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, can compromise the patient’s quality of life and health significantly. The purpose of the study was to investigate 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: A structured interviewing questionnaire, numerical rating scale, and self-care practices' specific effect. Results: There was a highly statistically significant difference in total knowledge scores regarding the endometriosis and the instructional supportive guidelines after implementing the guidelines between the study and the control groups. Also, there was a highly statistically significant decrease in the intensity of endometriosis-related pain in the study group 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. Also, there was a highly statistically significant difference in the score of woman's self-care practices' in the study group compared to the control group. Recommendations: providing health education programs 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, performing regular follow up to detect any health problems early is recommended. 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
Effect of Instructional Supportive Guidelines on Alleviating Endometriosis Related pain Symptoms

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 (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 investigate the effect of instructional supportive guidelines on alleviating endometriosis-related pain symptoms.  

**Purpose of the Study:**
Investigate 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 and the instructional supportive guidelines after receiving 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) had used to carry out the present study.

**Research Settings:**
The study was conducted at Obstetrics and Gynecology outpatient clinics affiliated with Menoufia University Hospital and Shebin El-Kom Teaching Hospital. These centers are government hospitals and are known to have a high flow rate 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 in Shebin El-Kom Teaching Hospital 3812 women. These centers also provide services to the 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. This technique helped in avoiding sample contamination and bias.

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.

Instruments

**Instrument I: A 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 I: Demographic characteristics of the study participants: included age, level of education, place of residence, occupation, marital status, and perceived income.

Part II: Concerned with obstetrical and gynecological history: it included gravidity, parity, endometriosis sites, duration, and types of previous surgery for its treatment.

Part III: Concerned with an assessment of women's level of knowledge regarding endometriosis. It includes 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 IV: a questionnaire for evaluating the women's level of knowledge regarding the guidelines of endometriosis. This was scored as follows: A score of 2 was given for
Effect of Instructional Supportive Guidelines on Alleviating Endometriosis 
Related pain Symptoms

Scoring system:
The scores of the items were summed up and the total was divided by the number of the questions giving the mean score. These scores were converted into percent scores. The higher scores reflected a satisfactory level of knowledge regarding the guidelines of endometriosis. The total score was indicated as the following: satisfactory ≥ 50% of the total knowledge score and unsatisfactory if less than 50%.

Validity of the instrument
The validity of the instrument was ascertained by three experts (two experts in Maternal and Newborn Health Nursing and one expert in Obstetrics & Gynecology) who judged the instrument for content and internal validity and modifications were made.

Reliability of the instrument
It had reasonable internal reliability and good test-retest reliability. All dimensions in the instrument were internally reliable with Cronbach’s α scores ranging from 0.75 to 0.90. Internal reliability was an indication of how well the items within a scale were associated with each other or their homogeneity.

Instrument II: 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 five qualified experts (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).who judged the instrument for content and internal validity and modifications were made.

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. Scores from repeated testing were compared to test the consistency of the results over time. The instrument has a construct validity of r 0.82, and Cronbach α reliability on the demonstration section of the instrument where r 0.86.

Instrument III: Numerical rating scale (NRS):
It was adopted 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 rating 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 experts (two experts in Maternal and Newborn Health Nursing and one expert in Obstetrics & Gynecology) who judged the instrument for content and internal validity and modifications made.

**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 $r= 0.85$.

**Administrative Approval:**

An approval from the Committee of Hearing and Ethics Faculty of Nursing, Menoufia University had obtained on 8/1/2020. Official letters were taken from Dean, Faculty of Nursing, Menoufia University and were submitted to the directors of Menoufia University Hospital and Shebin El-Kom Teaching Hospital to carry out the study. Official permission was obtained to carry out the study from the directors of the above-mentioned settings.

**Ethical Considerations:**

The researchers introduced themselves to the participating women and explained the purpose of the study and its nature to obtain their acceptance to be recruited in the study as well as to gain their cooperation. Also, approaches to ensure the ethical issues were considered in the study regarding confidentiality and informed consent. 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. After finishing the study, the findings would be presented as group data with no personal participant information remaining. After explanation prior to enrollment in the study; informed consent was obtained from all women. 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 questions 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. All women who participated in the pilot study were excluded from the study participants to assure the stability of the results, 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
Effect of Instructional Supportive Guidelines on Alleviating Endometriosis Related pain Symptoms

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.

**Study fieldwork:**

The current study was carried out through four phases: a preparatory phase, an assessment phase, an implementation phase, and an evaluation phase.

1) **The preparatory phase:**

An extensive review to formulate the knowledge base relevant to the study area was conducted involving an electronic dissertation, available books, and articles such as, Armour et al. (2019). Preparation and testing of all instruments regarding validity and reliability were done. A pilot study was obtained and the necessary modifications were made.

2) **Assessment phase:**

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.

**Step I:**

During the initial visit, the researcher introduced herself and explained the purpose of the research. After taking the informed consent from the women with endometriosis who met the inclusion criteria, each woman was individually interviewed in the waiting area of the outpatient clinic to collect the data related to the demographic status, previous obstetric history, women's knowledge regarding endometriosis, women's knowledge regarding the guidelines of endometriosis using instrument I, assess the women's self-care practice using instrument II and also, the intensity of endometriosis-related pain symptoms such as dysmenorrhea, dyspareunia, chronic pelvic pain, dysuria, and dyschezia using instrument III. The interview took around 15-20 minutes to be completed for each participant. The researcher faced the women and asked them the questions in Arabic and recorded the answers in the designed instrument. The telephone numbers of the study participants and their addresses were taken to facilitate communication.

**Step II:**

The researcher identified the deficit in women's knowledge regarding endometriosis and the guidelines, increasing the intensity of endometriosis-related pain symptoms for each woman. Objectives of the guide booklet were set according to the needs of the studied women and a review of related literature. Content of the booklet was planned to be provided to the study women individually.

**Step III:**

A guide booklet about the instructional supportive guidelines on quality of life among women with endometriosis was developed by the researcher and reviewed by a group of subject area experts. It included three chapters to provide the information regarding the guidelines to relieve the endometriosis-related pain and improve the women's 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 regarding diagnosis, treatment, and complications of endometriosis. The third chapter included information regarding the instructional supportive guidelines to alleviate the endometriosis-related pain symptoms
The implementation phase: (for the study group only)
It started immediately after the assessment phase. The researcher provided the instructions to the women with endometriosis regarding the instructional supportive guidelines to relieve the endometriosis-related pain and improve the women's self-care practice 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 practice. The researcher discussed with the women the instructional supportive guidelines such as frequent rest periods, application of warm compresses to the lower abdomen, and massage. As well as a discussion of the benefits of regular physical exercise which lowers the body's estrogen to relieve the endometriosis symptoms. A healthy diet for endometriosis as eliminates dairy foods, red meat, refined sugars, and carbohydrates. Soy and other high-estrogen foods should also be eliminated from the diet. Follow an anti-inflammatory diet, for example, 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 to help in relieving the stress and the anxiety. At the end of the session, the researcher advised the 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. 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.

Control Group:
The women who were assigned to the control group were also 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.

4) The evaluation phase:
In this phase, evaluation was conducted at one month after the intervention (post-test) and after two months (follow-up test). The women with endometriosis of both study and control groups completed the post-test and follow-up test to assess their knowledge regarding the endometriosis and the guidelines using Part III and Part IV of the instrument I. They were also evaluated for their self-care practice using instrument II and the endometriosis-related pain symptoms in the form of mild or moderate and severe using the instrument III 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 woman and the telephone call took about 10 minutes. A comparison was then held between the study and control groups throughout the different phases of intervention to determine whether there was a remarkable effect on the
Effect of Instructional Supportive Guidelines on Alleviating Endometriosis Related pain Symptoms

women's knowledge regarding endometriosis and the instructional supportive guidelines using the interviewing questionnaire before the intervention and after receiving the intervention guidelines. Also, the women in the study and control groups were compared for the endometriosis-related pain symptoms and their self-care practice after one month of the intervention and also, after two months to assess the endometriosis-related pain symptoms intensity and any change in the self-care practice

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 t-test, 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 nulligravida 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
Effect of Instructional Supportive Guidelines on Alleviating Endometriosis Related pain Symptoms

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.

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

<table>
<thead>
<tr>
<th>Variables</th>
<th>Study N=50</th>
<th>Control N=50</th>
<th>χ²</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. %</td>
<td>No. %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-29 years</td>
<td>32 (64.0)</td>
<td>28 (56.0)</td>
<td>1.44</td>
<td>2.30</td>
</tr>
<tr>
<td>30-40 years</td>
<td>18 (36.0)</td>
<td>22 (44.0)</td>
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<tr>
<td>Mean ± SD</td>
<td>31.02 ± 4.65</td>
<td>29.52 ± 3.42</td>
<td>t= 1.84</td>
<td>0.06</td>
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<tr>
<td>Level of education</td>
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<td></td>
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<tr>
<td>Illiterate</td>
<td>2 (4.0)</td>
<td>2 (4.0)</td>
<td>0.24</td>
<td>0.97</td>
</tr>
<tr>
<td>Read and write</td>
<td>3 (6.0)</td>
<td>4 (8.0)</td>
<td></td>
<td></td>
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<tr>
<td>Secondary education</td>
<td>30 (60.0)</td>
<td>28 (56.0)</td>
<td></td>
<td></td>
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<tr>
<td>University</td>
<td>15 (30.0)</td>
<td>16 (32.0)</td>
<td></td>
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<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working</td>
<td>19 (38.0)</td>
<td>20 (40.0)</td>
<td>0.43</td>
<td>0.83</td>
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<td>Housewife</td>
<td>31 (62.0)</td>
<td>30 (60.0)</td>
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<td></td>
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<tr>
<td>Place of residence</td>
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<td></td>
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<tr>
<td>Urban</td>
<td>11 (22.0)</td>
<td>14 (28.0)</td>
<td>0.48</td>
<td>0.32</td>
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<td>Rural</td>
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<td>36 (72.0)</td>
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<td>Marital status</td>
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<tr>
<td>Single</td>
<td>3 (6.0)</td>
<td>2 (4.0)</td>
<td>0.21</td>
<td>0.90</td>
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<tr>
<td>Married</td>
<td>45 (90.0)</td>
<td>46 (92.0)</td>
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<tr>
<td>Divorced</td>
<td>2 (4.0)</td>
<td>2 (4.0)</td>
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<td>Income</td>
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<tr>
<td>Enough</td>
<td>22 (44.0)</td>
<td>20 (40.0)</td>
<td>0.16</td>
<td>0.42</td>
</tr>
<tr>
<td>Not enough</td>
<td>28 (56.0)</td>
<td>30 (60.0)</td>
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</table>

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.
Effect of Instructional Supportive Guidelines on Alleviating Endometriosis Related pain Symptoms

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

<table>
<thead>
<tr>
<th>Variables</th>
<th>Study N=50</th>
<th>Control N=50</th>
<th>$\chi^2$</th>
<th>P–value</th>
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<tr>
<td>Nulligravida</td>
<td>(N=47)</td>
<td>(N=48)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 to 2</td>
<td>30 63.5%</td>
<td>22 46.0%</td>
<td>.388</td>
<td>0.14</td>
</tr>
<tr>
<td>&gt; 2</td>
<td>14 30.0%</td>
<td>22 46.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 6.5%</td>
<td>4 8.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td>(N=47)</td>
<td>(N=48)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nullipara</td>
<td>34 72.5%</td>
<td>36 75.0%</td>
<td>0.86</td>
<td>0.64</td>
</tr>
<tr>
<td>1 to 2</td>
<td>10 21.0%</td>
<td>12 25.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 2</td>
<td>3 6.5%</td>
<td>0 0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sites of endometriosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ovarian</td>
<td>44 88.0%</td>
<td>45 90.0%</td>
<td>0.10</td>
<td>0.50</td>
</tr>
<tr>
<td>rectovaginal</td>
<td>6 12.0%</td>
<td>5 10.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of endometriosis (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>0 0.0%</td>
<td>4 8.0%</td>
<td>5.50</td>
<td>0.06</td>
</tr>
<tr>
<td>3-5</td>
<td>14 28.0%</td>
<td>18 36.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;5</td>
<td>36 72.0%</td>
<td>28 56.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of previous surgery for treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laparotomy</td>
<td>2 4.0%</td>
<td>2 4.0%</td>
<td>5.15</td>
<td>0.27</td>
</tr>
<tr>
<td>Laparoscopy</td>
<td>27 54.0%</td>
<td>28 56.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cystectomy</td>
<td>6 12.0%</td>
<td>10 20.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyst drilling or cauterization</td>
<td>0 0.0%</td>
<td>2 4.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>15 30.0%</td>
<td>8 16.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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)
Effect of Instructional Supportive Guidelines on Alleviating Endometriosis Related Pain Symptoms

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).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Before the intervention</th>
<th>At one month after the intervention</th>
<th>At two months after the intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Study group (N=50)</td>
<td>Control group (N=50)</td>
<td>Study group (N=50)</td>
</tr>
<tr>
<td>Dysmenorrhea</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
</tr>
<tr>
<td>Mild</td>
<td>0 0.0</td>
<td>2 4.0</td>
<td>2 4.0</td>
</tr>
<tr>
<td>Moderate</td>
<td>9 18.0</td>
<td>8 16.0</td>
<td>37 74.0</td>
</tr>
<tr>
<td>Severe</td>
<td>41 82.0</td>
<td>40 80.0</td>
<td>11 22.0</td>
</tr>
<tr>
<td>Chronic pelvic pain</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
</tr>
<tr>
<td>Mild</td>
<td>1 2.0</td>
<td>3 6.0</td>
<td>2 4.0</td>
</tr>
<tr>
<td>Moderate</td>
<td>10 20.0</td>
<td>7 14.0</td>
<td>35 70.0</td>
</tr>
<tr>
<td>Severe</td>
<td>39 78.0</td>
<td>40 80.0</td>
<td>13 26.0</td>
</tr>
<tr>
<td>Dyspareunia (N=45)</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
</tr>
<tr>
<td>Mild</td>
<td>2 4.5</td>
<td>2 4.5</td>
<td>2 4.5</td>
</tr>
<tr>
<td>Moderate</td>
<td>11 24.5</td>
<td>13 28.0</td>
<td>32 71.0</td>
</tr>
<tr>
<td>Severe</td>
<td>32 71.0</td>
<td>31 67.5</td>
<td>11 24.5</td>
</tr>
<tr>
<td>Dyschezia</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
</tr>
<tr>
<td>Mild</td>
<td>12 24.0</td>
<td>17 34.0</td>
<td>27 54.0</td>
</tr>
<tr>
<td>Moderate</td>
<td>30 60.0</td>
<td>30 60.0</td>
<td>23 46.0</td>
</tr>
<tr>
<td>Severe</td>
<td>8 16.0</td>
<td>3 6.0</td>
<td>0 0.0</td>
</tr>
<tr>
<td>Dysuria</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
</tr>
<tr>
<td>Mild</td>
<td>25 50.0</td>
<td>26 52.0</td>
<td>39 78.0</td>
</tr>
<tr>
<td>Moderate</td>
<td>23 46.0</td>
<td>24 48.0</td>
<td>11 22.0</td>
</tr>
<tr>
<td>Severe</td>
<td>2 4.0</td>
<td>0 0.0</td>
<td>0 0.0</td>
</tr>
</tbody>
</table>

*= significant (p≤.05) **= highly statistical significant (p≤ .001).
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 findings of the current study revealed that the mean age of the study and control groups was 31.02 ± 4.65 and 29.52 ± 3.42 years respectively. This finding might be due to the delay in the diagnosis in young women as a result a large proportion of women with the disease may be asymptomatic, which may lead to an underestimation in the number of cases, the diagnosis can be definitively made only by direct visualization during laparoscopy or laparotomy and culturally, the pain symptoms related to periods are usually considered natural where women are often taught to view severe pain during menses as normal, so that they do not seek the medical care. This was congruent with EL Sayed & Aboud, (2018) who study the “Effect of an educational intervention on quality of life and sexual function in women with endometriosis” in Egypt. They concluded that the mean age of the study and control groups was 32.29 ± 2.58 and 31.54 ± 2.91 years respectively.
As for education, nearly more than half of the study participants were secondary educated. This may be interpreted as the rural residents usually prefer to have secondary education and then got married. This finding is consistent with Armour et al., (2020) who study “Endometriosis and chronic pelvic pain have a similar impact on women, but time to diagnosis is decreasing: an Australian survey.” They reported that the majority of the study participants had secondary education.

The results of the present study showed that the majority of the study participants were married, housewives, and from rural residences. This may be attributed to the nature of rural sanitation and it was shameful to discuss the issues related to their reproductive organ among them. This was in accordance with Metwally & Desoky, (2018) who study “Improving the quality of life among women with endometriosis: an intervention study” in Egypt and reported that, more than three-quarters of two groups from rural residence, married and more than half of them were housewives with no statistically significant difference regarding the socio-demographic characteristics between the two groups. This reflects that the two groups were homogenous. This similarity could be justified as this study and the study of Metwally & Desoky, (2018) were carried out in the same community.

As for gravidity and parity, the results of the current study showed that the majority of the study participants were nulligravida and nullipara because the endometriosis can influence fertility in several ways as, distorted anatomy of the pelvis, cause adhesions and scars in the fallopian tubes, inflammation of the pelvic structures, altered immune system functioning, changes in the hormonal environment for the eggs, impaired implantation of a pregnancy, and altered egg quality. Also, infertile women are more likely to have endometriosis than fertile women. This is supported by EL Sayed & Aboud, (2018) who conducted a study in Egypt and found that the majority of the study participants were nulligravida and nullipara as many clinical and epidemiological data suggested an inverse association between parity and the risk of developing 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 study "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 study “Effect of instructional supportive guideline for improving women's awareness towards endometriosis in Egypt” and mentioned that the majority of the 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 most of the women had unsatisfactory knowledge regarding the guidelines of endometriosis before the 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 the guidelines sessions, positive reinforcement, and due to the 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 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...
Effect of Instructional Supportive Guidelines on Alleviating 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:

- Providing health education programs 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.

References:


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Effect of Instructional Supportive Guidelines on Alleviating Endometriosis-related Pain Symptoms


