Effect of Instructional Supportive Guidelines on Alleviating Endometriosis Related pain Symptoms

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Abstract: Endometriosis is a complex disorder characterized by pain and infertility that, if not treated properly, it can disrupt the patient's quality of life and health significantly. The purpose of the study was to assess the effect of instructional supportive guidelines on alleviating endometriosis-related pain symptoms. Design: A quasi-experimental research design (non–equivalent group design) was utilized. **Sample:** A convenience sample of 100 women diagnosed with endometriosis. Settings: The study was conducted at Obstetrics and Gynecology outpatient clinics affiliated with Menoufia University Hospital and Shebin El-Kom Teaching Hospital. Instruments: Knowledge of mothers structured interviewing questionnaire, self-care practices' specific effect rating scale and numerical rating scale. **Results:** There was a highly statistically significant difference in total knowledge scores regarding the instructional supportive guidelines (92.0% & 97.0%) after implementing the guidelines. Also, there was a highly statistically significant decrease in the intensity of endometriosis-related pain in the study group (86.0 % - 90.0%) compared to the control group. There was a highly statistically difference in the score of women's self-care practices for alleviating endometriosis-related symptoms after implementation of the guidelines compared to their self-care practices before it. **Conclusion:** The instructional supportive guidelines resulted in a highly statistically significant increase in the total knowledge scores, a decrease in the intensity of endometriosis-related pain symptoms. **Recommendations:** Instructional Supportive Guidelines should be provided for women with endometriosis to improve their quality of life and increase their awareness regarding the guidelines to decrease the endometriosis-related pain symptoms is necessary. Also, regular follow-ups should be done to detect any health problem.
Keywords: Endometriosis, instructional supportive guidelines, quality of life.

Introduction

Endometriosis is a common chronic inflammatory estrogen-related disease that affects women of reproductive ages (Mowers et al., 2019). This condition is characterized by abnormal positioning of the endometrial glands and stroma outside the uterus. Endometriosis has a multifactorial etiology including genetic predisposition and immune system abnormalities as same as anatomical and environmental factors (Giuliani et al., 2020).

The prevalence of endometriosis is unknown because the definitive diagnosis of the condition is possible by laparoscopic surgery; therefore many cases are not recognized. However, various studies have reported a 2-15% prevalence rate of endometriosis among women during reproductive age. Also, studies have

shown that 30-45% of women with infertility or pain are suffering from endometriosis (De Graff et al., 2019).

Endometriosis can be staged I-IV as minimal, mild, moderate, and severe endometriosis by the classification of the American Society of Reproductive Medicine (ASRM) based on the location, extent, and depth of endometrial implants, presence, and the severity of adhesions (Giuliani et al., 2020). Endometriosis has a variety of symptoms including chronic pelvic pain, dysmenorrhea, dyspareunia, dysuria, lower abdominal pain, infertility, and others such as diarrhea or constipation, chronic fatigue, nausea, and vomiting, headache, heavy and/or irregular periods (Silva et al., 2018).

Mendes and Figueiredo, (2019) stated that the chronic painful symptoms of endometriosis and its negative consequences can reduce the women's quality of life. Many qualitative studies have documented the negative impacts of this disease on daily life; physical, mental, and social well-being; general health; interpersonal interactions; productivity, and self-esteem. So, endometriosis symptoms are the main causes of morbidity and psychosocial problems in women during their reproductive ages. Chronic pain may lead to a feeling of frustration, social dysfunction, and difficulties in work.

The instructional supportive guidelines are those guidelines that offer best practices advice to women with endometriosis to prevent complications and raise awareness about the endometriosis and how to cope with the disease to improve the quality of life. They contain simple self-management strategies such as drinking plenty of fluids, eating a healthy diet, performing exercise or physical activities, performing meditation and relaxation techniques, providing psychological support, and sexual intervention (Bonocher et al., 2017).

Nurses play an essential role in health promotion by providing support and required information to the woman with endometriosis to help them to cope with the disease and reduce endometriosis–related pain symptoms. So the gynecological nurses play a pivotal role in facilitating diagnosis through recognizing the endometriosis-related symptoms and aiding the earlier referral. Also, the nurses should understand the current evidence and best practices guidance regarding endometriosis, adding to, solving the obstacles & barriers that hinder the women from seeking medical care early and understand the instructional guidelines to improve the women's quality of life (Greg, 2018).

Significance of the study:
Worldwide, the prevalence of endometriosis ranges from 6% - to 10%. It was estimated that 176 million women had endometriosis globally. Up to 50.0% of women with infertility, 10.0% of women during the childbearing age, and 70.0% to 90.0% of women with pelvic pain have endometriosis (American Society for Reproductive Medicine, 2018). In North America, 8.5 million women are affected by endometriosis Kong et al., (2018). The prevalence of endometriosis in Egypt is difficult to be determined because of the lack of documentation or a filling system for cases of endometriosis and the only reliable diagnostic test is laparoscopy. Therefore a study in Dakahlia Governorate about the prevalence of endometriosis in adolescents with severe dysmenorrhea, is estimated to be 12.3% (Ragab et al., 2015).

Moreover, endometriosis is a disabling condition that noticeably affects different aspects of women's daily

lives including physical, mental, and social well-being; general health; interpersonal interactions; productivity, self-esteem, fertility, and sexual function. Therefore, there was a significant need to improve women's health-related quality of life by increasing awareness of endometriosis and providing instructional supportive guidelines that can assist in reducing the endometriosis-related pain symptoms and improving the quality of life (Mendes & Figueiredo, 2018).

According to the relevant literature review, there are limited studies conducted to investigate the effect of instructional supportive guidelines on quality of life among women with endometriosis. So, this study was conducted aiming to assess the effect of instructional supportive guidelines on alleviating endometriosis-related pain symptoms.

Purpose of the Study:
To assess the effect of instructional supportive guidelines on alleviating endometriosis-related pain symptoms.

Research Hypotheses
1) Women with endometriosis exhibit a higher knowledge score regarding the endometriosis after receiving the instructional supportive guidelines through the educational sessions than those who do not.
2) Women with endometriosis who implement the instructional supportive guidelines have a lower score of pain intensity regarding the endometriosis-related pain symptoms than those who do not.
3) Women with endometriosis who implement the instructional supportive guidelines exhibit a higher self-care practice score than those who do not.

Research Design:

A quasi-experimental research design (non - equivalent group design) was used to carry out the present study.

Research Settings:
The study was conducted at Obstetrics and Gynecology outpatient clinics affiliated to Menoufia University Hospital and Shebin El-Kom Teaching Hospital. These hospitals and are known to have high flow rates of women from rural and urban areas. The flow rate of women who attended Obstetrics and Gynecology Outpatient Clinics in Menoufia University Hospital was 4711 women and 3812 in Shebin El-Kom Teaching Hospital. These centers also provide services to women such as antenatal care especially for high-risk pregnancies, counseling for appropriate contraceptive methods, and diagnosis and treatment of gynecological problems such as endometriosis.

Sampling:
A convenience sample of 100 women diagnosed with endometriosis who fulfilled the inclusion criteria were selected including all women diagnosed with endometriosis during the reproductive age, various stages of endometriosis, and without any chronic medical or gynecological disorders that can affect the quality of life. The cases were then randomly assigned into two groups (study and control group).This took place by asking each one of the 100 women to pick a piece of paper containing a number. Those who selected number 1 were assigned to the study group and those who selected number 2 were assigned to the control group.

Sample size:
Reviewing the previous studies such as Metwaley & Desokey, (2018) that examined the same outcomes and found significant differences in women's scores of knowledge and

quality of life with a moderate effect size (Cohen D = 0.6). Thus, the average size was 50 women per group. The sample size per group was calculated at a 95% level of confidence, 80% power, and a significant level of 5% to detect a significant difference. So, a convenience sample of 100 women with endometriosis had recruited for the study.

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

where
z is the z score
ε is the margin of error
n is the population size
p̂ is the population proportion

Instruments

Instrument One: Knowledge of mothers structured interviewing questionnaire:
This instrument was used by the researcher to obtain complete data concerning endometriosis. This instrument was developed by the researcher based on the review of currently related literature. The instrument consisted of four parts that were revised by three professors at the maternal and newborn health nursing department and then tested for validity and reliability.

- **Part 1:** Characteristics of the study participants: They included age, level of education, place of residence, occupation, marital status, and perceived income.
- **Part 2:** Obstetrical and Gynecological History: It included gravidity, parity, endometriosis

sites, duration, and types of previous surgery for its treatment.
- **Part 3:** Assessment of Women Level of Knowledge regarding endometriosis. It included definition, risk factors, causes, common sites, manifestations, complications, diagnosis, and treatment of endometriosis. These questions were used to assess the women's level of knowledge regarding endometriosis before the intervention (pre-test), one month after the intervention (post-test), and two months after the intervention (follow-up).

Scoring system of knowledge:
Each item of the level of knowledge was given a score; correct & complete answers had scored (2), correct & incomplete answers had scored (1), whereas incorrect or don't know had scored (0).The total knowledge score was calculated by summation of the scores for the" known items". The scores had converted into percent. The higher scores reflected a higher level of knowledge regarding endometriosis. The total knowledge score was indicated as the following: Good: >75% of total knowledge score, Fair: 75 % - > 50% of total knowledge score, and poor if the percent score was less than 50%.
- **Part 4:** A questionnaire for evaluating the women's level of knowledge regarding the guidelines of endometriosis. It was scored as follows: A score of 2 was given for each know of the guidelines and 1 for each don't know.

Scoring system:
The total score was indicated as the following: satisfactory ≥ 50% of the total knowledge score and unsatisfactory if less than 50%.Satisfactory level was considered if women had ≥ 50% of the total

knowledge score and unsatisfactory if scores were less than 50%.

Validity of the instrument
The validity of the instrument was ascertained by three professors at the Maternal and Newborn Health Nursing department, Faculty of Nursing, and two assistant professors from the Obstetrics and Gynecology department, Faculty of Medicine. They judged the instrument for content and internal validity

Reliability of the instrument
Test–retest reliability had done by the researcher for testing the internal consistency of the instrument. It had done through the administration of the same instrument to the same participants under similar conditions. Cronbach α was 0.86.

Instrument two: **Self-Care Practices' Specific effect:** It was developed by the researcher; it was used in this study to measure the women's perceived self–efficacy in performing their self-care practices before, at 1 month, and at 2 months after the instructional supportive guidelines implementation.

Scoring System:
Scoring system for women's self-care practices "as reported by women", each item was scored as 2 for done, and scored as 1 for not done. So woman's self-care practices were considered satisfactory practices if women have equal or more than 60% of total practice scores, while unsatisfactory if women have less than 60% of total practice scores.

Validity of the instrument:-
The validity of the instrument was ascertained by three professors at the Maternal and Newborn Health Nursing department, Faculty of Nursing, and two assistant professors from the Obstetrics and Gynecology department, Faculty of Medicine. They

judged the instrument for content and internal validity

Reliability of the instrument:-
Test–retest reliability had done by the researcher for testing the internal consistency of the instrument. It had done through the administration of the same instrument to the same participants under similar conditions. Cronbach α was 0.86.

Instrument three: **Numerical rating scale (NRS):**
It was developed by Posadzka et al., (2015), to assess the intensity of endometriosis-related pain symptoms such as dysmenorrhea, dyspareunia, dysuria, dyschezia and pelvic pain. NRS consists of a straight line with the endpoints defining extreme limits such as no pain at all and pain as bad as it could be. The measurement was from zero to 10, in which zero means no pain while 10 illustrates the worst pain.

Scoring system:
Women were asked to rate the current intensity of endometriosis-related pain symptoms. NRS rated the pain level from 0 to 10, level 0 denoted no pain, a level from 1 to 3 denoted mild pain, a score from 4 to 6 denoted moderate pain, and a score from 7 to 10 indicated severe pain.

Validity of the instrument
The validity of the instrument was ascertained by three professors at the Maternal and Newborn Health Nursing department, Faculty of Nursing, and two assistant professors from the Obstetrics and Gynecology department, Faculty of Medicine. They judged the instrument for content and internal validity

Reliability of the instrument
Test-retest reliability had used by the researcher for testing the internal consistency of the instrument. It had done through the administration of the

same instrument to the same participants under similar conditions. Its reliability has been verified with Chronbach's alpha which revealed that all of the coefficients were desirable and satisfactory.. The instrument was found to be reliable as the reliability co-efficient was r= 0.85.

Ethical Considerations:
Approval of the Faculty of Nursing Ethical and Research Committee was obtained. The researchers introduced themselves to the participating women and explained the purpose of the study and its nature to obtain their written acceptance to be recruited in the study as well as to gain their cooperation. Confidentiality was achieved by the use of locked sheets with the names of the participants replaced by numbers. All the study participants were informed that the information they provided during the study would be kept confidential and used only for statistical purposes. Each woman was informed that participation in the study was voluntary and each woman could withdraw from the study whenever she decided to do so. Each woman was given the opportunity to freely refuse the participation. They were free to ask any question about the study details.

Pilot study:
A pilot study was conducted to test the feasibility, applicability, and understandability of the instruments. It was conducted on 10% of the total sample (10 women with endometriosis) according to the selection criteria. The pilot study was conducted to assess the feasibility and clarity of the instruments, and determine the needed time to answer the questions make. The necessary modifications were done. They were recruited from Obstetrics and Gynecology outpatient clinics in Menoufia University Hospital and Shebin El-Kom Teaching Hospital.

The results of the pilot study helped in refining the interviewing questionnaire and setting the final schedule. On the basis of the pilot study's results, the necessary modifications were made accordingly. All women who participated in the pilot study were excluded from the study participants to assure the stability of the results.

Procedure:
A formal letter was submitted from the Dean of the Faculty of Nursing to the directors of Menoufia University Hospital and Shebin El-Kom Teaching Hospital containing the purpose and methods of data collection to get their permission for data collection.

The data were collected over a period of 11 months from the beginning of July 2020 to the end of May 2021, in the obstetrics and gynecology outpatient clinics. It took three days per week (Saturday, Sunday, and Thursday) from 9.30 Am to 2 pm. This protocol was followed till the needed number was reached.

During the initial visit, the researcher introduced herself and explained the purpose of the research. After taking the informed consent from women, each woman was individually interviewed in the waiting area of the outpatient clinic to collect the data related to their characteristics and knowledge regarding endometriosis as well as self-care practices using instrument two and also the intensity of endometriosis-related pain symptoms such as dysmenorrhea, dyspareunia, chronic pelvic pain, dysuria, and dyschezia using instrument three. The interview took around 15-20 minutes to be completed for each participant. The researcher interviewed each woman and recorded the answers in the designed instrument. The telephone numbers of the study participants and their addresses were taken to facilitate communication.

Women who were assigned to the control group were only interviewed, and assessed for their knowledge regarding the endometriosis, the guidelines, endometriosis-related pain symptoms, and their self-care practice (pre-test).They did not receive any intervention from the researcher. The researcher scheduled each woman for a post-test after one month at the outpatient clinics or through the phone and for a follow-up assessment two months later

For the study group, the researcher identified the deficit in women's knowledge regarding endometriosis and its care. Objectives of the guide booklet were set according to the needs of the studied women and a review of related literature. A scientific booklet was planned to be provided to the studied women according to their needs.

The booklet included three chapters about endometriosis and self-care practice. The first chapter included information regarding the endometriosis definition, signs and symptoms, causes, risk factors, and common sites of endometriosis. The second chapter included information about diagnosis, treatment, and complications of endometriosis. The third chapter included information related to instructional supportive guidelines to alleviate the endometriosis-related pain symptoms and how to improve the women's self-care practice.

The implementation phase started immediately after the assessment phase. The researcher provided the instructions to the women with about endometriosis regarding the instructional supportive guidelines to relieve the endometriosis-related pain and improve the women's and self-care practices using the teaching sessions. Two teaching sessions were implemented for the women. One session was about an overview of endometriosis and one regarding the instructional supportive guidelines to relieve endometriosis-related pain symptoms and improve women's self-care practices.

As well, a discussion of the benefits of regular physical exercise which lowers the body's estrogen to relieve the endometriosis symptoms was done. Healthy diet for endometriosis which eliminates dairy foods, red meat, refined sugars, and carbohydrates was described. Soy and other high-estrogen foods should also be eliminated from the diet. Anti-inflammatory diet (e.g. green leafy vegetables, celery, broccoli, ginger, and a diet containing omega 3 such as salmon, intake of iron-rich foods) as well as psychological support was offered to the women with endometriosis

At the end of the session, the researcher advised women to apply the instructional supportive guidelines to relieve the endometriosis-related pain symptoms and improve their self-care practice. Each woman took a guide booklet and was informed about the instructional supportive guidelines.

A posttest was conducted after one month. Follow-up test was conducted 2 months later. The same data collection instruments were used. Women with endometriosis in both the study and control groups were asked to fill the post-test and follow-up test to assess their knowledge regarding the endometriosis and the guidelines using parts 3 and 4 of instrument one. They were also evaluated for their self-care practices using instrument 2 and endometriosis-related pain symptoms using instrument three after one month and after two months of the intervention. The researcher received the data via telephone contact to evaluate the effectiveness of the

intervention. This post-test took about 10 minutes for each telephone call

Statistical Analysis:

Data were collected, tabulated, statistically analyzed using an IBM personal computer with Statistical Package of Social Science (SPSS) version 22 (SPSS, Inc, Chicago, Illinois, USA). Chi-square test, student ttest, ANOVA tests were used to analyze the data.

Results

Table (1) shows the demographic characteristics of the studied women with endometriosis. It revealed that there was no statistically significant difference between the study and control groups regarding their demographic characteristics in items of, age, level of education occupation, place of residence, marital status, and the income (Where, p > 0.05).

Table (2) shows the obstetrical and gynecological history of the studied women with endometriosis. It displays that, 63.5% and 46.0% of the study and control groups were nultigravida respectively and 72.5 % and 75.0 % of the study and control groups were nullipara respectively. Regarding the sites of endometriosis, 88.0% of the study and 90.0 % of the control groups had ovarian endometriosis. The duration of endometriosis in the majority of the study and control group was > 5 years (72.0% & 56.0%) respectively. More than half of the study group and the control group (54.0% and 56.0%) stated that they had previous laparoscopy surgery for treatment of endometriosis. There was no statistically significant difference between both groups regarding the obstetrics and gynecological history (p > 0.05).

Figure (1): Shows total knowledge score between the study and control groups before the intervention (pre), at 1 month (post) and 2 months after the intervention (follow-up). The figure shows that there was a poor knowledge score before the intervention (pre-test) between the study and control groups (94.0% - 82.0%) respectively. The majority of the study group (66.0%) had fair knowledge at 1 month after the intervention (post-test) and a good knowledge score (72.0%) at 2 months after the intervention (follow up) compared to (20.0%) and (0.0%) in the control group.

Figure (2): Shows total knowledge score between the study and control groups regarding the guidelines of endometriosis before the intervention, at 1 month and at 2 months after the intervention. The figure shows that there was unsatisfactory knowledge score between the study and control groups before the intervention (pre-test) (72.0% & 96.0%) respectively. The majority of the study group (92.0% & 97.0%) had satisfactory knowledge score at 1 month after the intervention (post-test) and at 2 months after the intervention (follow up) compared to (94.0% & 84.0%) respectively have unsatisfactory knowledge scores at 1 month (post-test) and at 2 months after the intervention (follow- up) in the control group.

Table (3) Show endometriosis-related pain symptoms of the studied women with endometriosis before the intervention, at 1 month, and 2 months after the intervention (pretest, posttest & follow-up). The table shows that there was no statistically significant difference in endometriosis-related pain symptoms between the study and control groups before the intervention. Meanwhile, the table shows that there was a highly statistically significant difference between both groups 1 month after the intervention regarding

dysmenorrhea, chronic pelvic pain, dyspareunia, dyschezia, and dysuria. As well as, there was a highly statistically significant difference between the study and control groups 2 months after the intervention regarding dysmenorrhea, chronic pelvic pain, and dyspareunia.

Figure (3): Illustrates the comparison between the study and control groups regarding the mean score of endometriosis-related pain symptoms intensity before the intervention, at 1 month, and at 2 months after the intervention. It shows that the mean score of the intensity of endometriosis-related pain symptoms (dysmenorrhea, chronic pelvic pain, dyspareunia, dyschezia and dysuria) was matched in both groups before the intervention. Meanwhile, the mean score of endometriosis-related pain symptoms was remarkably reduced in the study group compared to the control group at one month and at two months after the intervention.

Results

**Table (1): Demographic Characteristics of the Studied Women (N=100).**

Variables	Study N=50		Control N=50		χ^2	P-value
	No.	%	No.	%		
Age (years)						
18-29 years	32	64.0	28	56.0	1.44	2.30
30-40 years	18	36.0	22	44.0		
Mean ± SD	31.02 ± 4.65		29.52 ± 3.42		t= 1.84	0.06
Level of education						
Illiterate	2	4.0	2	4.0		
Read and write	3	6.0	4	8.0		
Secondary education	30	60.0	28	56.0	0.24	0.97
University	15	30.0	16	32.0		
Occupation						
Working	19	38.0	20	40.0	0.43	
Housewife	31	62.0	30	60.0		0.83
Place of residence						
Urban	11	22.0	14	28.0		
Rural	39	78.0	36	72.0	0.48	0.32
Marital status						
Single	3	6.0	2	4.0		
Married	45	90.0	46	92.0	0.21	0.90
Divorced	2	4.0	2	4.0		
Income						
Enough	22	44.0	20	40.0		
Not enough	28	56.0	30	60.0	0.16	0.42

Table (2): Obstetrical and Gynecological History of the Studied Women (N=100).

Variables	Study N=50		Control N=50		χ^2	P–value
	No.	%	No.	%		
Gravidity	(N=47)		(N=48)			
Nulligravida	30	63.5	22	46.0	.3.88	0.14
1 to 2	14	30.0	22	46.0		
> 2	3	6.5	4	8.0		
Parity	(N=47)		(N=48)			
Nullipara	34	72.5	36	75.0	0.86	0.64
1 to 2	10	21.0	12	25.0		
> 2	3	6.5	0	0.0		
Sites of endometriosis						
ovarian	44	88.0	45	90.0	0. 10	0.50
rectovaginal	6	12.0	5	10.0		
Duration of endometriosis (years)						
1-2	0	0.0	4	8.0		
3-5	14	28.0	18	36.0	5.50	0.06
>5	36	72.0	28	56.0		
Types of previous surgery for treatment						
Laparotomy	2	4.0	2	4.0		
Laparoscopy	27	54.0	28	56.0		
Cystectomy	6	12.0	10	20.0	5.15	0.27
Cyst drilling or cauterization	0	0.0	2	4.0		
None	15	30.0	8	16.0		

Figure 1: Total Knowledge Score between the Study and Control Groups before the Intervention (pre), at 1 Month (post), and 2 Months after the Intervention (Follow-up) (N= 100)
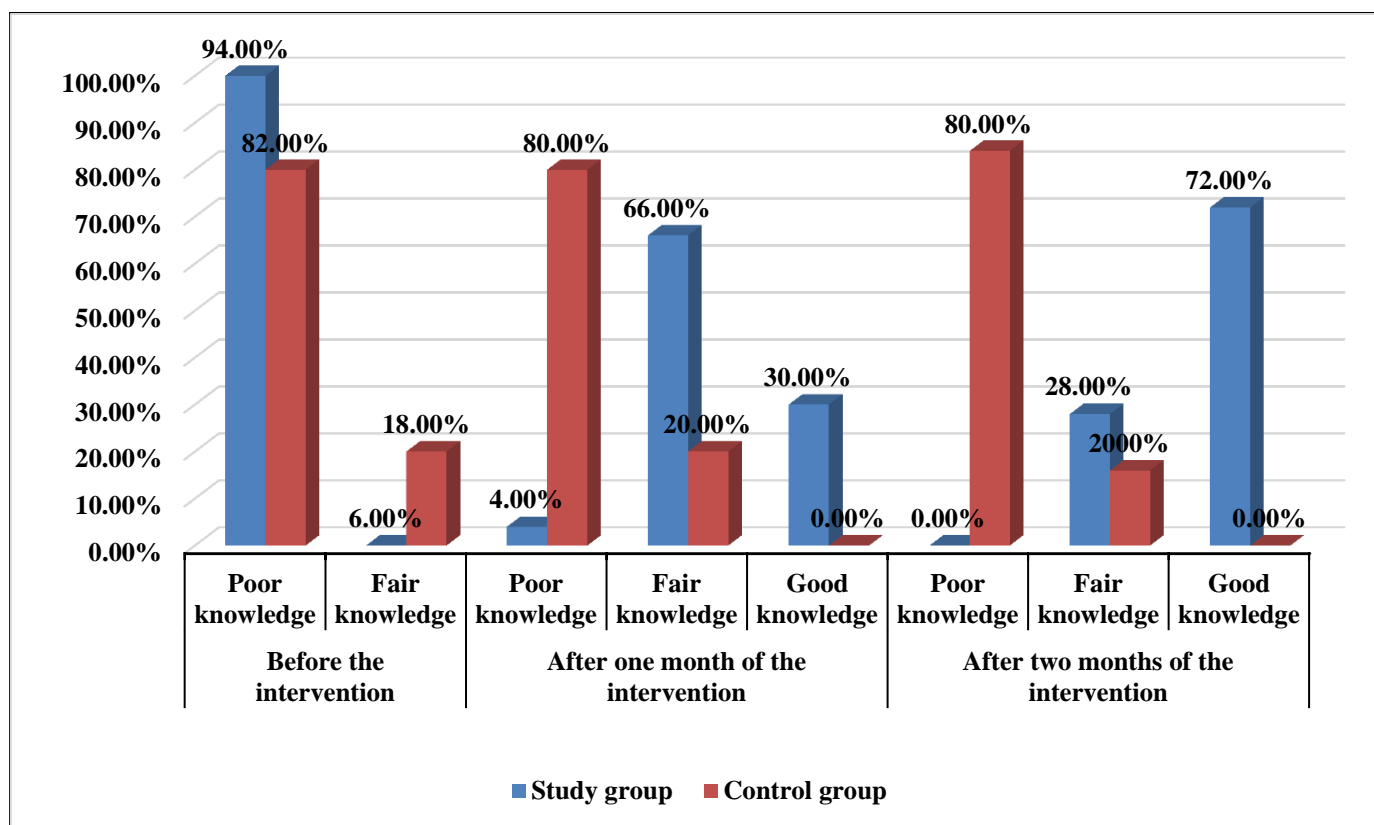
Figure 2: Total Knowledge Score between the Study and Control Groups Regarding the Guidelines of Endometriosis before the Intervention, at 1 Month, and at 2 Months after the Intervention (N=100).
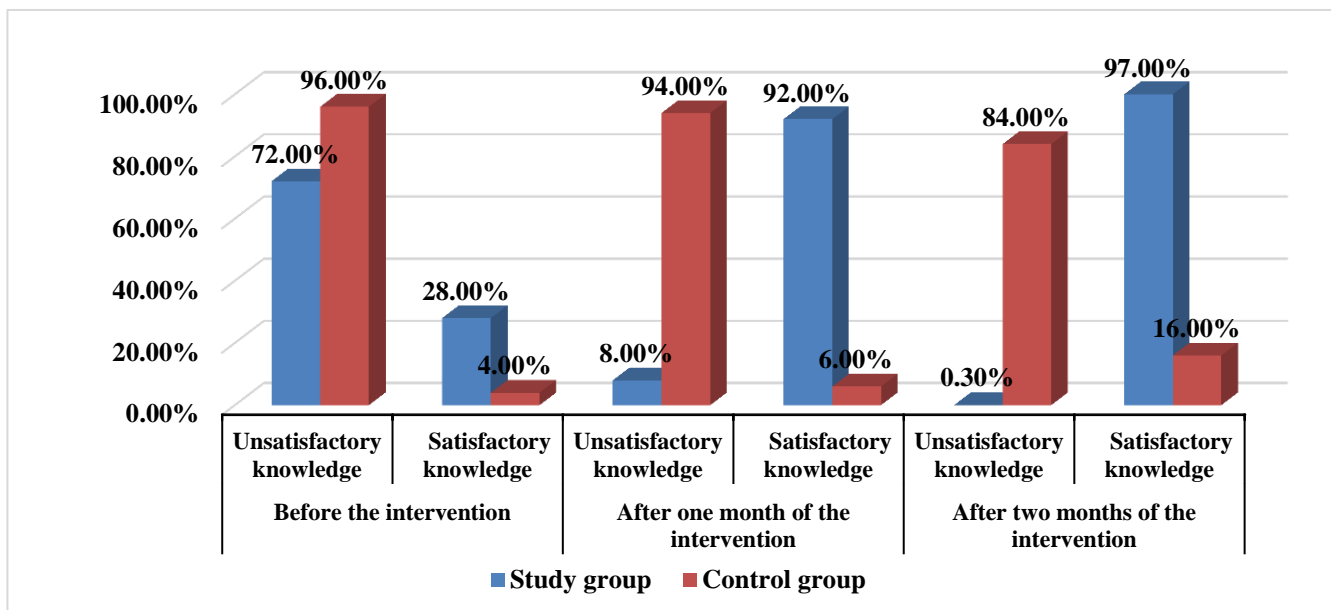

Table (3): Endometriosis-Related Pain Symptoms of the Studied Women before the Intervention, at 1 Month and 2 Months after the Intervention (Pretest, Posttest & Follow-up) (N=100).

Variables	Before the intervention				X^2 & P-Value	At one month after the intervention				X^2 & P-Value	At two months after the intervention				X^2 & P Value
	Study group (N=50)		Control group (N=50)			Study group (N=50)		Control group (N=50)			Study group (N=50)		Control group (N=50)		
	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	
Dysmenorrhea															
Mild	0	0.0	2	4.0		2	4.0	2	4.0	29.59 ** 0.00	4	8.0	2	4.0	39.85** 0.00
Moderate	9	18.0	8	16.0	2.07	37	74.0	12	24.0		41	82.0	14	28.0	
Sever	41	82.0	40	80.0	0.35	11	22.0	36	72.0		5	10.0	34	68.0	
Chronic pelvic pain															
Mild	1	2.0	3	6.0	3.53	2	4.0	3	6.0	30.0 ** 0.00	2	4.0	3	6.0	36.85 ** 0.00
Moderate	10	20.0	7	14.0	0.54	35	70.0	10	20.0		41	82.0	13	26.0	
Sever	39	78.0	40	80.0		13	26.0	37	74.0		7	14.0	34	68.0	
Dyspareunia (N=45)		(N=46)				(N=45)		(N=46)			(N=45)		(N=46)		
Mild	2	4.5	2	4.5	3.78	2	4.5	2	4.5	11.05 ** 0.004	3	6.5	2	4.5	17.43 ** 0.00
Moderate	11	24.5	13	28.0	0.06	32	71.0	17	37.0		34	75.5	16	34.5	
Sever	32	71.0	31	67.5		11	24.5	27	58.5		8	18.0	28	61.0	
Dyschezia															
Mild	12	24.0	17	34.0	5.76	27	54.0	18	36.0	4.72 * 0.004	29	58.0	19	38.0	4.08 ns 0.06
Moderate	30	60.0	30	60.0	0.06	23	46.0	30	60.0		21	42.0	29	58.0	
Severe	8	16.0	3	6.0		0	0.0	2	4.0		0	0.0	2	4.0	
Dysuria															
Mild	25	50.0	26	52.0	2.04	39	78.0	26	52.0	7.42 * 0.006	37	74.0	30	60.0	2.22 ns 0.10
Moderate	23	46.0	24	48.0	0.57	11	22.0	24	48.0		13	26.0	20	40.0	
Severe	2	4.0	0	0.0		0	0.0	0	0.0		0	0.0	0	0.0	

*= significant (p≤.05)   ** = highly statistical significant (p≤ .001).

Figure 3: Comparison between the Study and Control Groups Regarding the Mean score of Endometriosis-Related Pain Symptoms Intensity before the Intervention, at 1 Month, and at 2 Months after the Intervention.
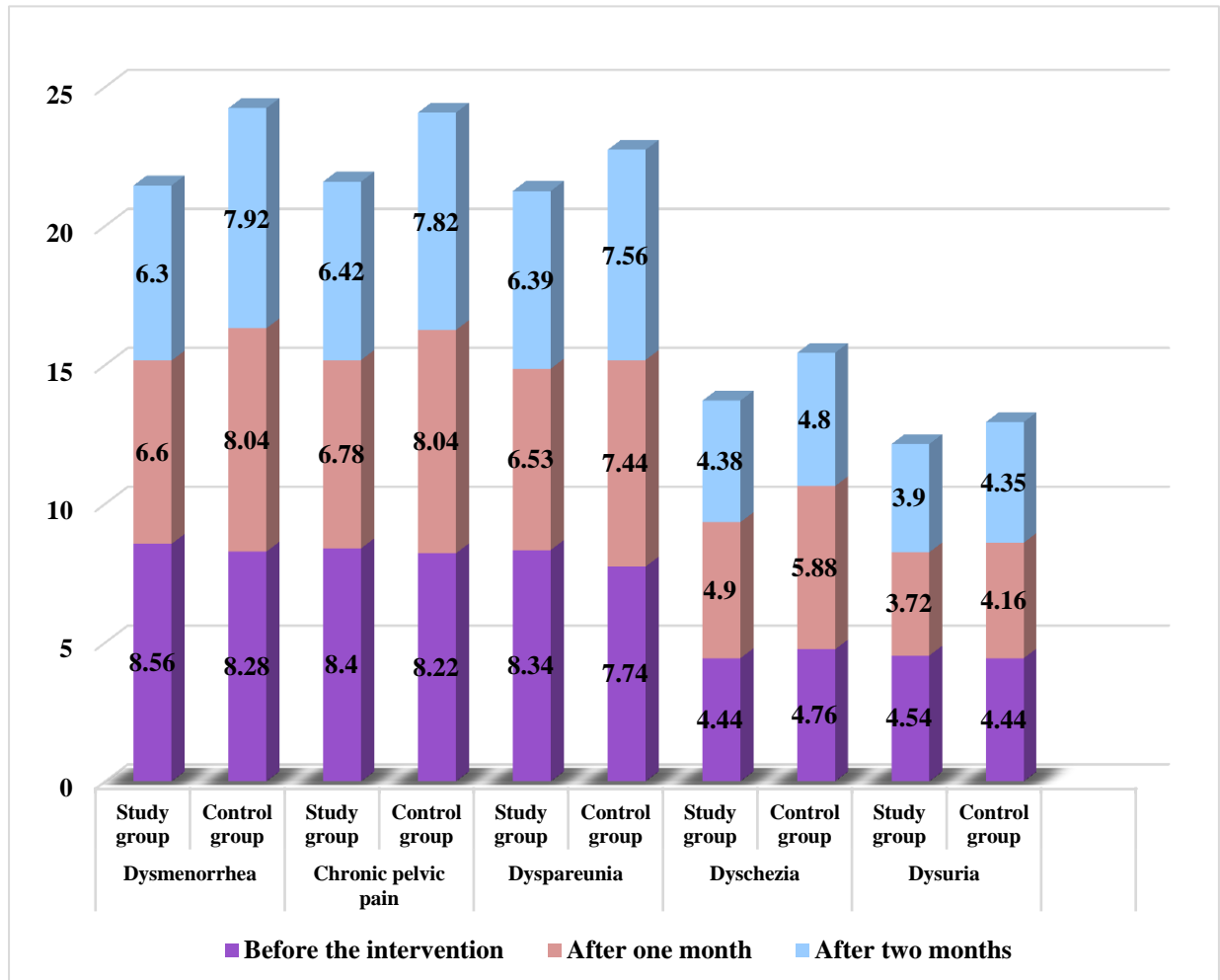
Discussion

The findings of the current study revealed that three research hypotheses were supported. The findings were discussed in the following sequence: 1- general findings regarding "demographic data" of the studied women 2-findings regarding the level of knowledge of the studied women with endometriosis regarding the endometriosis. 3-findings related to the knowledge of the studied women with endometriosis regarding the guidelines of endometriosis. 4-findings related to the endometriosis-related pain

symptoms of the studied women with endometriosis.5- findings related to the self-care practice for the studied women with endometriosis.

The present study reported that most of the study participants had inadequate knowledge regarding the endometriosis definition, risk factors, causes, common sites, complications, and its treatment before the application of the educational session as compared to after the application of the educational sessions. It also showed that post-education knowledge scores were

significantly higher in post-test and follow-up than in pretest. This might be related to the effect of health education sessions that were given to the women and due to the simple language and clarity of the educational booklet which can be clearly understood by the study group and supported them to remove any cloudiness and ambiguity and enhancing their awareness regarding endometriosis.

The results of the present study were consistent with Zanden, & Nap (2019) who studied "Knowledge and treatment strategies for, endometriosis among general practitioners" in the United Kingdom. They found that the majority of women with endometriosis had poor knowledge and needed education as they do not recognize immediately the symptoms that may be caused by endometriosis which lead to diagnostic delay.

This is also ascertained by Mohamed and Hassan., (2020) who studied "Effect of instructional supportive guideline for improving women's awareness towards endometriosis in Egypt" and mentioned that the majority of studied women had incorrect knowledge about the definition, risk factors, symptoms, prevention, and treatment which means that there was a statistically significant difference among the studied women regarding their knowledge about the endometriosis symptoms after the educational sessions.

The results of the current study displayed that the majority of women had unsatisfactory knowledge about the guidelines of endometriosis before intervention and there was a highly statistically significant improvement in the study group's knowledge regarding the guidelines of endometriosis after the implementation of the educational

sessions and at follow-up compared to their knowledge before.

This lack of knowledge may be attributed that this disease is not common among a large proportion of women and the improvement in knowledge could be attributed to the attendance of guidelines sessions, positive reinforcement and due to women's' interest in the instructional supportive guidelines as "proper diet, exercise and non-pharmacological management strategies" that help the study group to gain information about how to cope with the symptoms of endometriosis

This result was similar to Missmer et al., (2017) who revealed that women who consumed the highest amounts of omega-3 fats were less likely to have endometriosis, compared to women who consumed the lowest amounts of omega 3 in a study entitled "A prospective study of dietary fat consumption and endometriosis risk" in the USA. Omega-3 fats are believed to act as the building blocks of the body's inflammation and pain-relieving molecules, so it helps to relieve the endometriosis's pain.

Also, this finding is similar to Parazzini et al., (2020) who in their study entitled "Diet and endometriosis risk: a literature review" in Italy. They reported that women who ate more meat had an increased risk of endometriosis, compared to those who ate little meat. This means that a high intake of red meat may be associated with higher levels of estrogen in the blood and endometriosis is an estrogen-dependent disease, higher levels of estrogen may increase the risk of the condition.

The previous findings were also supported by Ghonemy & El Sharkawy, (2017) who conducted a study in Egypt to evaluate the" impact

of changing lifestyle on endometriosis-related pain" and proved that there was a significant difference in women's dietary habits at 3 months post education compared to pre-health education.

Also, Armour, et al., (2019) reported that self-management strategies, consisting of self-care or lifestyle choices, were very common amongst women with endometriosis. The most common forms used were heat, rest, and meditation or breathing exercises. Dietary changes and physical interventions such as yoga were the most highly rated in terms of self-reported effectiveness in pain reduction in a study entitled "Self-management strategies amongst Australian women with endometriosis: a national online survey" in Australia.

The findings of the present study illustrated that there was no statistically significant difference regarding the severity of endometriosis-related pain symptoms which includes (dysmenorrhea, chronic pelvic pain, dyspareunia, dyschezia and dysuria) between the study and control groups before the implementation of the instructional supportive guidelines. The majority of women with endometriosis had severe dysmenorrhea, chronic pelvic pain, and dyspareunia. This could be attributed to increasing the concentrations of prostaglandin in the menstrual blood of women with endometriosis which leads to an increase the uterine contractions and causes severe dysmenorrhea. Endometriotic lesions and adhesions may also cause deep pelvic pain and dyspareunia associated with endometriosis.

This was in accordance with Warzecha et al, (2020) who conducted a study entitled" The impact of endometriosis on the quality of life and the incidence

of depression- a cohort study" in Poland and pointed out that the most common complaints were chronic pelvic pain, dysmenorrhea, and dyspareunia. The intensity of pain was unrelated to the stage of endometriosis. The intensity of symptoms may range from mild to severe, but the level of pain does not always relate to the severity of the disease.

Also, this finding is similar to Pessoa de Farias Rodrigues et al., (2020) who investigated "Clinical aspects and the quality of life among women with endometriosis and infertility: a cross-sectional study" In Brazil. They reported that common symptoms of endometriosis are dysmenorrhea, dyspareunia, chronic pelvic pain, and intestinal or urinary pain.

Regarding the endometriosis-related pain symptoms of the study participants after the intervention, the present study also revealed that there was a decrease in numerical rating scale score of endometriosis- pains which included dysmenorrhea, chronic pelvic pain, dyspareunia, dyschezia, and dysuria after implementation of the instructional supportive guidelines and at follow up phase in the study group compared to the control group, which indicates the decrease of pain level in the study group. This improvement can be due to the impact of effective instructional supportive guidelines and lifestyle improvements that play an important role in dealing with endometriosis symptoms and helping the women to manage their symptoms and cope with the disease.

This is ascertained by Mohamed and Hassan, (2020) who conducted a study in Egypt and pointed out that there was a statistically significant relationship among the studied women regarding the level of pain and the knowledge regarding the endometriosis and

reported that designing a health education programs about the endometriosis and its coping strategies should be a priority to ensure early diagnosis of the disease and coping with its symptoms.

previous findings were also, supported by EL Sayed & Aboud, (2018) who concluded that there was a positive correlation between the endometriosis-related pain symptoms and two months of educational intervention implementation which included non-pharmacological management strategies for relieving the endometriosis-related pain symptoms such as frequent rest periods, application of heat to the lower abdomen, massage, regular physical exercise as walking three times per week for 15-30 minutes & a healthy diet for endometriosis.

This result was consistent with Moradi et al., (2018) who conducted a study in Australia entitled" Impact of endometriosis on women's lives: a qualitative study" and pointed out that lifestyle changes such as exercise, diet, and sleep are used for the management of endometriosis-related pain symptoms.

The current study revealed that there was a highly statistically significant impact in the women's self-care practices to alleviate endometriosis symptoms after implementation of the instructional supportive guidelines. The previous findings were supported by (Ghonemy & El Sharkawy, 2017) who conduct a study in Egypt and proved that there was a significant difference in women's dietary habits & exercises at 3 months post education compared to pre-health education. This could be due to women interested in educational instruction components of the instructional supportive guidelines such as "proper diet, exercise, and stress management strategies" that help the study group gain information about how to respond to the symptoms of endometriosis.

Conclusion

According to the findings of the present study, it can be concluded that there was a higher statistically significant increase in total knowledge score regarding the endometriosis and the instructional supportive guidelines after implementation of the educational session than before. This supported the first study hypothesis.

Also, the present study findings showed that there was a higher statistically significant decrease in the score of pain intensity regarding the endometriosis-related pain symptoms after implementing the instructional supportive guidelines than before. This supported the second study hypothesis.

In addition, the implementation of the instructional supportive guidelines was effective and there was a highly statistically significant difference in the score of the women's self-care practice in the study group compared to the control group. This supported the third study hypothesis. Therefore, the findings of this study supported the study hypothesis and failed to accept the null hypothesis.

Recommendations

Based on the findings of the current study, the following recommendations are proposed:

- Health education programs should be provided for women with endometriosis to improve their quality of life.
- Educational booklets in Arabic should be available for women with endometriosis to increase their

awareness regarding the guidelines to relieve the endometriosis-related pain symptoms.

- Women with endometriosis should perform regular follow-up visits to evaluate health-related quality of life and sexual function to detect any health problems early.
- Replication of the study using a large sample in different hospital settings is recommended for generalization of the results.

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