

Nursing Strategies for Alleviating Endometriosis Related Symptoms

Asmaa Mahmoud¹, Shadia Hamido², Randa Mohamed³

¹ Assistant lecturer of Maternity & Gynecological Nursing Department- Faculty of Nursing, Ain Shams University.

^{2,3} Professor of Maternity & Gynecological Nursing-Maternity & Gynecological Department Faculty of Nursing, Ain Shams University.

Abstract

Background: Endometriosis is a chronic and incurable condition associated with debilitating pain and sub fertility that affects approximately 176 million women worldwide. **Aim:** to evaluate effect of nursing strategies on alleviating endometriosis related symptoms. **A quasi- experimental design** was utilized. The study conducted at gynecological clinics at **Ain shams University Maternity Hospital**. **A purposive sample** of sixty women who meet the criteria of the study. Data were collected through **three tools** (Endometriosis Structured Interviewing Questionnaire& Endometriosis Health Profile Questionnaire) in addition follow up sheet. **Results:** there was highly statistical significant improvement in women knowledge regarding endometriosis after implementation of nursing strategy and at follow-up time compared to their knowledge before it. Also there was statistical significant improvement in women self-care practices for alleviating endometriosis related symptoms after implementation of nursing strategy compared to their self-care practices before it. **Conclusion:** The findings of the current study supported the hypothesis and aim of the present study which stated that women who received nursing strategies had highly statistical significant improvement on total EHP-30, pain & fatigue after implementation of nursing strategy (**P value** $\geq 0.001^{**}$), and also a positive correlation between Endometriosis Health Profile (endometriosis related symptoms), pain, fatigue of the studied sample and their compliance for nursing strategies" diet, exercises& stress management". **Recommendation:** awareness program should be developed to up raise women knowledge regarding endometriosis and self-care management.

Key words: Nursing strategies, Endometriosis related symptoms.

Introduction

Endometriosis is a painful, chronic, and inflammatory disease that is characterized by the growth of endometrial-like tissue outside of the uterus which causes pain and adhesions to chronic inflammatory reactions. Its incidence and symptoms can differ

during the women menstruation process as the hormone levels fluctuate (*As-Sanie et al, 2019*).

The prevalence of endometriosis is difficult to determine in Egypt due to poor statistics, also the need for laparoscopy to confirm the diagnosis (*Gad et al., 2018*). But it was estimated

that 176 million women globally are affected with endometriosis, and in North America 8.5 million women. Up to 50.0% of women with infertility, 10.0% of women of childbearing age, also 70.0% to 89.0% of women with pelvic pain have endometriosis (*Davila, 2019*).

As, endometriosis is usually found in the lower abdomen, or pelvis, endometriosis women commonly experience very painful menstruation, pelvic pain which can last throughout the cycle, and dyspareunia (painful coitus). Some will also have bowel symptoms as bloating and diarrhea & Symptoms of bladder irritation. Also fertility is often reduced due to scarring in the pelvis makes it difficult for an egg and sperm to meet and fertilize resulting in infertility (*Patrick et al., 2017*).

The origin and cause of endometriosis remains unknown, but there are some suspected risk factors for endometriosis that include: menstrual cycle factors as early onset of menstruation, heavy or painful periods, short menstrual cycles (less than 27 days) and long periods (more than one week), also allergies – such as food, eczema, family history of endometriosis, moreover exposure to toxins & environmental pollutants which contribute to the development of endometriosis (*Seckin, 2020*).

In addition, endometriosis may be mistakenly dismissed as routine menstrual pain, particularly in younger women, due to lack of symptoms awareness, stigma or symptoms normalization. Also it may be misdiagnosed to other health problems, like pelvic inflammatory disease, fibroids, or irritable bowel syndrome.

Which result in serious delays in diagnosis from 7 to 12 years between the onset of pain symptoms and the final diagnosis of endometriosis (*Riazi et al., 2018*).

So that diagnosis of endometriosis should be done through complete history and physical examination, including speculum and bimanual examination. Because of imaging has limited utility in the diagnosis of endometriosis, as Ultrasound & magnetic resonance imaging it's necessary to visualize the lesion through a laparoscope and biopsy to confirm the diagnosis (*Wise, 2017*).

Currently, there is no cure for endometriosis, but there are different treatment options which help women to manage or relieve the symptoms that include: medical treatment, surgical, combined medical& surgical and alternative treatment. So the proper treatment for endometriosis determined by health care provider based on women overall health and medical history, current symptoms, extent of the disease, procedures or therapies, women preference, and desire for pregnancy (*Curtis & Adams, 2017*).

In addition, nursing strategy can be defined as, the "decisions, plans, and actions that are undertaken to achieve specific health care goals or for improving and maintaining women health, so that strategy results from the detailed strategic planning process (*Martin & McFerran, 2019*)

So that gynecological nurses play a pivotal role in facilitating diagnosis through recognizing the endometriosis related symptoms and aid earlier referral by using a factsheet, also nurse should understand the current

evidence and best practices guidance regarding endometriosis, adding to, breaking the obstacles & solving barriers that hinder girls & women from seeking medical care early (*Greg, 2018*).

Moreover, nurse should support endometriosis women to cope with this condition through providing easily accessible information & evidence based practices which include simple life style changes as "diet, exercise, & pain & stress management" aiming to empower women, improve quality of life, reduce pain, and prevent further progression of disease (*Horne & Pearson, 2018*).

Significance of the study:

Endometriosis women after diagnosis realize that their condition is incurable, with an unclear cause, unpredictable development & uncertain outcomes of treatment also the recurrence rate about 40% to 50% after five years of treatment. Which affect on women all aspects of life and activities of daily living that lead to an overwhelming burden at individual, family and community level (*Poulin, 2018*).

In general, curative treatment alone is not enough to promote health. Supporting healthy behavior is the main goal of health promotion. so that gynecological nurses play essential role to lessen some of this burden by providing proper information about non-pharmacological pain alleviation methods & support self-management of the disease through nursing strategies which enhance women's healthy behavior in order to long term improvement in endometriosis women health outcomes (*Roger et al, 2017*).

Aim of the study

The present study was conducted to evaluate effect of nursing strategies on alleviating endometriosis related symptoms through the following:

1-Assess women knowledge about endometriosis.

2- Assess women practices regarding endometriosis symptoms

3- Evaluate effect of nursing strategies on alleviating endometriosis related symptoms.

Research hypothesis:

The current study hypothesized that: Endometriosis women who receive nursing strategies will have less symptoms.

Subjects and Methods

(I). Technical design:

✚ Research Design:

A quasi- experimental design was (one group pre-test post-test design) used to fulfill the aim of this study.

✚ Research Setting:

The study was conducted at gynecological clinics at Ain shams University Maternity Hospital.

✚ Sample size, type, and technique:

Sample size: was calculated according to the following statistics formula $n = Z^2 \cdot \alpha / 2p (1-p) / d^2$; a sample of 63 women was included in

the study, representing 10% of the total endometriosis women who attended at the previously mentioned setting in the previous year. Final sample size was 60 endometriosis women as (3 women were drop out due to the concerned with medical or surgical treatment to get pregnant).

Sample type:

Purposive sample technique was used.

Sample criteria: The sample was collected using the following criteria:

- Women diagnosed with endometriosis "minimal, mild & moderate grade" regardless of their age, educational level and parity.
- Had telephone number for contact.
- Free from any medical or gynecological problems except endometriosis.

Tools for data collection:

Three tools were used for data collection:

I. Endometriosis Structured Interviewing Questionnaire: that was designed by the researcher to assess women's general characteristics, menstrual history obstetric & gynecological history, history related to endometriosis, woman's knowledge regarding endometriosis. It was adopted from (Taylor et al, 2017), it contain of 7 questions which includes definition, Risk factors, signs& symptoms, stages, impact of endometriosis on women,

factors that increasing the symptoms & management of endometriosis, woman's self-care practices for alleviating endometriosis related symptoms. It was adopted from (Jenkinson, Kennedy & Jones, 2001) it contain of 6 questions

❖ Scoring system:

For the knowledge items, each item was scored as three marks for complete correct answer, two marks for incomplete correct answer and one mark for incorrect answer, so the total knowledge scores ranged from 0 to 18 score.

Similarly, scoring system for women 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 was 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.

II. Endometriosis Health Profile Questionnaire: It was adapted from (Jenkinson, Kennedy & Jones, 2001), it contain three parts:

Part "1": it contains seventeen statements, first 9 questions that assess impact of endometriosis on women health. The next four questions assess impact of endometriosis on women work. Finally, the last four questions assess impact of endometriosis on women sexual relation. Each statement scored by five items, never equal 1 mark, rarely equal 2, sometimes equal 3, often equal 4 & always equal 5.

Part "2": visual analog scale "VAS": it used to assess the subject's level of pain intensity. VAS consists of

a straight line with the endpoints defining extreme limits. VAS Rating Pain level from 0 to 10, Level (0) as no Pain, level from 1 to 3 as mild pain, a score from 4 to 6 as moderate pain and score from 7 to 10 indicated worst or severe pain, the subject verbally select a value that is most in line with the intensity of pain that they have experienced.

Part "3": The Fatigue Severity Scale (FSS): it is a method of evaluating the impact of fatigue on women. The FSS questionnaire contains nine statements that rate the severity of subject fatigue symptoms. A low value (1) indicated strong disagreement with the statement, while value (2) indicated uncertain and a high value (3) indicates strong agreement.

III. Follow-up sheet: As reported by women included in the study, to assess women compliance for nursing strategies which include" the date of follow-up, nutrition, exercise, and pain & stress management), women compliance for each strategy scored as never equal (1), sometimes equal (2) & always (3).

Supportive material: "Developed nursing strategies": These strategies developed by the researcher based on review of literature (*Donatti et al., 2017*). It used to help endometriosis women know, understand and perform healthy practices in their daily life to alleviate endometriosis related symptoms which include (diet, exercises & stress management).

Content validity and reliability:

Tools validity:

The tools of data collection were submitted to a panel of three nursing expertise in the field of obstetric – gynecological to test the content validity, modifications were done according to the panel's judgments on clarity of sentences and appropriateness of content.

Tool's reliability:

The reliability was done by cronbach's Alpha coefficient test which revealed that tools consisted of relatively homogenous items as indicated by the moderate to high reliability tool was (0.86).

Ethical considerations:

The approval was obtained from Scientific Research Ethical committee in Faculty of Nursing at Ain Shams University before starting the study. The researcher clarified the aim of the study to endometriosis women that included in the study. The researcher assured maintaining anonymity and confidentiality of the subject data. Women had the right to withdraw from the study at any time.

Operational design:

Preparatory phase:

It included reviewing of the current local and international related literature using books, articles and scientific magazines to develop tools for data collection.

Pilot study:

The Pilot study was carried out on 7 cases for 3 weeks that were included in the main study sample. It was conducted to test the study process & to evaluate the efficiency and content validity of the tools as well as the all research process steps, to find the possible obstacles and problems that might be faced during data collection.

Fieldwork:

Researcher collected data two days per week from 9 am to 2 pm. Data were collected through a period of 12 months from first of November 2018 till the first of November 2019. After women had been fully informed about the research and consented for participation in the research. Data collection procedure has been done through three phases; assessment, implementation and evaluation phase.

(1) Assessment phase: done at gynecological clinics where researcher met each participant individually and fill tools of data collection at first meeting. Tools of data collection require 25-30 minutes to fill by each participant.

(2) Implementation phase: Nursing strategy was concerned mainly with endometriosis women health life style through three main components; (diet, exercise and stress management).

Researchers conducted orientation session plus three instruction sessions with participant based on woman's needs after revising tools of data collection at base line assessment. Each session had a maximum 3-4 women,

Researcher started the *orientation session* by providing women

knowledge about definition of endometriosis, risk factors, signs & symptoms, impact of endometriosis on women life, diagnosis & different management for endometriosis. This teaching session was ranged from 15-20 minute.

First instruction session was concerning with "diet", this teaching session was ranged from 20-30 minute. On this instruction session researcher used different method as visual aid "pictures" & group discussion. Women instructed to follow healthy nutrition which include all five groups, fruits, vegetables, dairy, protein, and grains. Moreover vary the protein by adding in plant-based protein like beans and legumes to lower red meat consumption & focus on healthy fats like Omega 3's

Second instruction session was related to exercises, this session was ranged from 30- 40 minute. Researcher explain the importance of regular exercises for alleviating endometriosis related symptom, then explain different types of exercise that should be performed by women "as relaxation exercises "including deep breathing, meditation & yoga", & Pelvic floor strengthening" as kegel exercise" & Stretching and flexibility exercises "including hip & buttocks stretch, also exercises to avoid it as running, jumping, and other high-impact activities. On this session, Demonstration & redemonstration, and role play have been used as a method of teaching.

Third instruction session was focus on pain & stress management, this session was ranged from 15-20 minute. Researchers explain the importance of pain & stress management for

alleviating endometriosis related symptom & how to deal with pain & stress. On this session researcher used group discussion as a method of teaching.

At the end of three instruction sessions supportive material (Arabic booklet) were distributed on each woman.

Also the researchers trained the women about how to mark their pain level on visual analogue scale and asked women to plot and rate their level of pain during its occurrence (e.g. during the menstruation, intercourse, defecation, etc.) and also fatigue severity scale.

Researchers conduct telephone call for each women every 2 weeks to ensure women compliance for nursing strategy using follow up sheet, as well as to respond for any questions.

(3) Evaluation phase:

After the implementation of nursing strategies, the effect of the intervention was assessed immediately through the post-test, and after three months later by using the 3rd & 4th part of first tool & the second tool, to evaluate the effect of nursing strategies on alleviating endometriosis related symptoms

Administrative design:

An official approval was obtained from Dean of faculty of nursing, Ain Shams University and the director of Ain Shams University Maternity Hospital as an approval for data collection through written letter containing title and aim of the study.

Statistical design:

- The collected data was coded, organized, revised and analyzed by the researcher through pentium 4 computer using program (Excel version 2000 and statistical package of social science (SPSS) version 20. and result was presented in tables and figures. Data were presented using descriptive statistics in the form of frequencies and percentages. Test of Significance was used to find out association between the variables using Friedman test and Chi square test (X^2).

Significance of the results: (statistical analysis)

- No significant difference obtained at $P > 0.05$
- significant difference obtained at $P < 0.05$ (*)
- Highly significant difference obtained at $P < 0.01$ (**)

Limitations of the study:

"3 cases" withdrawal during data collection due to they concerned with medical or surgical treatment to get pregnant.

Results:

Table (1): reveals that 55% of study samples their ages range between 30 to 39 years with mean age 32.47 ± 5.24 . Regarding residence 56.7% of study samples from urban. Moreover, 53.3% of women not work. Concerning educational level 56.7% of women have High education. As regard marital status 73.3% of women are married. On the other hand 80% of the women have enough income.

Figure (1): shows that there is highly statistically significant difference in women knowledge regarding endometriosis after implementation of nursing strategy and at follow-up time compared to their knowledge before it.

Figure (2): explains that there is statistically significant difference in women self-care practices for alleviating endometriosis related symptoms before implementation of nursing strategy versus after implementation of nursing strategy. While there is highly statistically significant difference in women self-care practices before implementation of nursing strategy versus follow-up. Moreover, there is statistically significant difference in women self-care practices after implementation of nursing strategy versus follow-up

Table (2): indicate that there is highly statistically significant difference in woman's general health after implementation of nursing strategy compared to their general health before it. While there is no statistical

significant difference in woman's work life after implementation of nursing strategy compared to their work life before it. Moreover, there is highly statistical significant difference in woman's sexual relation after implementation of nursing strategy compared to their sexual relation before it.

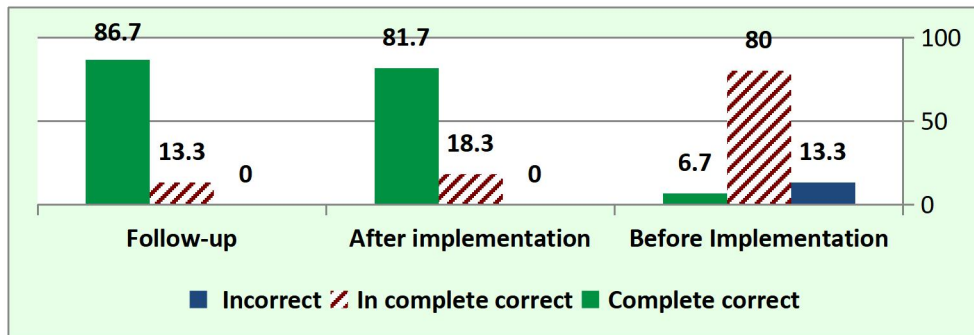
Table (3): reveals that there is highly statistically significant difference in women pelvic pains after implementation of nursing strategy compared to their pains before it.

Table (4): indicates that there is highly statistically significant difference in women fatigue after implementation of nursing strategy compared to their fatigue before it. p value <0.01 .

Table (5): indicates that there is a correlation between Endometriosis Health Profile (endometriosis related symptoms), pain, fatigue of the studied sample and women compliance for nursing strategies" diet, exercises & stress management".

Table (1): Distribution of the study sample according to their socio-demographic characteristics.

Items	No	n (60)	
			(%)
Age:			
20-29 year	10		16.7
30-39 year	33		55.0
40-49 year	17		28.3
Mean ± SD		32.47±5.24	
Residence:			
Urban	34		56.7
Rural	26		43.3
Occupation:			
Work	28		46.7
Not work	32		53.3
Educational level:			
Secondary	26		43.3
High	34		56.7
Marital status:			
Single	16		26.7
Married	44		73.3
Income:			
Enough	48		80.0
Not enough	12		20.0



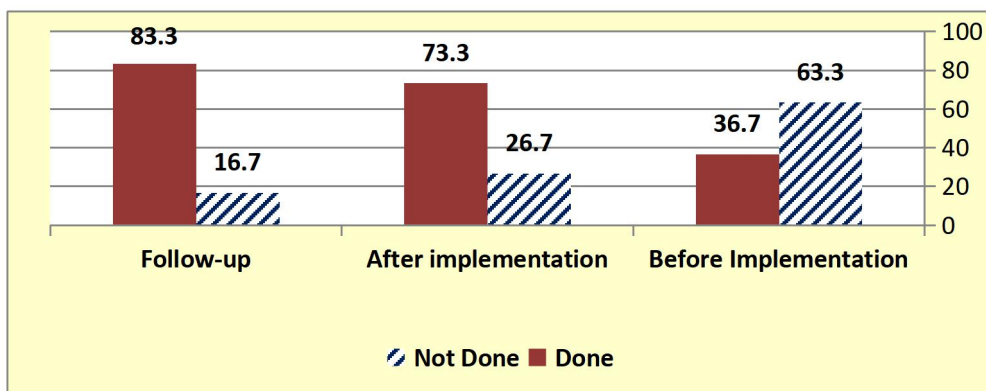
@X²=8.94 P=0.001** # X²=16.33 P=0.001**
 \$ X²=9.36 P=0.001**

Figure (1): Comparison of the study sample according to their knowledge regarding endometriosis before, after implementation of nursing strategy and at follow-up.

@Studied sample knowledge before implementation of nursing strategy versus after implementation of nursing strategy

Studied sample knowledge before implementation of nursing strategy versus follow-up

\$ Studied sample knowledge after implementation of nursing strategy versus follow-up



@ $X^2=6.84$ $P=0.01^*$ # $X^2=12.57$ $P=0.001^{**}$
 \$ $X^2=8.17$ $P=0.02^*$

Figure (2): Comparison of the study sample according to their self-care practices for alleviating endometriosis related symptoms before, after implementation of nursing strategy and at follow-up.

@Studied sample self-care practices before implementation of nursing strategy versus after implementation of nursing strategy

Studied sample self-care practices before implementation of nursing strategy versus follow-up

\$ Studied sample self-care practices after implementation of nursing strategy versus follow-up

Table (2): Distribution of the study sample according to their EHP-30 before & after implementation of nursing strategy.

Items	Before implementation of strategy	After implementation of strategy	Paired T - test	P value
	Mean \pm SD	Mean \pm SD		
Endometriosis effect on woman's general health	22.43 \pm 4.59	19.23 \pm 3.70	7.95	0.001**
Endometriosis effect on woman's work life	4.90 \pm 5.03	4.88 \pm 5.00	1.73	0.12
Endometriosis effect on woman's sexual relation	10.66 \pm 7.00	8.43 \pm 5.55	8.83	0.001**
Total	38.00 \pm 8.75	32.56 \pm 6.86	7.77	0.001**

Table (3): Distribution of the study sample according to their pains before and after implementation of nursing strategy.

Items	Before implementation of strategy	After implementation of strategy	Paired T – test	P value
Pelvic pain during period	2.77 ± 0.43	1.83 ± 0.46	8.76	0.001**
Pelvic pain during intercourse (dyspareunia)	1.93 ± 1.25	1.47 ± 1.04	6.06	0.001**
Pelvic pain at any other times	1.13 ± 0.90	0.53 ± 0.62	6.59	0.001**

Table (4): Distribution of the study sample according to their fatigue before and after implementation of nursing strategy.

Items	Before implementation of strategy	After implementation of strategy	Paired T – test	P value
Fatigue	15.73 ± 2.95	12.90 ± 2.88	10.35	0.001**

Table (5): Correlation between Endometriosis Health Profile (endometriosis related symptoms), pain, fatigue of the studied sample and women compliance for nursing strategy (diet, exercises, & stress management).

Items	Woman's compliance for (diet)		Woman's compliance for (exercises)		Woman's compliance for (stress management)	
Pelvic pain during period	r = 0.80	P= .02*	r = 0.98	P= .02*	r = 0.78	P= .04*
Pelvic pain during intercourse (dyspareunia)	r = 0.78	P= .04*	r = 0.83	P= .03*	r = 0.80	P= .03*
Pelvic pain at any other times	r = 0.82	P= .02*	r = 0.88	P= .03*	r = 0.74	P= .04*
Fatigue	r = 0.85	P= .02*	r = 0.84	P= .03*	r = 0.84	P= .03*
General health	r = 0.77	P= .04*	r = 0.82	P= .03*	r = 0.72	P= .04*
Work life	r = 0.74	P= .04*	r = 0.84	P= .03*	r = 0.70	P= .04*
Sexual relation	r = 0.72	P= .04*	r = 0.85	P= .03*	r = 0.70	P= .04*
Total EHP-30	r = 0.89	P= .01*	r = 0.97	P= .001*	r = 0.80	P= .03*

Discussion

Endometriosis is a long-term condition that can cause acute and chronic pain, and fatigue. It has a significant impact on the woman's quality of life, including relationships and sexuality, fertility, ability to work, and mental health. So, nurses and other health professionals plays an essential role in health promotion & disease management by providing evidence-

based, easily accessible information about endometriosis and ways of managing it (Lönnqvist & Erkkilä, 2018).

Accordingly, nursing strategies for women with endometriosis include simple life style changes as "diet, exercise & pain & stress management" through providing proper knowledge & healthy practices regarding endometriosis, in order to alleviate endometriosis related symptoms &

improve endometriosis women health and wellbeing (**Mette et al., 2016**).

Based on this important issue the present study was conducted to evaluate effect of nursing strategies on alleviating endometriosis related symptoms.

As regard general characteristics, the result of the present study revealed that slightly more than one half of women were between 30-39 years old with mean age 32.47 ± 5.24 . As regard place of residence more than half from urban area, and more than half of them not work. Concerning marital status nearly three fourth of them were married. While, more than half of them were high educated. Adding to, more than three fourth of them had enough income.

The present study findings was partially agreement with (**Abd El-Kader et al., 2019**) who carried out study on 109 cases with endometriosis to identify the impact of adhesions associated with endometriosis on quality of life among infertile women, and reported that mean age of cases was 32.1 ± 5.6 while 41.4% of them were college education or above, also 75.6% of them were not worked. This similarity could be justified by both study carried out at the same community.

The current study displayed that there was highly statistical significant improvement in women knowledge regarding endometriosis after the implementation of nursing strategy and at follow-up time compared to their knowledge before it (p-value <0.001).

The previous findings were consistent with (**Abd El-Mouty, Al**

Wehedy & Hassan, 2016) who conducted study to raise the awareness of Mansoura University working women about endometriosis and stated that there were significant changes in the knowledge level of the studied women about all items of educational session regarding endometriosis at post education and follow up time compared to their knowledge before the educational session. This might be due to simple language and clarity of nursing strategies which can be clearly understood by study sample and enhancing their awareness about endometriosis.

On the same line, the current study revealed that there was statistical significant improvement in women self-care practices to alleviate endometriosis symptoms after implementation of nursing strategy (P value < 0.05) and at follow up. The previous findings also supported with (**Ghonemy & El Sharkawy, 2017**) who conduct study to evaluate the impact of changing lifestyle on endometriosis related pain and proved that there was significant difference in women dietary habits & exercises at 3 months post education compared to pre-health education (P value < 0.05).

This could be due to women interested with educational instruction components of nursing strategies as "proper diet, exercise, and stress management" that help the study sample gain information about how to respond to the symptoms of endometriosis.

The current study showed that there is highly statistical significant improvement in woman's general health after implementation of nursing strategy compared to their general health before

it. This was in agreement with **Gupta et al. (2015)** who reported that endometriosis affects health on general, physical, mental and social wellbeing, sexually life, work, relationship, all daily life, and mention that there is a necessitate for more potent spread awareness sessions about the disease manifestations.

In addition, the current study displayed that there is no statistical significant difference in woman's work life after implementation of nursing strategy compared to their work life before it. The previous findings also were in the contrary with (**El-Maraghy et al., 2017**) who conduct study to assess the impact of endometriosis-related symptoms on work productivity and health-related quality of life in Egypt,

And concluded that endometriosis has a significant negative impact on work productivity and HRQoL due to their physical health; (66.4%) accomplished less than expected, (56.8%). This could be justified as more than half of study sample not work so that endometriosis related symptoms not affect the work.

The current study showed that there is highly statistical significant improvement in woman's sexual relation after implementation of nursing strategy compared to their sexual relation before it. The previous findings partially supported with (**EL Sayed & Aboud, 2018**) who conduct study to investigate the effect of an educational intervention on quality of life and sexual function in women with endometriosis.

And proved that a significant difference of the mean scores was

observed between the both groups after one and two months of implementation of an educational intervention which included non-pharmacological management strategies for relieving endometriosis-related pain symptoms such as frequent rest periods, application of heat to the lower abdominal, massage, regular physical exercise ($p \leq 0.001$). This might be attributed to effective educational nursing strategies that help women with endometriosis to cope with their condition.

On the same line, the current study revealed that there was highly statistical significant reduction in women pelvic pain after implementation of nursing strategy compared to their pain before it (**P value** ≥ 0.001). The previous findings were also consistent with (**Yousef, et al, 2019**) who conducted to evaluate sever dysmenorrhea for early recognition of endometriosis among adolescent girls.

And reported that there were statistically significant improvement of the level of pain and the number of symptoms associating dysmenorrhea among girls after three months (post-management) ($p=0.018$ and 0.000 , respectively). It was found that, while all girls (100%) had severe dysmenorrhea before management, only 28.2% of them had severe dysmenorrhea at post-management. This improvement may be due to the impact of successful nursing strategies and lifestyle changes that play an important role in dealing with endometriosis and help women managing their symptoms.

On the other hand, the current study indicated that there was highly statistical significant difference in

women fatigue after implementation of nursing strategy compared to their fatigue before it. The previous findings also supported with **Donatti et al. (2017)** who conduct study to observe correlation between coping strategies, depression, levels of stress and perception of pain in patients with endometriosis and reported that patients who used positive coping strategies had less exhaustion & fatigue ($p < 0.004$). This reflected effectiveness of nursing strategy on empowering endometriosis women to manage their fatigue.

Furthermore, the current study showed that there was a positive correlation between Endometriosis Health Profile (endometriosis symptoms), pain, fatigue and women compliance for diet. The previous study findings were in the same line of **(Armour et al., 2019)** who concluded that diet was used by almost half the women in the survey. Also, diet had high self-reported improvement scores. Moreover dietary changes may reduce pelvic pain symptoms.

This could be justified as many studies proved that diet has essential role in the pathogenesis of endometriosis because it influence in several processes related to the disease, such as inflammation, prostaglandin metabolism, and estrogen activity, so dietary modification can help to minimize the symptoms of endometriosis **(Hughes, 2017)**.

Moreover, the present study revealed that there was a correlation between Endometriosis Health Profile (endometriosis symptoms), pain, fatigue and women compliance for exercises. The previous findings also were in the contrary with **(Ghonomy & El Sharkawy, 2017)** who proved that there

was no correlation between three months post education exercise practices (physical activity) with severity of symptoms ($r = 0.052$, $p = 0.87$). This could be justified as researcher select the most simple, effective & easily preformed exercises that encourage & help the women to compliance for performing it.

previous findings also, supported with **(EL Sayed & Aboud, 2018)** who concluded that there was a positive correlation between endometriosis-related pain symptoms and two months of educational intervention implementation ($r = 0.541$, $p = 0.000^{**}$) which included non-pharmacological management strategies for relieving endometriosis-related pain symptoms such as frequent rest periods, application of heat to the lower abdominal, massage, regular physical exercise by walking three times per week for 15-30 minutes & healthy diet for endometriosis.

In addition, the present study displayed that there was a positive correlation between Endometriosis Health Profile (endometriosis symptoms), pain, fatigue and women compliance for stress management. The previous study findings were in the same line of **Donatti et al. (2017)** who found that a positive association between coping, depression levels, type and levels of stress and pain intensity in patients with endometriosis at ($p < 0.001$).

This might be due to endometriosis is usually associated with multiple types of pain that trigger a stressor so women need to develop mechanisms of coping with their illness to deal with a stressor and the management of emotions in relation to

the stressor which achieved through women compliance to instructional nursing strategy.

Conclusion

The findings of the current study supported the hypothesis and aim of present study which stated that women who received nursing strategies had highly statistical significant improvement on total EHP-30, pain & fatigue after implementation of nursing strategy (**P value** $\geq 0.001^{**}$). And also a positive correlation between Endometriosis Health Profile (endometriosis related symptoms), pain, fatigue of the studied sample and their compliance for nursing strategies" diet, exercises & stress management".

Recommendations

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

1) Awareness program should be developed to up raise women knowledge regarding endometriosis and self care management.

2) Application of nursing strategy at different clinics offer care for women suffering from endometriosis related symptoms

Further research:

1) Evaluate the effect of nursing strategies versus other methods on alleviating endometriosis related symptoms.

References

- Abd El-Kader, Gonied, A., Mohamed, M., et al. (2019):** Impact of Endometriosis-Related Adhesions on Quality of Life among Infertile Women, Zagazig University, Zagazig, Egypt Int J Fertil Steril. 2019; 13(1): 72-76. doi: 10.22074/ijfs.2019.5572.
- Abd El-Mouty, S., Al Wehedy, A. & Hassan, S. (2016):** Raising Awareness of Working Women in Mansoura University Towards Endometriosis: A Follow up Study, IOSR Journal of Nursing and Health Science (IOSR-JNHS) e-ISSN: 2320-1959, p-ISSN: 2320-1940 Volume 5, Issue 5 Ver. VI (Sep. - Oct. 2016), PP 15-23 www.iosrjournals.org
- Armour, M., Sinclair, K. Chalmers, J., et al. (2019):** Self-management strategies amongst Australian women with endometriosis: a national online survey BMC Complementary and Alternative Medicine, 19:17.
- As-Sanie, S., Linda, C., Giudice, D., et al. (2019):** Assessing research gaps and unmet needs in endometriosis American Journal of Obstetrics & Gynecology 30 (6): 60-89.
- Curtis, L. & Adams, P. (2017):** Endometriosis: From Identification to Management. mdedge 27 (5):28-32
- Davila, W. (2019):** what is the prevalence of endometriosis, Fertile Steril. 64 (5).pp:898-902.

- Donatti, L., Ramos, D., Andres, M., et al. (2017):** Patients with endometriosis using positive coping strategies have less depression, stress and pelvic pain. *einstein*. 15(1):65-70.
- EL Sayed, H. & Aboud, S. (2018):** Effect of an Educational Intervention on Quality of Life and Sexual Function in Women with Endometriosis, *Obstetrics and Woman Health Nursing*, Faculty of Nursing, Benha University, Egypt *International Journal of Studies in Nursing*; Vol. 3, No. 2; 2018 pp:127-136.
- El-Maraghy, M., Labib, K., El-Din, W.S. and Ahmed, A.B. (2017):** The Impact of Endometriosis Symptoms on Health Related Quality of Life and Work Productivity in Egypt. *Austin J Obstet Gynecol.*; 4(3): 1078. *Austin Journal of Obstetrics and Gynecology*
- Gad, M., Abdel-Gayed, Dawoud, R., et al. (2018):** Prevalence of endometriosis in unexplained infertility and chronic pelvic pain in women attending Menoufia University Hospital, *Menoufia medical journal*, vol: 30, issue: 2 pp: 356-360
- Ghonemy, G. and El Sharkawy, N. (2017):** Impact of Changing Lifestyle on Endometriosis Related Pain *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, Volume 6, Issue 2 Ver. V, PP 120-129 www.iosrjournals.org
- Greg, H. (2018):** National action plan for endometriosis, Commonwealth of Australia as represented by the Department of Health pp:8-12. available from <https://creativecommons.org/licenses/by/4.0/legalcode>
- Gupta, S., Harlev, A., Agarwal, A., Reynolds, N., Beydola, T., & Haroun, N. (2015):** Endometriosis: Impact on Patient Quality of Life. In *Endometriosis a comprehensive update: (pp.75-78)*. Springer.
- Horne, A. & Pearson, C. (2018):** Endometriosis: The Experts' Guide to Treat, Manage and Live well with your symptoms. Vermilion, London, 1st ed, pp: 28-32
- Hughes, E. (2017):** Nutritional Protocol for Endometriosis Department of Basic and Clinical Sciences, *Journal of Nutrition and Diet Supplements USA* vol 11, issue (1) p: 104.
- Jenkinson, Kennedy & Jones,(2001):** endometriosis health profile questionnaire (EHP-30) baseline vol (1). *issu(25):* 1-18.
- Lönnqvist, O. & Erkkilä, M. (2018):** Theises newest: Endometriosis and Pain Management at Home: The Nurses Role in Providing Effective Information to Patients with endometriosis, *ARCADA*, p: 52
- Martin, E. and McFerran, T. (2019):** *A Dictionary of Nursing (5 ed.)* Oxford University Press.
- Mette, A., Risoer, M., Forman, A., and Seibaek, L. (2016):** Practices and Attitudes Concerning Endometriosis among Nurses Specializing in Gynecology *Global Qualitative Nursing Research*

Global Qualitative Nursing Research. Volume 3 pp: 1 –12

Patrick, J., Stevens, Bonnie, J., Walker, Suellen, M., Zempsky, William, T. (2017): Oxford Textbook of Paediatric Pain. OUP Oxford.p-09-10.

Poulin, M. (2018): “No Good Options: Fighting diagnostic and treatment challenges for women with endometriosis” Harvard Medical School. Journal of Obstetrics and Gynaecology; 32(3): 291-293.

Riazi, H., Tehranian, N., Mohammadi, E., et al. (2018): Clinical diagnosis of pelvic endometriosis: a scoping review. BMC Womens Health. Vol:15 (39): 12-13.

Rogers, P., Adamson, G., Al-Jefout, M., Becker, C., D'Hooghe, T., et al. (2017): Research priorities for endometriosis: recommendations from a global consortium of

investigators in endometriosis, Reprod Sci.Vol: 24 issue: 2 pp: 202-226.

Seckin, T. (2020): Endometriosis: A Guide for Girls. Turner Publishing Company, New York, 1st ed, pp: 25-31.

Taylor, H.S., Giudice, L.C., Lessey, B.A. et al. (2017): Treatment of Endometriosis-Associated Pain with Elagolix, an Oral GnRH Antagonist. N Engl J Med.; 377(1): 28-40.

Wise, J. (2017): NICE urges GPs to diagnosis endometriosis more quickly, The BMJ. 358:j4186

Yousef, Y., Marzouk, S., Alam Eldien, H., et al. (2019): Early Recognition of Endometriosis Depending on Severity of Dysmenorrhea Among Adolescent Girls. American Journal of Nursing Science. Vol. 8, No. 4, 2019, pp. 197-205.