

Effect of Instructional Supportive Guidelines on Quality of Life among Women with Endometriosis

A. M. F. Alasser⁽¹⁾, D. KH. Eshra⁽²⁾, S.A.A.Saleh⁽³⁾, and Assist. Prof. E. S. S. Ashour⁽⁴⁾

(1) Assistant Lecturer in Maternal and Newborn Health Nursing, Faculty of Nursing, Menoufia University

(2) Professor of Maternal and Newborn Health Nursing, Faculty of Nursing, Menoufia University

(3) Professor of Obstetrics and Gynecology, Faculty of Medicine, Menoufia University

(4) Assistant Professor of Maternal and Newborn Health Nursing, Faculty of Nursing, Menoufia University

Corresponding email: Aya22_Mohamed20@yahoo.com.

Abstract

Background: Pain and infertility are hallmarks of endometriosis, a complex illness that, if left untreated, may have a devastating influence on a patient's life and health. **The purpose of the study** was to investigate the effect of instructional supportive guidelines on the quality of life among women with endometriosis. **Design:** The investigation was conducted using a design that was classified as quasi-experimental (non-equivalent group). **Sample:** 100 women diagnosed with endometriosis were selected as a convenience sample from a larger pool of women with the disease. **Settings:** Both Menoufia University Hospital and Shebin El-Kom Teaching Hospital (both in Egypt) participated in the research by providing access to their affiliated obstetrics and gynecology outpatient clinics. **Instruments:** A structured interviewing questionnaire, a numerical rating scale, and an endometriosis health profile questionnaire were used as the instruments in this study. **Results:** Total endometriosis knowledge ratings were drastically different of both groups, and this difference seemed extremely clinically meaningful after implementing the guidelines. In comparison to the control group, the pain associated with endometriosis was significantly less severe in the study group. This difference was statistically significant. The mean scores of the total endometriosis health profile showed impairment in quality of life in the study and control groups before the intervention. One and two months after the instructional supportive guidelines' implementation, the study group had a significantly lower mean total score of the endometriosis health profile than the control group, indicating improved quality of life. **Conclusion:** Increases in overall knowledge and decreases in endometriosis-related pain symptom severity were shown to be statistically significant outcomes of the instructional supporting guidelines. In addition, the women in the study group had a markedly better quality of life across all dimensions than those in the control group. **Recommendations:** It is vital to provide health education programs for women who have endometriosis to enhance their quality of life and expand understanding of the guidelines that may be followed in order to lessen the pain symptoms that are associated with endometriosis. It is also recommended that regular follow-up be performed in order to assess the level of health-related quality of life and identify any potential health issues at an early stage.

Keywords: Endometriosis, instructional supportive guidelines, quality of life

Introduction

Women of childbearing age are disproportionately affected by endometriosis, a chronic inflammatory condition linked to estrogen (Mowers et al., 2019). The endometrial glands and stroma are abnormally located outside of the uterus, which marks this disease. Endometriosis can be caused by a number of things, including genetics, abnormalities in the body, and environmental conditions (Giuliani et al., 2020).

Due to the fact that endometriosis can only be definitively diagnosed by laparoscopic surgery, the true incidence of the problem is unknown. As a result, many cases of the illness are not identified. On the other hand, a variety

of studies have revealed that the prevalence rate of endometriosis among women of reproductive age ranges from 2–15%. Also, studies have revealed that endometriosis affects 30–45% of women who are unable to have a child or are experiencing chronic discomfort (De Graaff et al., 2019).

According to the American Society for Reproductive Medicine (ASRM)'s classification, endometriosis can be staged from minimal to severe endometriosis (Giuliani et al., 2020). Persistent pelvic pain, dysmenorrhea, dyspareunia, dysuria, lower abdomen pain, infertility, headache, and heavy and/or irregular periods are some of the

symptoms associated with endometriosis (Silva et al., 2018).

According to Mendes and Figueiredo (2019), the chronic pain sensations of endometriosis and its negative repercussions can reduce a woman's quality of life. The harmful effects of this illness on daily life-physical, mental, social, general health, interpersonal interactions, productivity, and self-esteem have been reported by several qualitative investigations. Consequently, endometriosis symptoms are a leading contributor to female morbidity and psychosocial distress during the childbearing years. Frustration, social disintegration, and difficulty at work may all result from living with chronic pain.

Endometriosis can cause infertility, which can lead to feelings of frustration and isolation, as can a delay in receiving a diagnosis of the condition. Endometriosis can have a severe impact on sexual connections, which can wreak havoc on the bonds within a family. Because of this, endometriosis causes a significant amount of mental anguish. According to the findings of several studies, endometriosis poses a risk to patients' mental health, which calls for the possibility of providing them with psychological treatment options. Therefore, in recent years, a few researches focused on the consequences of endometriosis on quality of life (QoL), which is related to one's health (HRQoL). A multifaceted and ever-changing term, "quality of life" takes into account not only the physiological but also the social and mental components of an individual's state of health in relation to a specific illness or that illness's treatment (Facchin et al., 2019).

The instructional and supportive guidelines are those that provide best practices advice to endometriosis patients in order to prevent complications and raise awareness of endometriosis and how to cope with the disease in order to improve 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 engaging in sexual intervention (Bonoher and Colleagues, 2017).

Nurses play a crucial part in promotion of health by offering emotional support and the

necessary knowledge to women who suffer from endometriosis. This assists the women in coping with the condition and lessens the pain symptoms that are associated with endometriosis. So, the gynecological nurses play a pivotal role in facilitating diagnosis by recognizing the endometriosis-related symptoms and aiding the earlier referral. In addition, nurses should understand the current evidence and best practices guidance regarding endometriosis, as well as the obstacles and barriers that prevent women from seeking medical care early (Greg, 2018).

Significance of the study:

Endometriosis has a prevalence that ranges anywhere from 6% to 10% around the world. It was estimated that 176 million women around the world suffered from endometriosis. Endometriosis affects up to 50.0% of women who are unable to have children, 10 percent of women of reproductive age, and 70 to 90 percent of women who experience pelvic pain (American Society for Reproductive Medicine, 2018). Endometriosis impacts 8.5 million women in the United States and Canada alone, according to Kong et al. (2018). It is difficult to quantify the incidence of endometriosis in Egypt because of the absence of documentation, and the only diagnostic procedure that is considered credible is laparoscopy. As a result, according to the findings of a study conducted in the Dakahlia Governorate, the estimated prevalence of endometriosis among adolescents who suffer from severe dysmenorrhea is 12.3% (Ragab et al., 2015).

Endometriosis is a debilitating disorder that has far-reaching consequences for women's physical, mental, social, interpersonal, productive, self-esteem, reproductive, and sexual health and functioning. As a result, there is a pressing need to enhance women's health-related quality of life through the dissemination of information about endometriosis and the development of instructional supportive guidelines that can aid in the alleviation of pain sensations caused by the condition (Mendes & Figueiredo, 2018).

An examination of the research in this area indicates that there are few studies looking at how educational and supportive guidelines influence the quality of women's lives. For this reason, the current study set out to examine

how instructional supportive guidelines can affect the quality of women's lives.

Purpose of the study:

- Investigate the effect of instructional supportive guidelines on quality of life among women with endometriosis.

Research Hypotheses:

- 1- Women with endometriosis who follow the instructional supportive guidelines have a higher knowledge score about endometriosis and the instructional supportive guidelines than those who don't.
- 2- Women with endometriosis who follow the instructional supportive guidelines have lower pain intensity scores for endometriosis-related pain symptoms after receiving the educational sessions than those who do not.
- 3- Women with endometriosis who follow the instructional supportive guidelines exhibit a better quality of life in all aspects, including physical, psychological, social, and sexual aspects, after receiving the educational sessions than those who do not.

Research Design:

A non-equivalent group design, which is a type of quasi-experimental research design, was used to do the current study.

Research Settings:

The research was carried out at outpatient obstetrics and gynecology clinics that were associated with both Menoufia University Hospital and Shebin El-Kom Teaching Hospital. These facilities are public hospitals, and it is common knowledge that a significant number of women from both rural and urban areas seek care at them. In the Menoufia University Hospital's Obstetrics and Gynecology outpatient clinics, there was a flow rate of 4711 women, whereas in the Shebin El-Kom Teaching Hospital's clinics, there was a flow rate of 3812 women. These clinics also offer women services such as antenatal care, particularly for high-risk pregnancies; contraception counseling; and the diagnosis and treatment of gynecological problems such as endometriosis.

Sampling:

All women diagnosed with endometriosis during reproductive age, women with varying degrees of endometriosis severity, and women without other serious medical or gynecological

conditions that could compromise quality of life were included in the convenience sample of 100 women selected for this study. Afterwards, we split the cases into two groups using a random number generator (study and control groups). Each woman was given a slip of paper with a random number on it. Those who picked option 1 became part of the study group, while those who picked option 2 became part of the control group. This method was useful for lowering the chances of bias and contamination in the samples used.

Sample size:

Reviewing previous studies such as Metwaley & Desokey (2018) that indicated a moderate effect size (Cohen D = 0.6) between the two groups of women on measures of knowledge and quality of life. Each group's sample size was determined using the following parameters: 95% level of confidence, 80% power, and a significant level of 5% to detect significant differences. So, a convenience sample of 100 women with endometriosis had been recruited for the study.

Instruments**Instrument I: A structured interviewing questionnaire:**

The researcher relied on this particular instrument to compile all of the relevant information regarding endometriosis. The researcher constructed this instrument after doing a study of the most recent literature that was relevant to the topic (Armour et al., 2019; De Graaff et al., 2019). The instrument had four parts:

Part I: The demographic features of the participants who took part in the research. This section covered the participants' ages, levels of education, places of residence, occupations, marital statuses, and perceived incomes.

Part II: The patient's obstetrical and gynecological history. This section contained questions about the patient's gravida, para, and endometriosis sites, as well as the types of surgeries she had undergone in the past to address the condition.

Part III: It is related to determining the extent of women's understanding of endometriosis and how it affects them. Endometriosis is defined; common sites,

causes, symptoms, consequences, diagnosis, and therapy are all covered. Women were tested on their endometriosis knowledge with these questions before (pre-test), after (post-test), and two months after the intervention (follow-up).

Scoring system of knowledge:

Accurate and complete answers were worth two points; one point for correct and incomplete answers; and zero (0) for incorrect or don't know answers. The final knowledge score was determined by adding up all of the points awarded for "known things." The percentages reflected the transformed scores. Scores closer to 100 indicate a stronger general understanding of endometriosis. Here is how much of a total score was earned in terms of knowledge: Knowledge scores of 75% or higher are considered excellent, those between 75% and 50% are considered fair, and those below 50% are considered poor.

Part IV: a questionnaire for evaluating the women's level of knowledge regarding the guidelines for endometriosis. The following is how this was rated: Each criterion was assigned a score of 2 if the respondent knew it, and a score of 1 if they didn't.

Scoring system:

Taking the sum of all the points earned on each item and then dividing by the total number of questions. The percentages based on these ratings were calculated. An adequate level of familiarity with endometriosis guidelines was shown in the higher scores. If the overall score was above 50% in terms of knowledge, it was considered satisfactory; otherwise, it was considered unsatisfactory.

Instrument II: A numerical rating scale (NRS):

The Posadzka et al. (2015) pain scale was adapted to assess the severity of endometriosis-related pain. Dysmenorrhea, dyspareunia, dysuria, dyschezia, and pelvic pain are all examples of these conditions. The pain rating scale is a continuous scale from 0 (no pain) to 10 (extreme agony). Pain was rated on a scale from 0 (no discomfort) to 10 (severe agony), with 0 denoting absolutely no pain and 10 the worst conceivable suffering.

Scoring system:

In this study, women were asked to rate how severely they were now experiencing discomfort from endometriosis. On the NRS scale, which ranges from 0 to 10, a zero indicates that there is no pain; a level between 1 and 3 indicates that there is mild pain; a 4 and 6 score indicates moderate pain; and a 7 and 10 score indicates severe pain.

Instrument III: The endometriosis health profile questionnaire (EHP):

To assess the health-related quality of life for women, we adapted the EHP from Jones et al. (2001). It is one measure that has been popular worldwide. The original version of the scale was written in English, and then it was translated into Arabic. It was disproportionately longer compared to the other scales. It resulted in questions from the women about its importance. Modifications were made to create a short version of EHP for rapid assessment and to correspond with Egyptian culture.

The condensed version consisted of dimensions that are applicable to all women who have endometriosis. These dimensions include the following: pain (10 items), control and powerlessness (3 items), social support (4 items), emotional well-being (4 items), self-image (2 items), work (5 items), sexual activity (5 items), infertility (2 items), and treatment (3 items). These dimensions were categorized by the researcher into physical, psychological, social, and sexual aspects.

Scoring System:

Each component of EHP is normalized to a scale ranging from 0 to 100, where 0 represents excellent health and 100 represents poor health. The scale's total raw scores were added up and then divided by the highest possible raw score that could be earned across all of the items in the scale. These numbers were then multiplied by 100 to arrive at the scores for each item. Each statement is scored using five criteria: never equaling 0 points, rarely equaling 1 point, occasionally equaling 2 points, frequently equaling 3 points, and always equaling 4 points.

Validity of the instrument:

A panel of five highly qualified specialists confirmed the reliability of the instrument (three experts at the Maternal and Newborn

Health Nursing department, Faculty of Nursing, and two physicians from the Obstetrics and Gynecology department, Faculty of Medicine). They evaluated the instrument for and internal validity and made adjustments based on their findings.

Reliability of the instrument:

The researcher had utilized test-retest reliability in order to test the instrument's internal consistency. It had accomplished this by giving the same test to the same subjects while keeping all other aspects of the experiment the same. Its reliability has been verified with Chronbach's alpha, which revealed that all of the coefficients were desirable and satisfactory. The instruments were found to be reliable, as the reliability coefficient ranged between 0.75 and 0.90 for instrument I, $r = 0.85$ for instrument II, and 0.86 for instrument III.

Administrative Approval:

The Committee of Hearing and Ethics granted authorization to the Faculty of Nursing at Menoufia University on August 1, 2020, after the Faculty of Nursing was successful in getting permission from the Committee. In order to conduct the research, official letters were collected from the Dean of the Faculty of Nursing at Menoufia University and presented to the directors of Menoufia University Hospital and Shebin El-Kom Teaching Hospital. The directors of the aforementioned settings gave their official approval for the researchers to carry out the study after they submitted the necessary paperwork.

Ethical Considerations:

To get the women's consent to participate and cooperation, the researchers introduced themselves and discussed the study's goals and methodology. Methods were also reviewed to ensure the study was conducted ethically with respect to problems such as privacy and informed consent. Locked sheets with anonymous participant numbers were used to maintain privacy. Locked sheets with anonymous participant numbers were used to maintain privacy. Prior to participating in the study, all participants were assured that their personal data would be safeguarded and used only for statistical analysis. Following completion of the research, the results would

be presented as aggregated statistics with no identifying information about individual participants included. All of the women in the study provided formal consent after being fully briefed on the study's purpose and procedures. Every woman who participated in the study was informed that her decision to do so was completely voluntary. Any woman who didn't want to participate might have gently said so. Participants could inquire about any aspect of the research project.

Pilot study:

The instruments' usability, reliability, and interpretability were all evaluated in a pilot study. Ten women with endometriosis were chosen at random from the larger pool of endometriosis patients as part of the study's 10% sample. All of the women who took part in the pilot study were disqualified from being participants in the main study in order to guarantee the reliability of the findings, evaluate the practicability and accuracy of the instruments, and figure out how much time is required to answer the questions that are made. The essential alterations have been carried out. They came from the obstetrics and gynecology outpatient clinics at Menoufia University Hospital and Shebin El-Kom Teaching Hospital, where they were selected for the study. The results of the pilot research were helpful in refining the interview questionnaire and determining the final timetable for the project. The results of the pilot research served as the basis for the necessary adjustments, which were made in accordance with those results.

Study fieldwork:

The current investigation was carried out in four stages:

1- The preparatory phase:

An exhaustive review was carried out in order to construct the knowledge base that was pertinent to the topic that was being investigated. This review included the use of an electronic dissertation, accessible publications, and articles such as Armour et al. (2019).

2- Assessment phase:

Information was gathered at obstetrics and gynecology outpatient clinics over the course of 11 months, commencing in July 2020 and concluding in May 2021. It took three days per week (Saturday, Sunday, and Thursday) from

9.30 a.m. to 2 p.m. This protocol was followed until the needed number was reached.

Step One: The researchers presented themselves to the participants of the study and discussed the objectives of the investigation during the first visit. After obtaining informed consent from women with endometriosis who met the inclusion criteria, we conducted one-on-one interviews in the outpatient clinic's waiting area to collect information about the women's demographics, previous obstetric history, knowledge of endometriosis and endometriosis guidelines using the Instrument I, and the severity of endometriosis-related pain symptoms like dysmenorrhea, dyspareunia, pelvic pain, dysuria, and dyschezia using the Instrument II. Also, assess the women's health-related quality of life using Instrument III. The interview took about 15–20 minutes. To facilitate communication, the telephone numbers and addresses of the women under study were obtained.

Step Two: The researcher determined that women lacked awareness of endometriosis and the guidelines, that women's endometriosis-related pain sensations were increasing in severity, and that women's quality of life was being negatively affected. The goals of the handbook were established after listening to the experiences of the women in the research and reading up on the topic. The researchers' participants would have received a pamphlet with the study's findings.

Step III: The researchers prepared a guide booklet outlining the instructional supporting guidelines, and a group of subject area specialists reviewed it. It included three chapters to provide information regarding the guidelines regarding endometriosis-related pain and quality of life. The first chapter included information regarding the endometriosis definition, signs and symptoms, causes, risk factors, and common sites of endometriosis. The second chapter discussed the diagnosis, treatment, and complications. Information regarding the instructional supporting guidelines to alleviate the pain symptoms associated with endometriosis, along with

strategies for improving women's quality of life, were discussed in the third chapter.

3.The implementation phase: (for the study group only)

It began straight away following the conclusion of the assessment phase. The researcher provided instructions to the women with endometriosis regarding the instructional supportive guidelines used in the teaching sessions. Two teaching sessions were implemented for the women. There will be two sessions: the first session provides an overview of endometriosis and its consequences on women's lives, and the second session provides instructional supporting instructions to alleviate the associated pain and improve women's lives.

The researchers spoke with the participants' women over the instructional and supporting instructions, like the importance of frequent rest times, the use of warm compresses on the lower abdominal region, and massage of the area. In addition, a discussion of the benefits of frequent physical exercise, which can help reduce the endometriosis's symptoms by lowering the estrogen level produced by the body, will be included. Endometriosis sufferers should avoid consuming dairy products, red meat, processed sugars, and carbohydrates as part of a healthy diet. It is recommended that soy and other foods that are high in estrogen be removed from the diet. Women who suffer from endometriosis were encouraged to follow a diet rich in anti-inflammatory foods like green leafy vegetables, celery, broccoli, and ginger; follow a diet containing omega-3 fatty acids like salmon; increase their intake of iron-rich foods; and receive psychological support to help relieve the stress and anxiety.

The study's researchers encouraged the participants, as the session came to a close, to put the instructional supporting suggestions into practice. Each woman took a guide booklet and was informed about the instructional supportive guidelines. The researcher scheduled each woman for a post-test after one month at the outpatient clinics or over the phone and for a follow-up assessment two months later.

Control Group:

The women who were assigned to the control group were also interviewed and

assessed for their knowledge regarding endometriosis, the guidelines, endometriosis-related pain symptoms, and their quality of life (pre-test). They did not receive any intervention from the researcher. Each woman was scheduled for a post-test at the outpatient clinics or via phone after a month and a follow-up assessment two months later.

4. The evaluation phase:

Evaluations were performed 1 and 2 months after the end of the intervention (post-test and follow-up, respectively). Both the trial and control group's endometriosis patients took the Instrument I's Parts III and IV post- and follow-tests to gauge their familiarity with the condition and the recommendations. After one and two months of treatment, they were assessed for quality of life using instrument III and for pain symptoms associated with endometriosis using instruments I and II. The information necessary to assess the intervention's success was transmitted to the researcher by telephone. Each lady spent roughly 10 minutes on this post-test, and the phone call lasted roughly 10 minutes.

A comparison was then held between the study and control groups throughout the different phases of the intervention to determine whether there was a remarkable effect on the women's knowledge regarding endometriosis and the instructional supportive guidelines using the interviewing questionnaire before the intervention and after receiving the intervention guidelines. In addition, the quality of life and the endometriosis-related pain symptoms were compared between the study and control groups after one month and again after two months to ascertain the strength of the endometriosis-related pain symptoms and any changes that occurred in their quality of life.

Statistical Analysis:

All of the data collection, tabulation, and statistical analysis was done on an IBM personal computer running version 22 (SPSS, Inc., Chicago, Illinois, USA). The chi-square test, the student t-test, and an analysis of variance were used to examine the data.

Results

The demographic data of the women with endometriosis who participated in the study are presented in Table 1. Age, education, occupation, residence, marital status, and income were compared between the study and

control groups, and it was found that there was no statistically significant difference between them (where $p > 0.05$).

The gynecological and obstetric records of the women who have endometriosis are listed in Table 2. There were 63.5% nulligravidae in the study group compared to 46.0% in the control group, and 72.5% nulliparas in the study group compared to 75.0% in the control group. Ovarian endometriosis was found in 88.0 percent of the study group and 90.0 percent of the control group when examining the locations of endometriosis. Endometriosis was present in the majority of people in both the research and control groups for at least five years in 72% and 56% of the cases, respectively. Fifty-four percent of the study group and fifty-six percent of the comparison group said they had previously had laparoscopic surgery for endometriosis. No significant difference in obstetric or gynecological history was found between the two groups ($p > 0.05$).

Figure 1 displays the difference in overall knowledge score between the study and control groups before, after, 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% and 82.0%, respectively). Most of the study group (66.0%) had fair knowledge 1 month after the intervention (post-test) and a good knowledge score (72.0%) 2 months after the intervention (follow-up), compared to 20.0% and 0.0% in the control group.

Figure 2 compares the baseline levels of endometriosis knowledge between both groups with those measured before the intervention, at 1 and 2 months following the intervention. The figure shows that there was an unsatisfactory knowledge score between both groups before intervention (72.0% and 96.0%, respectively). Most of the study group had satisfactory knowledge scores one month and two months after the intervention (92.0% and 97.0%, respectively), compared to (94.0% and 84.0%, respectively) having unsatisfactory knowledge scores at 1 month (post-test) and at 2 months after the intervention (follow-up) in the control group.

Figure 3 depicts a comparison of the study and control groups in relation to the mean score of endometriosis-related pain symptom intensity before the intervention, at 1 month, and 2 months after the intervention. It displays that both groups had similar pre-intervention mean scores for the intensity of dysmenorrhea, persistent pelvic pain, dyspareunia, dyschezia, and dysuria symptoms associated with endometriosis. Furthermore, the study group experienced a significant reduction in endometriosis-related pain symptoms at both the one-month and two-month post-intervention time points, with the reduction being statistically significant.

Table 3 compares the average endometriosis health profile score between the study and control groups before the

intervention, 1 month after the intervention, and 2 months after the intervention. The table illustrates that the mean scores for EHP showed an impaired quality of life in both groups prior to the intervention. The mean EHP score was 70.76 ± 8.25 in the study group and 77.74 ± 13.09 in the control group, with no statistically significant difference (where $p > .05$). However, a highly significant difference in the mean scores was seen among women who were assessed one and two months after the intervention had taken place. A significantly lower mean total score on the EHP between the study and control groups (where $p \leq 0.001$) is indicative of an improvement in the quality of life of the study group.

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

z	Study group N=50		Control group 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 \pm SD	31.02 \pm 4.65		29.52 \pm 3.42		t=1.84	0.06
Level of education						
- Illiterate	2	4.0	2	4.0	0.24	0.97
- Read and write	3	6.0	4	8.0		
- Secondary education	30	60.0	28	56.0		
- University	15	30.0	16	32.0		
Occupation						
- Working	19	38.0	20	40.0	0.43	0.83
- Housewife	31	62.0	30	60.0		
Place of residence						
- Urban	11	22.0	14	28.0	0.48	0.32
- Rural	39	78.0	36	72.0		
Marital status						
- Single	3	6.0	2	4.0	0.21	0.90
- Married	45	90.0	46	92.0		
- Divorced	2	4.0	2	4.0		
Income						
- Enough	22	44.0	20	40.0	0.16	0.42
- Not enough	28	56.0	30	60.0		

* t= t-test

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

Variables	Study group N=50		Control group N=50		χ^2	P-value
	No.	%	No.	%		
Gravidity	(N=47)		(N=48)		3.88	0.14
- Nulligravida	30	63.5	22	46.0		
- 1 to 2	14	30.0	22	46.0		
- > 2	3	6.5	4	8.0		
Parity	(N=47)		(N=48)		0.86	0.64
- Nullipara	34	72.5	36	75.0		

- 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	5.15	
- Cystectomy	6	12.0	10	20.0		
- Cyst drilling or cauterization	0	0.0	2	4.0		
- None	15	30.0	8	16.0		0.27

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)

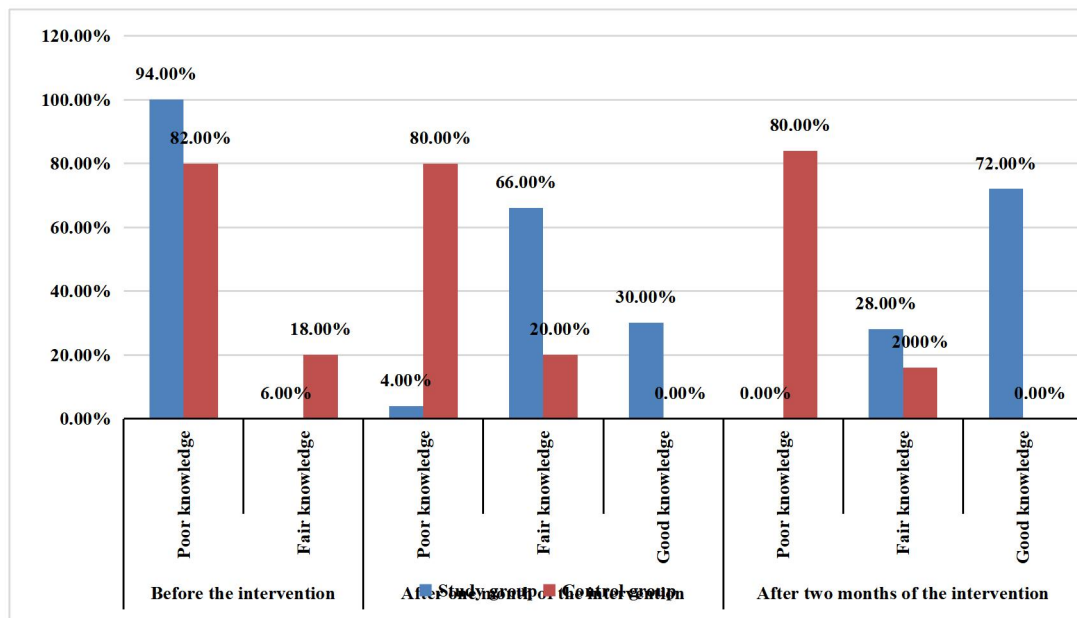


Figure 2: Mean Difference Score in Endometriosis Guidelines Knowledge between the Study and Control Groups before the Intervention, 1 Month, and at 2 Months after the Intervention (N = 100).

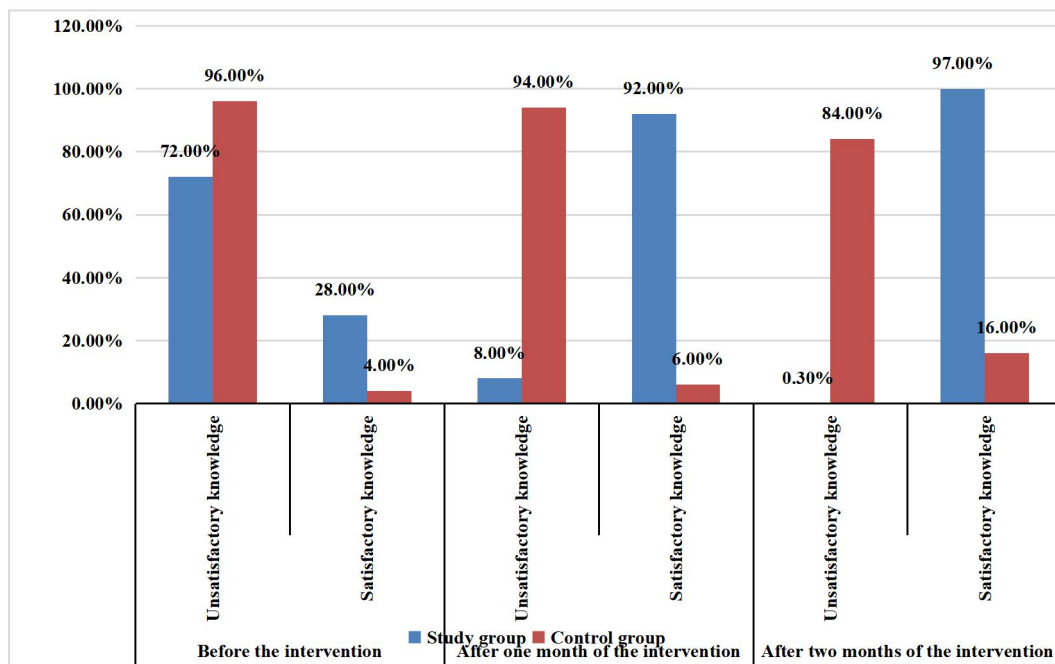


Figure 3: Comparison between the Study and Control Groups Regarding the Mean Score of Endometriosis-Related Pain Symptoms Intensity Before the Intervention, 1 Month After, and 2 Months After the Intervention

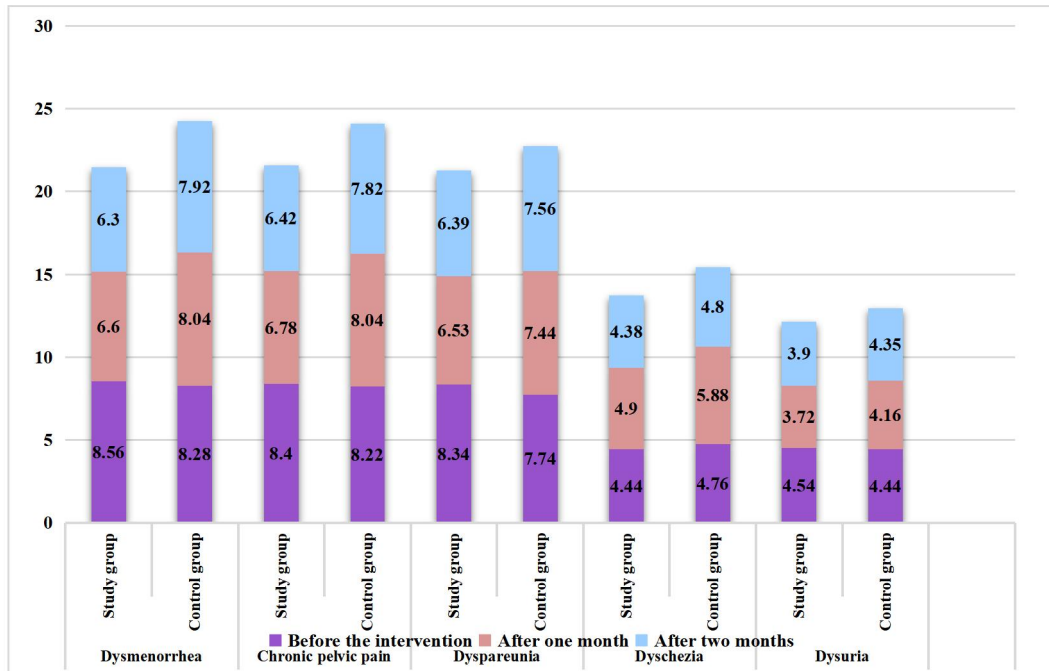


Table 3: Comparison between the Study and Control Groups with Regard to the Mean Score of the Endometriosis Health Profile Before the Intervention, 1 Month, and 2 Months After the Intervention (N = 100)

Variables	Study group (N=50) Mean ±SD	Control group (N=50) Mean ±SD	t-test	P-value
Physical aspect of quality of life:				
Pain				0.39
- Before the intervention	74.72 ± 10.22	72.81 ± 16.85	0.86	0.00
- After one month	54.04 ± 6.69	71.40 ± 16.568	10.83**	0.00
- After two months	45.86 ± 5.77	70.54 ± 16.87	13.75**	
ANOVA test	435.36**	0.23 ^{ns}		
P-value	0.00	0.79		
Psychological aspects of quality of life:				
Control and powerlessness				0.38
- Before the intervention	73.33 ± 11.14	71.66 ± 16.19	0.92	0.00
- After one month	56.16 ± 7.63	71.58 ± 16.64	9.81**	0.00
- After two months	49.41 ± 2.66	69.58 ± 17.01	12.39**	
ANOVA test	361.35**	0.25 ^{ns}		
P-value	0.00	0.78		
Emotional well-being				0.40
- Before the intervention	73.75 ± 11.03	71.00 ± 15.25	0.84	0.00
- After one month	50.16 ± 3.56	69.75 ± 16.13	10.83**	0.00
- After two months	47.0 ± 4.38	68.66 ± 15.74	12.78**	0.00
ANOVA test	372.04**	0.28 ^{ns}		
P-value	0.00	0.76		
Self-image				0.19
- Before the intervention	71.83 ± 9.63	77.33 ± 16.15	1.31	0.00
- After one month	50.16 ± 3.56	77.16 ± 15.87	12.04**	0.00
- After two months	47.0 ± 4.38	77.94 ± 15.96	12.96**	0.00
ANOVA test	446.85**	0.09 ^{ns}		
P-value	0.00	0.92		

Variables	Study group (N=50) Mean \pm SD	Control group (N=50) Mean \pm SD	t-test	P-value
Infertility				
- Before the intervention	75.0 \pm 27.66	77.87 \pm 21.66	0.78	0.43
- After one month	63.37 \pm 21.50	77.12 \pm 21.66	5.51**	0.00
- After two months	59.50 \pm 22.88	77.62 \pm 12.66	7.61**	0.00
ANOVA test	16.17**	0.11 ^{ns}		
P-value	0.00	0.89		
Treatment				
- Before the intervention	72.50 \pm 11.44	72.33 \pm 16.55	0.05	0.95
- After one month	54.83 \pm 6.75	72.33 \pm 16.55	10.87**	0.00
- After two months	51.33 \pm 4.57	70.33 \pm 15.77	12.48**	0.00
ANOVA test	221.33**	0.25 ^{ns}		
P-value	0.00	0.77		
Social aspects of quality of life:				
Social support				0.20
- Before the intervention	74.0 \pm 9.96	70.75 \pm 15.04	1.27	0.00
- After one month	53.25 \pm 5.24	70.12 \pm 15.60	11.54**	0.00
- After two months	49.87 \pm 1.54	78.50 \pm 15.05	13.37**	
ANOVA test	411.23**	0.29 ^{ns}		
P-value	0.00	0.75		
Work	(N=19)	(N=20)		
- Before the intervention	77.68 \pm 11.40	80.50 \pm 12.02	0.48	0.63
- After one month	52.36 \pm 6.09	79.50 \pm 12.02	12.07**	0.00
- After two months	50.0 \pm 0.0	79.00 \pm 11.76	14.44**	0.00
ANOVA test	160.23**	0.08 ^{ns}		
P-value	0.00	0.92		
Sexual aspect of quality of life:				
Sexual Intercourse	(N=45)	(N=46)	1.49	0.14
- Before the intervention	82.60 \pm 10.07	85.40 \pm 30.01	5.69**	0.00
- After one month	53.90 \pm 20.76	82.90 \pm 29.40	8.17**	0.00
- After two months	47.90 \pm 16.78	84.50 \pm 26.86		
ANOVA test	90.93**	0.09 ^{ns}		
P-value	0.00	0.91		
Total endometriosis health profile				
- Before the intervention	70.76 \pm 8.25	77.74 \pm 13.09	1.38	0.17
- After one month	51.07 \pm 5.49	76.93 \pm 12.74	13.18**	0.00
- After two months	46.83 \pm 4.58	76.10 \pm 12.66	15.37**	0.00
ANOVA test	430.11**	0.20 ^{ns}		
P-value	0.00	0.82		

ns = not significant ($p > .05$)

** = highly statistically significant ($p \leq .001$).

Discussion

Three hypotheses tested in this investigation were confirmed by the findings. This is how the findings were broken down: 1- overall conclusions concerning the demographic data of the women who were researched; 2- findings regarding the level of knowledge of the women with endometriosis regarding endometriosis; 3- findings related to the knowledge of women with endometriosis regarding the guidelines for endometriosis; 4- findings related to the endometriosis-related pain symptoms of the studied women with endometriosis; and 5- findings related to the health-related quality of life.

The current investigation showed that the mean age of participants in the study group was 31.02 ± 4.65 years, whereas in the control group it was 29.52 ± 3.42 years. This observation may be attributable to a number of factors, including cultural norms that teach women to accept severe pain during menstruation as normal, the difficulty of making a definitive diagnosis without invasive procedures like laparoscopy or laparotomy, and the fact that only a small percentage of women with the disease experience symptoms.

Corresponding findings were found in a 2018 Egyptian study on the "Effect of an educational intervention on quality of life and sexual function in women with endometriosis" by EL Sayed & Aboud. According to their

findings, the average ages of the participants in the study and control groups were 32.29 ± 2.58 and 31.54 ± 2.91 year, respectively.

As for education, nearly more than half of the study participants were formally educated. One possible interpretation of this is that women who live in rural areas generally choose to get their secondary educations and then get married. These results are in line with those found by Armour et al. (2020), who analyzed "Endometriosis and persistent pelvic pain have equal effects on women, although the time to diagnosis is decreasing: an Australian survey." According to their findings, most of the women who participated in the investigation had completed secondary education.

The results of this investigation indicated that most of the women who participated in the research were married, stay-at-home mothers, and lived in rural areas. It is possible that this is because of the lack of privacy they felt when discussing concerns involving their reproductive organs, which may be a result of the poor quality of sanitation in rural areas.

This was consistent with the findings of Metwally & Desoky's (2018) study in Egypt, who conducted the intervention study "Improving the quality of life among women with endometriosis: an intervention study." These researchers found that there were no statistically significant differences in the demographic data of the two groups. This demonstrates that the two groups were consistent with each other.

As for gravidity and parity, because endometriosis can affect fertility in a number of different ways, including causing adhesions and scars in the oviduct, infection of the pelvic organs, distorted immune system responses, modifications in the hormonal climate for the embryos, impeded implantation of a gestation, and changed fetal growth, the outcomes of the current research demonstrate that most of the participants were nulligravida and nullipara. This was due to the fact that the risk of endometriosis among infertile women is higher than it is among fertile women.

As several clinical and epidemiological data revealed an inverse association between parity and the likelihood of having

endometriosis, EL Sayed and About 's study (2018), in Egypt, observed that most of the study respondents were nulligravida and nullipara.

The findings of this analysis revealed that most participants had insufficient knowledge regarding the definition of endometriosis, risk factors, causes, common sites, problems, and treatment of endometriosis before the training sessions were applied in comparison to their knowledge afterward. It also showed that post-education knowledge scores were significantly higher in the posttest and follow-up than in the pretest. It's possible that this is because the informative booklet was written in plain English and was easy to follow.

Zanden and Nap (2019), who conducted research in the United Kingdom titled "Knowledge and treatment methods for endometriosis among general practitioners," found that the findings of the present study were in line with their findings. They found that most women with endometriosis had inadequate knowledge and required education because they could not immediately recognise the symptoms that may be caused by endometriosis, thus delaying the diagnostic process.

This is confirmed by Mohamed and Hassan, whose 2020 study entitled "Effect of instructional supportive guidelines for improving women's awareness about endometriosis in Egypt" found that most of the women in the study had inaccurate knowledge about the disease's definition, risk factors, symptoms, prevention, and treatment.

The outcomes of the research revealed that most of the women had inadequate awareness of endometriosis guidelines before the intervention. However, there was a statistically significant increase in the study group's knowledge of these guidelines after the implementation of the educational sessions and at follow-up.

The study group learned about "proper diet, exercise, and non-pharmacological management strategies" to deal with the symptoms of endometriosis, and this improvement in knowledge could be attributed

to the women's attendance at the guidelines' sessions, positive reinforcement, and their interest in the instructional supportive guidelines.

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 investigated "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 which 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 include (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 an increase in 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.

Findings from a Polish study by Warzecha et al. (2020), titled "The impact of endometriosis on the quality of life and the incidence of depression- a cohort study," confirmed that persistent pelvic pain, dysmenorrhea, and dyspareunia were the most often reported symptoms. This was in agreement with the findings of Warzecha et al. (2020), who found that endometriosis has a negative impact on the quality of life and the There was no correlation between the severity of symptoms and the progression of the endometriosis. The severity of symptoms can range from hardly noticeable to debilitating, although the degree of discomfort is not always proportional to the gravity of the underlying condition.

Clinical features and the quality of life among women with endometriosis and infertility: a cross-sectional study" by Pessoa de Farias Rodrigues et al. (2020) in Brazil found similar results. According to their findings, endometriosis is characterized by a variety of symptoms, the most prevalent of which are dysmenorrhea, dyspareunia, chronic pelvic pain, and intestinal or urinary pain.

Concerning the participants' endometriosis-related pain symptoms after the intervention, the present study revealed a decrease in the numerical rating scale score of endometriosis-pain, including dysmenorrhea, chronic pelvic pain, dyspareunia, dysphasia, and dysuria, in the study group after the implementation of the instructional supportive guidelines and at the follow-up phase,

compared to the control group, indicating a decrease of pain level. Effective instructional supportive guidelines and lifestyle adjustments may have contributed to this improvement, as they play a significant role in addressing endometriosis symptoms and assisting women in managing and coping with the disease.

Mohamed and Hassan (2020) conducted research in Egypt and found a correlation between the degree of pain experienced by women with endometriosis and the amount of information they had about the disease. They concluded that health education programs about endometriosis and symptom management should be developed as soon as possible.

This finding was in agreement with the findings of an Australian study by Moradi et al. (2018), titled "Impact of endometriosis on women's lives: a qualitative study," which found that exercise, nutrition, and sleep modifications are used to alleviate discomfort associated with endometriosis. Ghonemy and El Sharkawy (2017) found that participants' endometriosis-related pain and mean pain scores decreased significantly before and three months after the health education program was completed.

There was no statistically significant difference between the study and control groups on the mean score of total EHP, showing impaired quality of life regarding physical aspects prior to the implementation of instructional supportive guidelines due to physical limitation, anorexia, homework, sleeping disturbances, and taking care of children due to pain. This could be understood given that women with endometriosis have excruciating symptoms that lower their standard of living.

This agrees with the findings of a London-based study by De Graaff et al. (2017), titled "The considerable influence of endometriosis on physical, mental, and social wellbeing: results from an international cross-sectional survey." Both the physical and psychological components of quality of life

were observed to be negatively impacted by persistent pain and dyspareunia.

In addition, Fonseca et al. (2018) conducted a cross-sectional observational study in Brazil titled "Interrelationships among endometriosis-related pain symptoms and their effects on health-related quality of life," finding that women with symptomatic endometriosis experience negative physical and mental health outcomes.

The current study revealed impaired psychological aspects of quality of life among the study participants, and there was no statistically significant difference among the study participants before the intervention regarding the psychological aspects, which include control and powerlessness, emotional well-being, self-image, infertility, and their reaction toward the treatment.

The vast majority of people who took part in the research project reported that they generally felt unwell, that they were frustrated because their symptoms were not improving, that they were inadequate and depressed about not having children, and that they also had the feelings of depression, anxiety, lack of confidence, low self-esteem, worry, and frustration because of their treatment. In addition, the majority of people reported that they had the feeling that their treatment was making them feel unwell. This could be because of the painful symptoms associated with endometriosis, which have been shown to have a variety of adverse effects on the lives of women. Women who had endometriosis were not only affected by the condition itself but also by a lack of proper information and a feeling of powerlessness. The most burdensome aspect of the condition for the majority of women was fertility issues.

This discovery was supported by Warzecha, who conducted the research (2020). They discovered that a positive correlation existed between the onset of depressive symptoms such as dyspareunia, chronic pelvic discomfort, and painful defecation, all of which were known to enhance the likelihood of developing depressive symptoms. There is a correlation between the severity of endometriosis-related pain and the occurrence of clinical depression in patients.

Women with endometriosis exhibited higher levels of perceived stress compared to controls, as shown by Simoens et al.'s (2019) study, "The burden of endometriosis: expenses and quality of life of women with endometriosis and treated in referral centers" in Belgium. Women with endometriosis and chronic pelvic pain also report lower quality of life scores in areas connected to mental health, and their stress levels are higher than the general population's.

The current study found that the social aspects of quality of life were impaired among the participants of the study, and there was no statistically significant difference between the two groups before the intervention regarding the social aspects, which include social support and the effect that endometriosis has on the workplace. This might be due to a lack of social support, psychological disturbance, and the endometriosis pain that affects the productivity of the women and limits their ability to work.

The vast majority of the women who took part in the survey either did not feel comfortable sharing their feelings with others or were unable to perform their job obligations as a direct result of their discomfort.

Similar results were found by El-Maraghy et al (2017). They came to the conclusion that endometriosis has a considerable adverse impact on the amount of work that women are able to accomplish. Furthermore, the results showed that most women stated that their physical health had an impact on work-related tasks; almost two-thirds achieved less than planned, and more than half reported physical limits.

According to the results of the current study, women with endometriosis have a lower sexual quality of life than those without the condition, and this difference was not statistically significant before the intervention. It could be due to the fact that endometriosis symptoms, particularly dyspareunia, are significantly linked to an impairment of sexual function and that women's mental health play's a critical role in the quality of their intimate relationships. Negative impacts on sexual function and satisfaction were reported by the

majority of study participants, including pain during sexual activity, decreased desire and arousal, and subpar orgasm.

This study's results were consistent with those found by Arbara et al.'s study (2017), titled "What is known and unknown about the association between endometriosis and sexual functioning?" in Italy. Almost two-thirds of women with endometriosis, they noted, experienced sexual dysfunction and not just profound dyspareunia. Endometriosis' impact on a woman's sexual life is multifaceted, involving not just the physical discomfort she experiences but also her mental state and the quality of her relationships with others, including her husband's sexual performance.

A study that was carried out in London by De Graaff et al. (2017) demonstrated that women who have endometriosis have fewer sexual encounters and more frequently interrupt their intimate interactions due to the pain.

After 1 and 2 months of the intervention, the current research demonstrated a highly statistically significant difference in the mean scores of EHP between the two groups, showing an increase in health-related quality of life across all categories (physical, psychological, social, and sexual).

The study group had a considerably lower mean total score on the EHP when compared to the control group, which implies that the study group had a higher quality of life. This improvement can be linked to the influence of the instructional instructions and teaching sessions that were provided to the women with endometriosis in order to alleviate their endometriosis-related pain symptoms and enhance their quality of life. Additionally, the psychological assistance that was made available to women was helpful in allowing them to communicate their worries and complaints regarding the therapy and sexual issues.

Moradi et al. (2018), who conducted a study in Australia, agreed, noting that misunderstandings about endometriosis compound its negative effects. The negative effects of endometriosis can be mitigated, and women's quality of life can be improved, if we

have a better grasp of the disease's long-term and far-reaching effects across all phases of their lives. Thomas and Natarajan (2017) conducted research across Europe on the topic of "Diet as a New Way to Cure Endometriosis: What is the Evidence?" and reached the same conclusion: dietary factors play an important role in slowing the advancement of endometriosis, and they are important as a therapy strategy for boosting women's quality of life despite the condition.

Conclusion

The current study's findings indicate that the educational sessions resulted in a statistically significant rise in participants' total knowledge score about endometriosis and the instructional supportive guidelines than there had been prior to the educational session. This supported the first study hypothesis.

In addition, the current research found that the endometriosis-related pain symptoms were significantly lower after the instructional supportive guidelines were implemented compared to before they were implemented. This evidence backed the second hypothesis of the research.

In addition, the execution of the instructional supportive guidelines was successful, and the women's scores on the quality-of-life survey were significantly different from one another in a manner that was highly statistically significant. Participants in the study group reported significantly better quality of life than those in the control group. This was due to a significant improvement in all of the EHP categories, which cover the physical, psychological, social, and sexual elements of life. This supported the third study hypothesis. Therefore, the outcomes of this analysis supported the study hypotheses and failed to accept the null hypothesis.

Recommendations

The current study suggests the following:

- Increasing the availability of health education programs for women who have endometriosis in order to improve their overall quality of life.
- Women who suffer from endometriosis should have access to educational publications written in Arabic to help them become more knowledgeable about the

recommendations that can help alleviate the pain sensations associated with endometriosis.

- Women with endometriosis should get regular checkups so that any new health problems can be taken care of as soon as possible. These checkups should include a look at their quality of life.
- Replication and further research using a larger sample size and a variety of hospital settings are recommended to generalize these findings.

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