.05$)

**A high statistical significant difference ($P \leq 0.001$)

$X^2$1 Comparison between the study and control groups before intervention

$X^2$2 Comparison between the study and control groups at 3 months after intervention

$X^2$3 Comparison between the study and control groups at 6 months after intervention

Table 5. Distribution of the studied women according to reported coital hygiene practices through times of assessment (n=196)

Items	Groups	Before intervention Always No. (%)	3 months after intervention Always No. (%)	6 months after intervention Always No. (%)	X^2_1 (P-value)	X^2_2 (P-value)	X^2_3 (P-value)
Genital care before sexual intercourse	Study group n= 98	29 (29.6)	88 (89.8)	91 (92.9)	1.607^{ns}	62.402**	64.713**
	Control group n= 98	31 (31.6)	35 (35.7)	38 (38.8)			
Vaginal douching after sexual intercourse	Study group n= 98	73 (74.5)	42 (42.9)	33 (33.7)	1.596^{ns}	33.890**	52.376**
	Control group n= 98	68 (69.4)	67 (68.4)	64 (65.3)			
Urination after intercourse	Study group n= 98	35 (35.7)	66 (67.3)	87 (88.8)	3.524^{ns}	15.490**	40.989**
	Control group n= 98	39 (39.8)	41 (41.8)	45 (45.9)			
Utilize antiseptic products to clean after intercourse	Study group n= 98	59 (60.2)	18 (18.4)	12 (12.2)	3.857^{ns}	34.577**	41.236**
	Control group n= 98	54 (55.1)	52 (53.1)	48 (49.0)			

^{ns} no statistical significant difference ($p > 0.05$) **A high statistical significant difference ($P \leq 0.001$)

X^2_1 Comparison between the study and control groups before intervention

X^2_2 Comparison between the study and control groups at 3 months after intervention

X^2_3 Comparison between the study and control groups at 6 months after intervention

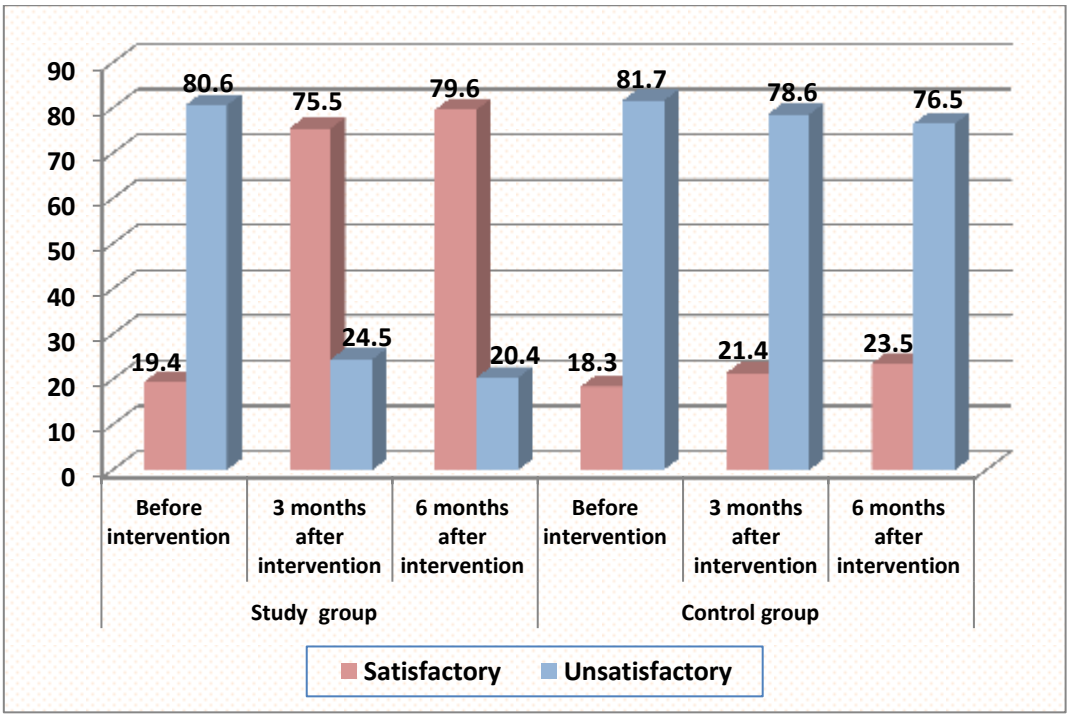

Figure 2. Distribution of the studied women according to total hygienic practices regarding recurrent vaginitis through times of assessment (n=196)

Table 6. Comparison of the mean scores of health-promoting lifestyle behaviors regarding recurrent vaginitis in both groups through times of assessment (n=196)

Dimensions / Groups		Range of Possible Scores	Before intervention	3 months after intervention	6 months after intervention	t_1 (P-value)	t_2 (P-value)	t_3 (P-value)
			Mean ± SD	Mean ± SD	Mean ± SD			
Nutrition	Study group n= 98	9-36	23.63 ± 1.64	26.79 ± 1.59	28.94 ± 0.78	1.793^{ns}	15.358**	52.177**
	Control group n= 98		23.21 ± 1.63	23.38 ± 1.52	23.58 ± 0.67			
Physical activity	Study group n= 98	8-32	12.37 ± 1.11	15.95 ± 1.60	16.45 ± 1.20	1.065^{ns}	16.992**	17.328**
	Control group n= 98		12.19 ± 1.17	12.21 ± 1.47	12.82 ± 1.67			
Stress management	Study group n= 98	8-32	19.88 ± 1.96	23.39 ± 1.18	27.17 ± 2.17	1.829^{ns}	11.743**	15.599**
	Control group n= 98		19.29 ± 2.46	20.18 ± 2.43	21.32 ± 3.01			
Health responsibility	Study group n= 98	9-36	20.79 ± 0.84	23.67± 1.66	24.03 ± 2.75	1.390^{ns}	13.527**	9.741**
	Control group n= 98		20.60 ± 1.04	21.12 ± 0.85	21.28 ± 0.53			
Spiritual growth	Study group n= 98	9-36	22.26 ± 1.32	24.81 ± 0.48	27.32 ± 1.06	1.338^{ns}	9.236**	14.854**
	Control group n= 98		22.52 ± 1.35	23.17 ± 1.69	23.29 ± 2.46			
Interpersonal relations	Study group n= 98	9-36	23.14 ± 1.39	25.57 ± 2.91	26.21 ± 3.24	1.153^{ns}	8.925**	10.715**
	Control group n= 98		23.48 ± 2.53	23.76 ± 3.53	23.98 ± 3.36			
Overall score	Study group n= 98	52-208	122.29 ± 4.02	128.62 ± 9.46	149.66 ± 8.79	1.590^{ns}	11.222**	13.136**
	Control group n= 98		121.31 ± 4.67	123.14 ± 4.21	125.12 ± 6.59			

^{ns} no statistical significant difference (p > 0.05) **A high statistical significant difference (P ≤ 0.001)

t_1 Comparison of mean scores between the study and control groups before intervention

t_2 Comparison of mean scores between the study and control groups at 3 months after intervention

t_3 Comparison of mean scores between the study and control groups at 6 months after intervention

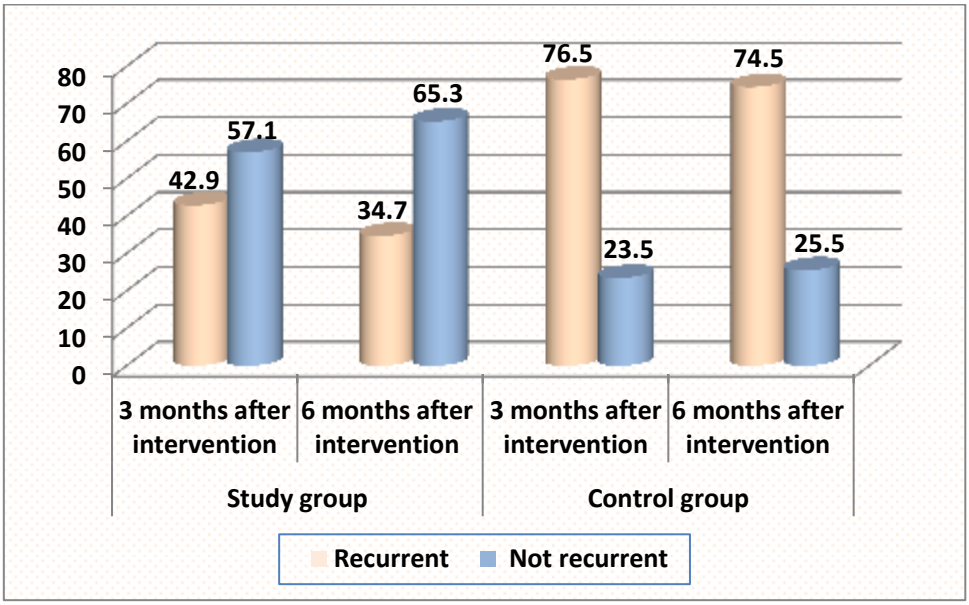

Figure 3. Distribution of the studied women according to recurrence of vaginitis after three and six months of intervention (n=196)

Table 7. Correlation between the frequency of recurrent vaginitis, total hygienic practices and health-promoting lifestyle behavior scores in both groups after three and six months of intervention (n=196)

Groups / Variables	Frequency of recurrent vaginitis							
	Study group n= 98				Control group n= 98			
	3 months after intervention		6 months after intervention		3 months after intervention		6 months after intervention	
	r	P-value	r	P-value	r	P-value	r	P-value
Total hygienic practices score	- 0.720	0.000**	- 0.793	0.000**	- 0.451	0.000**	- 0.411	0.000**
Health-promoting lifestyle behavior score	- 0.647	0.000**	- 0.612	0.000**	- 0.399	0.000**	- 0.382	0.000**

**A high statistical significant difference ($P \leq 0.001$)

IV. Discussion

The current study aimed to investigate the effect of implementing nursing intervention guidelines on recurrent vaginitis among reproductive-age women. This aim was significantly achieved through a quasi-experimental design (time series) research design. The findings of this study were accepted the research hypotheses which were 1) Women who received nursing intervention guidelines will report higher hygienic practices regarding recurrent vaginitis than those who don't. 2) Women who received nursing intervention guidelines will more engage in health-promoting lifestyle behaviors than those who don't. 3) Women who received nursing intervention guidelines will have lower episodes of recurrent vaginitis than those who don't.

Socio-demographic factors such as age group, marital status, and educational level have been associated with vaginitis prevalence [24]. The finding of the current study revealed that the mean age of the study and control groups were 29.63 ± 5.52 and 30.78 ± 6.21years respectively. More than half of both groups had secondary education. Increased vaginitis prevalence in this age group may be due to increased sexual activity and utilization of various contraceptive methods. This result is in accordance with Abu Salem et al. [26] who studied vaginitis among married women attending primary health care in Tanta District and found that the mean age of the studied group was 29.47 ± 6.93 years. Also, Domeika et al. [27] who applied guidelines for the laboratory diagnosis of Trichomoniasis in East European countries, and mentioned vaginitis was diagnosed among women in the age group20–30 years. Similarly, the study conducted by Lamichhane [28] about types of vaginitis and association between bacterial vaginosis and urinary tract infection in pregnant women pointed out that the higher rate of vaginitis was in the age group 20-29 years of this age is the most reproductive age and the most highly sexual exposure.

Regarding residence, the study findings revealed that more than three-quarters of both groups live in rural areas. Less than three-quarters of both groups were housewives. Most of both groups had no enough monthly income, whereas only about one-tenth of the study group and the control group had enough monthly income. This may be related to insufficient income increases the risk of vaginitis, consequential to improper hygiene, malnutrition and low immunity. These results agree with Muda et al. [24] who assessed prevention practices of vaginitis among Malaysian women and its associated factors and showed that women in the urban area were more likely to practice vaginitis prevention (OR=1.40, 95% C=1.06–1.84) compared with those in the rural areas.

The present study showed there was no statistically significant difference between both groups regarding body mass index, the mean body mass index of the study and control groups were 27.76 ± 3.29 and 28.54 ± 2.55 kg /m^2 respectively. This may be attributed to obesity is one of the predisposing factors of vaginitis. This is in accordance with Abd El-Aliem [29] who examined the effect of counseling on coping and outcome of women with vaginal infection and found that the mean body mass index of studied women was 27.5±18.34 kg/cm².

Regarding obstetric history, the study finding revealed that there was no statistically significant difference between both groups regarding gravidity and parity, more than three-quarters of both groups use the intrauterine devices. This may be due to the fact of the most common contraceptive method used by women was Intrauterine device which is a greater risk factor for vaginitis. This is similar to Mohamed et al. [19] who studied the prevalence of vaginal infection and associated risk health behaviors among married women in Ismailia city, Egypt and reported that more than half of women with vaginal infection used Intrauterine devices as a method of contraception.

Additionally, more than half of the study and control groups diagnosed with bacterial vaginosis, followed by vaginal candidiasis and trichomonous. This is congruent with Bhargava et al. [30] who studied the prevalence of vaginitis in females attending national medical college and teaching hospital, the study was carried out on reproductive age group females and the prevalence and reported that among all the 155 positive

cases of vaginitis the bacterial vaginosis is the highest 54.3%, followed by candidiasis 28.8% and trichomoniasis 2.6%. On the contrary, the study conducted by Kamel [31] who assessed the common types of vaginal infections among women attending gynecological clinics at El-Manial university hospital, Egypt and showed that the most common cause of vaginitis among the studied women was vulvovaginal candidiasis 41%, followed by bacterial vaginosis 10.2%, and 6% trichomonas.

As well, Kiran et al. [32] who investigated the etiologic characterization of vulvovaginitis among females attending a tertiary care hospital for one year and stated that out of 137 diagnosed cases of vulvovaginitis, candidiasis was the most common etiology with 59.12%, followed by bacterial vaginitis 22.63% and 18.25% were diagnosed with trichomoniasis.

In addition, the study finding revealed that about two-thirds of both groups had two times of vaginitis recurrence in the last six months. The mean duration of the current complaint of the study and control groups was 6.47±1.91 and 7.82±3.24 days respectively. This result is in contrast with Ebrahimi-Tavaniet al.[33] who assessed the educational needs among women of reproductive age with common genital tract infections (vaginitis) In a descriptive cross-sectional study using purposive sampling of 224 non-pregnant, premenopausal, 15-49 years old, and sexually active females complaining from vaginitis. The results revealed that the duration of symptoms was with an average of 22.7±24.5 days. Additionally, Parsapouret al. [10] studied the factors affecting relapse of vaginitis among reproductive-aged women: An experimental study, found that eighty-eight percent of all participants had vaginitis at least once in six months before the study. As well, Mohamed et al. [19] showed that 85.5% of the cases had a recurrence with a rate of three times per year. This may be interpreted due to cultural differences.

The findings of the current study illustrated that women in both groups complained of multiple symptoms, the most common symptom was itching of the genital organ, followed by discharge with an unpleasant odor, followed by burning micturition, followed by discomfort during intercourse followed by backache and lower abdominal pain. This may be related to low level of women's awareness and cultural barriers were the reasons for delayed diagnosis and treatment regardless of symptoms. These findings were slightly similar to the study conducted by Dahal et al.[7] who assessed the risk factors and medication used for infectious vaginitis among females of reproductive age visiting maternity hospital of Pokhara, Nepal and found that 75% of women with infectious vaginitis complained of itching/soreness of genital organ, 24% of discharge from genitals often accompanying with unpleasant odor, 15% from burning micturition, 32% from discomfort during intercourse, whereas 20.76% of women complained of other symptoms like dysmenorrhoea, irregular menstruation, frequent urination, backache, lower abdominal pain. Likewise, Ali and Hussein [34] who assessed the health behaviors knowledge regarding vaginal discharge among women attending maternity hospitals in Baghdad city and showed that 71% having itching and irritation, 66% having pain during intercourse, 64.5% having a bad odor, 62% having a burning sensation during urination, 57% having severe burning during intercourse and 23% having vaginal sore.

Genital hygiene is the major component of women's health and is very important for the protection of reproductive health [35]. In relation to genital hygiene practices, the findings of the current study proved that there was no statistically significant difference between the study and control groups before the intervention. This may be due to a higher frequency of vaginitis among women with incorrect genital hygiene practices. These findings are matched with Hamed [23] who studied 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 and found a higher occurrence of genital infections among participants who practiced incorrect genital hygiene technique as keep the genital area moist after cleaning it several times with their hands and used a reusable cloth for drying (P=0.001). Also, the present findings are in the same line with Nielsen et al. [36] who studied reproductive tract infections in rural Vietnam, women's knowledge, and health-seeking behavior: A cross-sectional study and concluded reproductive tract infections were associated with poor genital hygiene.

However, a high statistical significant improvement was observed in the study group compared with the control group after three and six months of intervention. These findings might be related to women's commitment to the received nursing guidelines. The result is in accordance with Elsabagh [37] who examined the impact of intervention program on non-pregnant women's knowledge and genital hygiene practices regarding bacterial vaginosis and reported that the overall mean practice score increased from 3.90±2.41 to 5.40±1.19 after program intervention, with a highly significant difference ($p<0.001$).

Menstrual hygiene management practices are characterized by practices such as the type of absorbent material used and the frequency changed, associated body washing, the methods of washing, drying and storing reusable pads as well as other contextual factors, such as the location of menstruation-related changes and washing practices [38].

Concerning menstrual hygiene practices, the present findings showed that there was no statistically significant difference between both groups before the intervention. Probably due to the lack of knowledge about healthy practices during menstruation, this negatively predisposes to vaginitis. These findings are congruent with the study of Mudey et al. [39] who conducted a study about a cross-sectional study on the awareness regarding safe and hygienic practices amongst school going adolescent girls in the rural areas of Wardha district and indicated that vaginal infections due to lack of hygiene during menstruation mainly related to inappropriate information about menstrual hygiene. Also, Ananda et al. [40] studied menstrual hygiene practices and its association with reproductive tract infections and abnormal vaginal discharge among women in India and reported that 15% of women used sanitary pad during menstruation. Both reproductive tract infection and abnormal vaginal discharge were positively related to non-use of hygienic practices and concluded the women who used unhygienic practices during menstruation were more likely to have a reproductive tract infection. Conversely, after three and six months of intervention, the present findings demonstrated that there was a statistically significant improvement was observed in the study group compared with the control group.

As regards coital hygiene practices, the findings revealed there was no statistically significant difference between the study and control groups before the intervention. This may be related to embarrassment and the sensitive issues among women, especially the majority of women were from a rural area. However, a high statistical significant improvement was observed in the study group compared with the control group after three and six months of intervention. This result may be due to the efficiency of the nursing intervention guidelines and the instructional sessions.

Concerning the reported hygienic practices, the findings of the current study revealed that less than one-quarter of women in the study and control groups had satisfactory practices regarding recurrent vaginitis before intervention. The findings of the current study can be explained by the fact that a lack of knowledge and awareness about vaginal health among participants can lead to unhealthy practices. This is in agreement with the study by Muda et al. [24] who found that the mean vaginitis prevention practices score of 12 out of a maximum score of 30 may imply low practices among women.

Meanwhile, at three and six months after intervention, a significant increase to more than three quarters in the study group, while no changes were observed in the control group. This finding can be attributed to women pay more attention to hygienic practices and have a higher commitment to the received nursing guidelines.

This finding is consistent with Yarmohammadi et al.[41] who examined the effect of education on knowledge, attitude and practice of patients with vaginitis and reported that the mean practice score of the intervention group showed a significant increase compared to before education ($p = 0.002$), while the control group showed no significant difference before and after education. Likewise, Nappi and Kokot-Kierepa [42] who conducted a study titled vaginal health: insights, views, and attitudes (VIVA) results from an international survey. Climacteric and stressed unsanitary practices may contribute to the development and aggravation of vaginitis, which refers to the crucial need for health education programs to raise women's awareness and improve regular practices.

A health-promoting lifestyle behavior is one of the main determinative components of health as a known underlying factor in the prevention of many diseases [43]. Maintaining a health-promoting lifestyle is defined as controlling certain behaviors and selecting appropriate behaviors in daily life for one's health. Health-promoting lifestyle behaviors are a multifaceted model of perception, self-initiated action or practice [44].Improvement of information, motivation, and behavioral skills are necessary to change related behaviors and attain correct self-care behaviors [33].

On investigating health-promoting lifestyle behaviors among women, the findings of the current study demonstrated the mean scores of the overall health-promoting lifestyle scores and its dimensions were partially the same between both groups, with no statistically significant difference before the intervention. A similar study was conducted by Mohamed et al. [19] concluded that the majority of married women attending primary health care centers in the Ismailia city with recurrent vaginitis had unsatisfactory health behaviors.

In contrast, after three and six months of intervention, the mean scores for overall health-promoting lifestyle behaviors and all dimensions in the study group were significantly higher compared to the control group. This is attributed to the knowledge and behavioral skills that women taught during instructional sessions play a prominent role in encouraging and motivating women to change their lifestyle behaviors. Besides, intervention guidelines play a very important role in helping women to acquire knowledge regarding healthy lifestyle behaviors. These findings are supported by Parsapure et al.[45] who studied the impact of health-promoting educational intervention on lifestyle (nutrition behaviors, physical activity and mental health) related to vaginal health among reproductive aged women with vaginitis and found that there was significant differences in the overall health-promoting lifestyle behaviors mean scores between both groups ($P < 0.001$). The mean difference scores in the intervention group for all dimensions of health-promoting lifestyle behaviors were

higher than the control group scores. As well, Barot [46] who study entitled sexual and reproductive health and rights are key to global development: the case for ramping up investment and pointed out that treatment and behavioral intervention programs are effective treatment methods, but with few side effects, the behavioral intervention program is superior and cost-effective.

Health-promoting lifestyle behaviors includes appropriate nutrition, regular exercise, avoiding destructive behaviors, timely diagnosis of symptoms, emotional control, coping with stress, and modification of interpersonal relationships [47, 48]. In this respect, the present findings are supported by Glenville [49] who stated nutrient intake may be associated with vaginitis, the healthy nutrition help the body to fight against infection, to resist against the colonization of bacteria and encourage the success of the medical treatment. Likewise, Al-Ghazzewi and Tester [50] who studied Biotherapeutic agents and vaginal health and emphasized that routine yogurt and dairy intake, and consumption fresh vegetables and fruits decrease the possibility of vaginitis, whereas sweets intake increases the probability of vaginitis.

A sedentary lifestyle is a challenge for most countries because the positive effect of physical activity upon health is undeniable [51]. With regards physical activity, the findings of the current study illustrated that the women in both groups have lower mean scores for physical activity before intervention. This may be explained by the fact that women, due to cultural or personal reasons, generally do not practice physical activity. Besides, limited physical activity leads to obesity, which is a predisposing factor for vaginitis. The results are consistent with Parsapour et al. [10] showed that the chance of vaginitis in women with weak physical activities (OR=7.81, 95% CI: 1.65–36.92) times the same chance in women with good physical activities. Women who were at a moderate level of physical activities (OR=1.25, 95% CI: 0.26–5.96) times the same chance in women with health-promoting physical activities. On the other hand, there was improved in engaging physical activity in the study group compared to the control group three and six months after intervention. This represents the positive effect of nursing intervention guidelines.

According to Al-Aali [52] increased psychosocial stress is associated with increased prevalence of bacterial vaginosis, recurrent candida vulvovaginitis, and incidences independent of other risk factors**.** Vaginitis is also associated with mental health, including relationships with others, problem-solving skills, perception of counseling, and responsibility for health [10]. Besides, health responsibility and interpersonal relations have a positive relationship with learning problem-solving skills, self-care, and search for health information [53]. These can interpret the increase the mean scores of health responsibility, interpersonal relations and spiritual growth after three and six months of the intervention implied the women in the study group have a higher incentive for participating in healthy lifestyle behaviors towards vaginitis, as a result, the effect of instructional sessions.

Pertaining to a recurrence of vaginitis, the findings of the current study revealed that less than half and more than one-third of the study group had recurrent vaginitis compared with around three-quarters of the control group after three and six months of intervention. These findings may be attributed to the effect of nursing intervention guidelines on women's hygienic practices and proper participation in healthy lifestyle behaviors consequently reduced the recurrent vaginitis. Besides, the high costs of treatment have demanded a shift in the emphasis of care for the prevention of recurrence vaginitis instead of the treatment.

These are in the same line with Parsapour et al [10] who found that a relapse of vaginitis in the intervention group is 27.7% compared to72.3 % in the control group ($p<0.001$), chance for relapse of vaginitis in the group that did not receive intervention was more than the same chance in the intervention group (OR=5.14).

Furthermore, the study findings revealed that the frequency of recurrent vaginitis was negatively correlated to the total hygienic practices and also health-promoting lifestyle scores in both groups after three and six months of intervention. This implies that higher hygienic practices and more engaging in health-promoting lifestyle behaviors lead to a lower frequency of recurrent vaginitis. This may be attributed to the women's compliance with intervention guidelines received during instructional sessions regarding hygienic practices and promoting lifestyle behaviors that consequently decrease the recurrence of vaginitis. These findings are in accordance with Baraia [54] who studied the impact of the educational program about self-care practices on the reliving of vaginal infection among high risk women in Ismailia city, Egypt and found that women who followed self-care practices had higher cure percent compared to those who did not receive it, as 87.8% of the control group suffers from a recurrence of symptoms at follow up after three months, which indicates that self-care practices modifications are useful in improving and preventing recurrence of vaginal infections. Also, these findings were in agreement with Hainer and Gibson [55] who conducted a study titled vaginitis: diagnosis and treatment and indicated that women compiled to the treatment protocol and follow instructions given about self-care hygienic practices were exposed to less recurrence of vaginitis.

V. Conclusion

The implementation of nursing intervention guidelines has a significant effect in improving hygienic practices, and increasing health-promoting lifestyle behaviors among women with recurrent vaginitis in the study group compared with the control group. Also, recurrent vaginitis episodes were lower among women in the study group than those in the control group. A significant negative correlation between the frequency of recurrent vaginitis and total hygienic practices and also health-promoting lifestyle scores was observed in both groups. Therefore, the research hypotheses are accepted.

VI. Recommendations

In light of the study findings, the following recommendations are suggested:

- Applying educational intervention to improve women's awareness about hygienic practices to prevent further recurrence of vaginitis.
- Simple illustrated guidelines about vaginitis and healthy lifestyle behaviors towards vaginal health should be available for women in obstetrics and gynecology outpatient clinic.
- Further qualitative studies are needed to explore the women's experience with recurrent vaginitis and its impact on the quality of life.
- Further studies are proposed to evaluate the long-term effect of implementing nursing guidelines on recurrent vaginitis.
- Further studies are needed to investigate adherence to healthy lifestyle behaviors and its relationships for recurrent vaginal infection.

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References

[1]. Sevil S, Kevser O, Aleattin U, Dilek A, and Tijen N. An evaluation of the relationship between genital hygiene practices, genital infection. Gynecol Obstet., 2013; 3 (6): 187.
[2]. Sumarah S, and Widyasih H. Effect of vaginal hygiene module to attitudes and behavior of pathological vaginal discharge prevention among female adolescents in Slemanregency, Yogyakarta, Indonesia. J Fam Reprod Health. 2017; 11(2): 104-109.
[3]. Bohbot J M, Sednaoui P, and Verriere F. Nystatin-Neomycin-Polymyxin B Combination: efficacy and tolerance as 1st-line local treatment of infectious vaginitis. Open Journal of Obstetrics Gynecology, 2014; 4(7):445-454.
[4]. Mills B B. Vaginitis: beyond the basics. Obstet Gynecol Clin North Am 2017; 44:159–177.
[5]. Egypt Demographic and Health Survey. Egyptian Ministry of Health and Population and UNICEF: Main Findings, 2014.
[6]. Thulkar J, Kriplani A, Agarwal N, and Vishnubhatla S. Aetiology & risk factors of recurrent vaginitis & its association with various contraceptive methods. Indian J Med Res. (2010); 131:7-83
[7]. Dahal P, Jhendi S, Pun C, and Maharjan L. Assessment of risk factors and medication use for infectious vaginitis among females of reproductive age visiting maternity hospital of Pokhara, Nepal, The Open Public Health Journal, 2017; 10(1):140-147.
[8]. Mulu W, Yimer M, Zenebe Y, and Abera B. Common causes of vaginal infections and antibiotic susceptibility of aerobic bacterial isolates in women of reproductive age attending at the Felegehiwot referral Hospital, Ethiopia: a cross sectional study, BMC Women's Health ,2015; 15 (1):42.DOI 10.1186/s12905-015-0197-y.
[9]. World Health Organization (2015). A multi-country study on gender, sexuality and vaginal practices: Implications for sexual health. Retrieved from:http://apps.who.int/iris/bitstream/handle/10665/75182/WHO_RHR_HRP_12.25eng. pdf;jsessionid =43829AD 360B 9212DAD8D41945314EC33?
[10]. Parsapour R, Majlessi F, Rahimiforoushani A, and Sadeghi R. Determination of factors affecting relapse of vaginitis among reproductive-aged women: An experimental study. Electron Physician, 2017; 9(1):3499-3507.
[11]. Ricci S, Kyle T, and Carman S. Maternity and Pediatric Nursing, 3rd ed., Wolters Kluwer, Philadelphia, 2017, p 182.
[12]. Littleton-Gibbs LY, and Engebretson J. Maternity Nursing Care, 2nd ed., Cengage Learning, United States, 2012; pp 181-182.
[13]. Alexandra R, El Werdany M, Hadoura E, and Mahmood T. Vaginal Discharge. Obstetrics, Gynaecology & Reproductive Medicine. 2016; 26(11):317–323.
[14]. Bitew A, Abebaw Y, Bekela D, and Mihret A. Prevalence of bacterial vaginosis and associated risk factors among women complaining of genital tract infection. International Journal of Microbiology, 2017; 8-17.
[15]. Paladine H L, and Desai U A. Vaginitis: diagnosis and treatment. Am Fam Physician. 2018; 97(5):321-329.
[16]. Ranjit E, Raghubanshi B R, Maskey S, Parajuli P. Prevalence of bacterial vaginosis and its association with risk factors among nonpregnant women: A Hospital based study. Int J Microbiol. 2018; 8349601.
[17]. Adolfsson A, Hagander A, Mahjoubipour F, Larsson P G. How vaginal infections impact women's everyday life: women's lived experiences of bacterial Vaginosis and recurrent vulvovaginal candidiasis. Advances in Sexual Medicine, 2017; 7(1): 1-19.
[18]. Daniel WW. Biostatistics: a foundation for analysis in the health sciences 7th ed., Wiley, New York, 1999; Pp180-185.
[19]. Mohamed H I, Shalaby N S, El-Maraghy N N, and Baraia Z A. Prevalence of vaginal infection and associated risk health behaviors among married women in Ismailia city, Int.J.Curr.Microbiol.App.Sci., 2015; 4(5): 555-567.
[20]. Machado D, Castro J, Palmeira-de-Oliveira A, Martinez-de-Oliveira J, and Cerca N. Bacterial vaginosis biofilms: challenges to current therapies and emerging solutions. Front Microbiol. 2016; 6:1528.
[21]. Abd El-Salam A A, Eldeeb A M, Frahat F Z. The efficacy of learning package regarding vaginal infection and associated risk health behaviors among female university students. The Malaysian Journal of Nursing, 2018; 9 (4): 84-94.
[22]. Ozkan AI, and Kulakaç O. Genital hygiene behaviors in women, Anadolu Journal of Nursing and Health Sciences, 2011; 14: 31-38.
[23]. Hamed A G. 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. Journal of Nursing and Health Science, 2015; 4(6): 55-64.
[24]. Muda, W M, Wong L P, and Tay S T. Prevention practices of vaginitis among Malaysian women and its associated factors, Journal of Obstetrics and Gynaecology, 2018; 38(5):708-715.

[25]. Walker SN, Sechrist K R, Pender N J. The Health-Promoting Lifestyle Profile: development and psychometric characteristics. Nurse Res. 1987; 36(2):76-81.
[26]. Abu Salem M E, Alkot M M, Salama A A, Abdl-Sameh D H. Vaginitis among married women attending primary health care in Tanta district, El-Gharbia Governorate, Egypt. Menoufia Med J, 2017; 30:87-91
[27]. Domeika M, Zhurauskaya L, Savicheva A, Frigo N, Sokolovskiy E, Hallen A, Unemo M, Ballard RC and Networka SRH. Guidelines for the laboratory diagnosis of Trichomoniasis in East European countries. J Eur Acad Dermatol Venereol, 2010; 24:1125–1134.
[28]. Lamichhane P, Joshi D R, Subedi Y P, Thapa R, Acharya G P, Lamsal A, Upadhaya S, and Pokhrel S. Study on types of vaginitis and association between bacterial vaginosis and urinary tract infection in pregnant women, International Journal of Biomedical and Advance Research, 2014; 5 (6):304-307.
[29]. Abd El-Aliem R S. Effect of counseling on coping and outcome of women with vaginal infection, unpublished thesis for doctorate degree in Maternal and Newborn Health Nursing , Faculty of Nursing, Benha University,2015; p86.
[30]. Bhargava D, Kar S, Saha A, and Saha M. Prevalence of vaginitis in females attending national medical college and teaching hospital, Birgunj, Nepal, Indian Journal of Medical Research and Pharmaceutical Sciences, 2016; 3(7):39-43.
[31]. Kamel A D. Assessment of common types of vaginal infections among women attending gynecological clinics at El- Manial University Hospital: A proposed plan of action, 2014; available at http://scholar.cu.edu.eg/?q=msc/files/cu-pdf_3.pdf
[32]. Kiran C K, Kandati J, and Ponugoti M. Etiologic characterization of vulvovaginitis among females attending a tertiary care hospital: a one year study. Int J Reprod Contracept Obstet Gynecol, 2017; 6 (6): 2246-2251.
[33]. Ebrahimi-Tavani M, Ghofranipour F, Hajizadeh E, and Abedini M. Assessment of educational needs among women of reproductive age with common genital tract infections (vaginitis): the first step for developing a self-care educational package. Int J Women's Health Reprod Sci.2015; 3(4):201-207.
[34]. Ali R M, and Hussien A S. Assessment of health behaviors knowledge regarding vaginal discharge among women attending maternity hospitals in Baghdad City, IOSR Journal of Nursing and Health Science (IOSR-JNHS) , 2017;6(4): 31-36.
[35]. Chauhan A, Chawla D, Saini G, Rawat H, Pundir K, Kumar L, and Benjamin P. Effectiveness of a 'planned teaching program' (PTP) on knowledge related to reproductive tract infections among rural women. Journal of Nursing and Health Science, 2014; 3(1):17-21.
[36]. Nielsen A, Lan P T, Marrone G, Phuc H D, Chuc N T, and Stalsby Lundborg C. Reproductive tract infections in rural Vietnam, women's knowledge, and health-seeking behavior: A cross-sectional study. Health Care Women Int.2014; 37:392-411.
[37]. Elsabagh E M. Impact of intervention program on non-pregnant women's knowledge and genital hygiene practices regarding bacterial vaginosis. International Journal of Current Research, 2016;8(11): 41864-41874.
[38]. Torondel B, Sinha S, Mohanty J, Swain T, Sahoo P, Panda B, Nayak A, Bara M, Bilung B, Cumming O, Panigrahi P, and Das P. Association between unhygienic menstrual management practices and prevalence of lower reproductive tract infections: a hospital-based cross-sectional study in Odisha, India, BMC Infectious Diseases,2018; 18:473.
[39]. Mudey AB, Keshwani N, and Mudey G A. A cross-sectional study on the awareness regarding safe and hygienic practices amongst school going adolescent girls in the rural areas of Wardha district. Global J Health Sci.2010; 2:225–231.
[40]. Ananda E, Singhb J, and Unisaa S. Menstrual hygiene practices and its association with reproductive tract infections and abnormal vaginal discharge among women in India, Sexual & Reproductive Health care, 2015; 6(4): 249–254.
[41]. Yarmohammadi S, Taheri G, Mousavi S S, Sheikhehpour M, Paykoub M H, Hashemian A H. The effect of education on knowledge, attitude and practice of patients with vaginitis. Advances in Biological Research. 2015; 9(3):196–200.
[42]. Nappi R, and Kokot-Kierepa M. Vaginal Health: insights, views and attitudes (VIVA) results from an international survey. Climacteric. 2012; 15(1):36–44.
[43]. Bakouei S, Bakouei F, Omidvar S, and Bakhtiari A. Health-Promoting behaviors and their predictors in Iranian women of reproductive age: A Cross-sectional study, International Quarterly of Community Health Education, 2017;38(1) 3–8.
[44]. [44].Gokyildiz S, Alan S, Elmas E, Bostanci A, and Kucuk E. Health-promoting lifestyle behaviours in pregnant women in Turkey. Inte J Nurs Pract. 2014; 20:390-397.
[45]. Parsapure R, Rahimiforushani A, Majlessi F, Montazeri A, Sadeghi R, and Garmarudi G. Impact of health promoting educational intervention on lifestyle (nutrition behaviors, physical activity and mental health) related to vaginal health among reproductive-aged women with vaginitis. Iran Red Crescent Med J. 2016; 18(10):e37698.
[46]. Barot S. Sexual and reproductive health and rights are key to global development: the case for ramping up investment. Guttmacher Policy Review. 2015; 18(1): 1-7.
[47]. Mirghafourvand M, Mohammad-Alizadeh-Charandabi S, Tavananezhad N, and Karkhaneh M. Health-promoting lifestyle and its predictors among Iranian adolescent girls. Int J Adolesc Med Health. 2014; 26(4):495-502.
[48]. Sehhatie F, Mirghafourvand M, and Momeni K. Health promoting behaviors among postmenopausal women in Langroud city, Iran. Int J Womens Health Reprod Sci. 2015; 3(3):158-162.
[49]. Glenville M. Vaginal infections, Understanding vaginal infections e-book, everything you need to know about vaginal infection from symptoms to solutions. The natural health practice,2012; 2- 19.
[50]. Al-Ghazzewi F H, and Tester R F. Biotherapeutic agents and vaginal health. J Appl Microbiol. 2016; 121(1):18–27.
[51]. Sonmezer H, Cetinkaya F, and Nacar M. Healthy life-style promoting behavior in Turkish women aged 18–64. Asian Pacific J Cancer Prev. 2012; 13: 1241–1245.
[52]. Al-Aali KY. Prevalence of vaginal candidiasis among pregnant women attending Al-Hada Military Hospital, Western Region, Taif, Saudi Arabia. IJSR. 2015; 4(5):1736-1743.
[53]. Ghahremani L, Alipoor M, Amoee S, and Keshavarzi S. Health promoting behaviors and self-efficacy of physical activity during pregnancy: an Interventional study, International Journal of Women's Health and Reproduction Sciences, 2017;5 (3): 181–186.
[54]. Baraia Z A, Abdallah I M, and Nour S A. Impact of educational program about self-care practices on the reliving of vaginal infection among high risk women in Ismailia city, IOSR Journal of Nursing and Health Science (IOSR-JNHS), 2017; 6(3):73-78.
[55]. Hainer B L, and Gibson M V. Vaginitis: diagnosis and treatment. Am Fam Physician, 2011; 83(7):807-815.

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