Level of Knowledge, Pain and Sleep Quality among Women with Endometriosis

Dina Ahmed Amen Ali[1]**, Amina Saad Gonied**[2]**, Faten Ibrahim Elsebeiy**[3]**, Hanan Morsy Salem**[4]

[1] B.Sc in Nursing Science-Faculty of Nursing -Zagazig University**,** [2] Professor of Obstetrics and Gynecology Nursing-Faculty of Nursing-Zagazig University, [3] Assistant Professor of Obstetrics and Gynecology Nursing-Faculty of Nursing Zagazig University, [4] Assistant Professor of Obstetrics and Gynecology Nursing-Faculty of Nursing - Zagazig University

Abstract:

Background: Endometriosis is a chronic disorder accompanied by pain and infertility that affects nearly 176 million women worldwide. **Aim of the study:** the study aim was to evaluate level of knowledge, pain and sleep quality among women with endometriosis. **Study Design**: Descriptive design. **Setting:** The study was conducted at gynecological outpatient unit of Zagazig university hospitals, Sharkia governorate, Egypt. **Study subjects:** 132 women were included in the study as purposive sample. **Tools for data collection:** Three tools were used: a structured interview questionnaire include: knowledge assessment questionnaire, pain assessment questionnaire and sleep quality questionnaire. **Results:** The current study showed that a higher percentage of women correctly knew symptoms and goal of treatment of endometriosis. Dysmenorrhea and pelvic pain were the main types of pain in the majority of studied women and the majority of the studied women had poor sleep quality. **Conclusion:** Almost half of women had poor knowledge, while more than one third of them had average level and small percentage of them had good knowledge. Half of studied women had severe pain, less than one fourth of them had moderate pain, and one fourth of them had mild pain while only small percentage of them had no pain. The majority of women had poor sleep quality, while lower percentage had good sleep quality. **Recommendations:** It is very important to raise women knowledge regarding endometriosis through mass media, educator nurse who provides knowledge to every woman go to gynecological outpatient units, duplication of the study using other sample from different geographical places to increase concentration on the diseases. Serum cancer antigen is a tumor marker is recommended in early detection and prevention of complications.

Keywords: Knowledge-Pain-Sleep Quality-Endometriosis.

Introduction:

Endometriosis is a state in which non-neoplastic endometrial glands or stroma is protruded from the uterine cavity. The ovary, pelvis, and peritoneum are the most frequent sites, though it can occur elsewhere. It manifests as endometrioma, a chocolate cyst filled with blood, in the ovary [1]. Approximately 10% of reproductive age women have the disorder, which affects 176 million women worldwide which mean one out of every ten of them has the condition. Laparoscopy revealed endometriosis in 20% to 50% of asymptomatic women, 30% to 40% of infertile women, and 80% of women with chronic pelvic pain [2].

The mechanism underlying the complicated and subjective nature of endometriosis pain is still not fully understood. There are numerous suggestions concerning the pathophysiology and routes of pain that have been extensively explored due to the variance in pain's nature and its correlation with the location and severity of the disease. Chronic pelvic pain, dyspareunia, dysmenorrhea, premenstrual pain, dysuria, and dysphasia are all symptoms of endometriosis [3].

Numerous medical and sleep disorders can affect sleep which is a crucial physiological process. Numerous researches have clarified that sleep disorders are important symptom in endometriosis [4]. Recently, a link between sleep problem and endometriosis-related symptoms

including pain has been identified. According to a study, poor sleep is linked to worse quality of life, more depressive symptoms, and bladder pain syndrome in women with endometriosis [5].

Regarding poor sleep quality, endometriosis-affected women's capacity to carry out daily functional tasks can be significantly impacted by it (decreases in total sleep time, insomnia, and difficulties falling asleep, for example). Additionally, less sleep quality causes pelvic pain to worsen, which lowers the quality of life for women [6].

A person needs to sleep in order to preserve their physical and mental health. Sleep problems can seriously impair everyday functioning and quality of life, as well as raise the risk of medical, neurological, and mental diseases. As a result of pain's neurobiological impacts, sleep quality may decrease [7].

The nurse should inform women about the illness process, debunk any illusions they may have about menstruation, and promote a healthy atmosphere in the community. The nurse must inform the woman about the likelihood of infertility, as well as, if necessary, treatment alternatives and adoption services [8].

Significance of the study:

Endometriosis is underdiagnosed, underreported, and understudied. Due to its high frequency and crippling effects on young females, which result in a significant socioeconomic cost of disease, it is recognized as a social disease [9]. Globally, the condition affects 6 to 10% and 20 to 90 percent of women who have pelvic pain or infertility have endometriosis [4]. The only accurate diagnostic procedure is laparoscopy, despite the fact that it is hard to estimate the prevalence of endometriosis in Egypt due to a lack of documentation or file systems for endometriosis women [10]. So this study was conducted to assess level of knowledge, pain and sleep quality among women with endometriosis.

Aim of the study:

To evaluate level of knowledge, pain and sleep quality among women with endometriosis. **The previous aim was fulfilled through the following objectives:**

1- Determine women knowledge about endometriosis.
2- Assess level of pain among women with endometriosis.
3- Identify sleep quality among women with endometriosis.

Research questions:

1-What is the level of knowledge among women with endometriosis?

2-What is the level of pain among women with endometriosis?

3-What is the sleep quality among women with endometriosis?

Subjects and methods:

Research design:

The current study was conducted using a descriptive design.

Study setting:

Outpatient gynaecology department at Zagazig University Hospitals in Sharkia governorate of Egypt was chosen to carry out the study since it serves a sizable woman with a variety of characteristics with wide flow rate.

Study subjects:

132 endometriosis-affected women diagnosed by the physician and attended the study site were included in the study as a purposive sample according the following standards: Endometriosis-affected women in all phases of the disease and those who agreed to participate in the study. Women with

mental illnesses and those who have attended endometriosis education programs are excluded. Sample size estimated at a 95% confidence level using the Thompson [11] calculation.

$$n = \frac{N \times p(1-p)}{\left[N-1 \times \left(d^2 \div z^2 \right) \right] + p(1-p)}$$

Tools for data collection:

Tool 1: A structured interview questionnaire: The tool was constructed by the researcher after revising related studies and literature such as **Ansong et al** [12] to gather data about main characteristics of sample which entailed of: personal data, obstetric & family history, symptoms of endometriosis and menstrual history.

Part 1: Knowledge assessment questionnaire: The researcher developed this tool depend on literature reviews and previous studies related to endometriosis as **Hassan** [9], **Schlorke** [13] **& Mohamed et al** [14].

Knowledge scoring system:

Each item in the questionnaire was given a score: (3) was given for complete correct answer, (2) was given for incomplete answer and (1) was given for incorrect or don't know answer, then the final score was summed and classified as the following:

- **Poor:** When the total level of knowledge was less than 50%.
- **Average:** When the total level of knowledge was from 50% to 75%.
- **Good:** When the total level of knowledge was more than 75%.

Tool 2: Pain assessment Questionnaire which entailed four parts: type of pain related to endometriosis, characteristics of pain, use of pain medication and its frequency and level of pain by using visual analogue scale (VAS) adopted from **Hayes and**

Patterson [15] to assess women level of pain. VAS consists of a straight line with the endpoints defining extreme limits such as no pain at all and unbearable pain. Women verbally select a value that is most in line with the intensity of pain that they have experienced from 0 to 10.

Visual analogue scale scoring system:

- Level (0) denoted no pain.
- Level from (1-3) denoted mild pain.
- Level from (4-6) denoted moderate pain
- Level from (7-10) denoted severe pain.

Tool 3: Sleep quality questionnaire by Pittsburgh sleep quality index: It was adopted from **Daniel J Buysse** [16]. It consisted of 19 items classified into seven components (sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication and daytime dysfunction).

Pittsburgh scoring system:

Every item on the scale rated from 0 to 3, then the seven components score were calculated together.

- Total score of PSQI is from 0 to 21.
- Score higher than 5 indicated poor SQ.
- Scores lower than 5 indicated good SQ.

Validity & Reliability:

Three professionals of obstetrics and gynaecology nursing field assessed the tool's content for it's validity. Adaptations were made in accordance with their judgement. Cronbach's alpha coefficient test for reliability displayed that every used tool was composed of substantially homogeneous components. The values were showed as the following: knowledge assessment (0.948), pain assessment (0.859), sleep assessment (0.854) overall reliability (0.953).

Field work:

The researcher presented in the mentioned setting three days per week from 9:30 am to 2:00 pm to gather data. The data were provided from gynaecological out-patient clinic at Zagazig University Hospitals from June 2022 to November 2022. The researcher began gathering data through two stages:

1-Interviewing stage:

In which the researcher obtained data about the following:

- Personal data which included data about age, level of education, marital status, occupation and place of residence.
- Obstetric history which contained data about gravidity number, parity number and abortion number.
- Family history of endometriosis.
- The main symptoms of endometriosis as pain, infertility and vaginal bleeding and the onset of these symptoms.
- Menstrual history which included data about age at menarche, regularity of menstrual cycle, duration of menstruation, amount of menstrual blood (4 pads/day, 5-7pads/day or 8 or more pads/day).

2-Assessment stage:

The participant women were assessed in this stage according to:

- Knowledge regarding endometriosis: in which women were asked 12 open ended questions about female genital system, definition, risk factors, causes, symptoms, site of migration, diagnosis, complications, treatment, goal of treatment prevention and the source of knowledge.

- Pain associated with endometriosis which included four questions about type of pain related to endometriosis: Presented in the form of dysmenorrhea, premenstrual pain, dyspareunia, pelvic pain, dysuria (pain during urination) and dysphasia (pain during defecation). Characteristics of pain whether it was pressure, aching or stabbing pain. Use of pain medication and its frequency. Level of pain by using visual analogue scale.

- Sleep quality which included seven components (sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction).

- The researcher conducted a single face-to-face interview to gather all data. Each interview lasted 20 to 45 minutes, depending on woman readiness (mentally and physically) or how eager they were to participate. All responses of the women were recorded on the sheet. The researcher responded to all follow-up explanations from women and corrected any faulty inquiries. The women were given educational guidelines in simplified Arabic for use in the future and to aid in rewarding other family members. The information covered nursing topics such definitions, symptoms, diagnoses, complications, treatments, and dietary changes.

Pilot study:

A pilot study was carried out on 10% (13) of the women in the sample. They were not included in the total sample size. It was conducted to assess the degree of women's understanding of the questionnaire and their interest in participating in the study, as well as to look at the clarity, viability, and time needs of the study materials. The questionnaire was recreated after the pilot study and any necessary modifications were made to create the final edition.

Administrative and ethical consideration:

By submitting an official letter from the nursing faculty to the relevant research setting authorities, approval was officially acquired for the gathering of data. The nursing and medical professionals who care for women were asked for their participation. The nursing faculty at Zagazig University's scientific and ethics committee granted their approval for the study. (M.D. ZU.NURS/175/17/5/2022) was the code of ethics. Every ethical concern was taken into account at every stage of the research. The subjects' confidentiality and identities were protected by the researcher. Before each woman agreed to participate, the researcher gave a brief clarification of the research's aim and nature. The gynaecological outpatient clinic at Zagazig University Hospital granted permission for the study to be carried out. Women were also given the assurance that the data they granted for the study would be private and utilized only for that purpose. Prior participation in the study, all participants provided oral consent.

Statistical analysis:

Version 20.0 of (SPSS) Statistical Package for the Social Sciences was utilized to gather, arrange, code, and statistically analyze the acquired data. Quantitative data is typically expressed as percentage and frequency, while qualitative continuous data is typically expressed by mean ± SD. The sample size was determined using the Steven Sampson equation. To evaluate the dependability of scales, the Cronbach's alpha coefficient was determined. To clarify the association among research variables, the X^2 test was done. To evaluate the correlation between the study variables, Pearson correlation was performed. P-values were set at 0.05 for outcomes that were significant, at 0.01 for results that were very significant, and at 0.05 for results that were statistically insignificant.

Results:

Table1 displays the participant personal data. The table shows that 59.1% of them with age >25 years with mean ± SD 32.45±5.24 years. Additionally, 56.8% of them were from urban, 67.4% of them were wives house and 74.2 % of them were married. For level of education, 44.7% of them were highly educated.

Table 2 illustrates the participant women obstetric, family history and symptoms. It shows that 32.2% of them were nulli gravida and 49.2% of studied women were nulli para. History of abortion was reported by only 16.9% of them, 70% of them had positive history for endometriosis. Regarding symptoms, they had severe pain, infertility and bleeding in (53.1%, 24.2% &22.7 respectively). Regarding onset of symptoms, 50.0% of them had long duration of symptoms longer than 7 years with delayed diagnosis less than 2 years in 42.4% of them.

Table 3 reveals knowledge of participant women regarding endometriosis. It shows that (49.2%, 45.5% & 58.3 % respectively) had incorrect knowledge about definition, risk factors and prevention of endometriosis, (65.5%, 47.7%, 47.7%, 56.1%, 44.7%, 62.1% respectively) had incomplete knowledge about of genital organs, causes, sites, complications and treatment of endometriosis. Only, (56.8% & 43.9% respectively) had complete knowledge about symptoms and treatment goal of endometriosis.

Figure 1 Illustrates total knowledge of the participant women regarding endometriosis. It shows that 53% of women had poor level of knowledge, while 35% of them average level only, 12 % of them had good level of knowledge.

Table 4 clarifies distribution of studied women regarding pain of endometriosis. It shows that dysmenorrhea was found in 75.8% of studied women. Followed by pelvic pain, dyspareunia, premenstrual

pain, painful urination and defecation (71.9%, 70.4%, 50.0 %, 21.9%, and 13.7% respectively). As for characteristics of pain, (49.1%, 31.5% &19.4% respectively) of women had pressure, stabbing and aching pain. Regarding pain medication, 72.7 % of women took pain medication with 62.5% of them took it more than once/day.

Figure 2 represents distribution of participant women regarding level of pain. It displays that 50.0% of women had severe pain, 22.7% had moderate pain, 21.2 % had mild pain and only 6.1% had no pain with min– max level of pain from 0-8 and mean ±SD 7.41±3.11.

Table 5 clarifies sleep pattern of the participant women. It displays that 65.9 % of participant women their sleep quality was very poor. Only, 9.8% of women had the best sleep latency, 18.9%of them their sleep duration was > 7 hr at night. As for sleep efficiency 8.4% of them their sleep efficiency was ≥ 85%, while 4.5% of them hadn't sleep disturbance during the past month. Regarding use of sleeping medication 64.4% of them use sleep medication ≥3 times/week during the past month. Moreover, 65.2 % of them complain from the worst daytime dysfunction.

Figure 3 illustrates total sleep quality of the participant women. It displays that 76.5% of the studied women had poor sleep quality, while 23.5% of them had good sleep quality.

Table 6 clarifies relation between personal data of the studied women and level of knowledge. It displays that there was a significant relation between level of knowledge and education, occupation and residence. Higher percentage of average level of knowledge was among highly educated, working women and urban residence (P = 0.000**, 0.000**& 0.000**respectively).

Table 7 indicates relation between menstrual history and sleep quality. It shows a significantly association between total sleep quality and menstrual regularity, menstrual amount and painful menstruation. Higher percentage of poor sleep quality was among irregular menstruation, heavy menstrual amount ≥8 pads/day and painful menstruation. (P = 0.002*, 0.023*& 0.022* respectively).

Table 8 reflects highly significant relation between level of pain and sleep quality. It shows that there was significant relation between level of pain and total sleep quality. High percentage of moderate and severe pain associated with poor sleep quality. P = 000**.

Table 9 reflects positive correlation between total knowledge, level of pain and sleep quality. It reveals a significant correlation among total sleep quality and level of pain (r= 0.709, p= 0.000**). Also, no significant correlation among total sleep quality and total knowledge (r =0.018, p = 0.842).

Discussion:

The current study aimed to evaluate level of knowledge, pain and sleep quality among women with endometriosis. Gynecological unit at the outpatient clinic of Zagazig university hospitals was chosen to conduct the current study at as it produces care with high flow rate to huge number of population over Sharkia governorate, Egypt. Main six sections were discussed in the current study which contained women general features, women knowledge regarding endometriosis, women level of pain, sleep quality, relation between the studied variables and correlation between the studied variables.

Concerning personal data of the participant women, approximately three fifth of women were more than 25 years and nearly one third of them were ranges from 20-25 years with mean ± SD 32.45±5.24 years. As for level of education, about half of them were high education and about two fifth of them were secondary education. Moreover, more than two third of them were house

wives. Additionally, more than half of them were urban residents and nearly three quarters of them were married.

The study by Mohamed et al [14] about effect of instructional nursing strategies on endometriosis symptoms at Ain shams university maternity hospital, Egypt was consistent with the current study results. It mentioned that the mean age of women was 32.47 ±5.42 years. Concerning education, 56.7% of them were highly educated, 73.3% were married, 53.3% not working and 56.7% from urban area. The similarity might be related to both studies conducted in similar community.

As for obstetric history of the studied women, the present study findings revealed that nearly one third were nulli gravida and more than half of the studied women had 1-2 pregnancy. Regarding number of parity, nearly half of them were nullipara. The result was consistent with Mohamed [9] who performed a study at Mansoura university hospitals, Egypt to enhance young female knowledge about endometriosis and found that 42.6 % were nulli gravida, 46% were nullipara and 53.1% of women were primi gravida. These finding may be due to the effect of endometriosis on women's fertility. As fertility is often reduced due to scarring in the pelvis makes it hard for an egg and sperm to meet.

As for symptoms of endometriosis, severe pain was the main complain among more than half of studied women followed by infertility. The result agreed with Hemmert et al [18] in a study about modifiable life style factors and risk for incident endometriosis in San Francisco and stated that main complaint was severe pelvic pain in 63% of women.

Regarding onset of symptoms, half of the studied women had long period of symptoms > 7 years with delayed diagnosis reached to 2 years in more than two fifth of them. In the same line with Brandes et al [19] who carried out a study about differences in the time course of disease progression, quality of life and health service utilization in women with endometriosis at German and mentioned that most of the women already had symptoms for an average of 7.7 years with diagnostic delay.

Pertaining knowledge of studied women regarding endometriosis, the present study clarified that nearly half of them had incorrect knowledge about the definition and risk factors of endometriosis, and more than half had incorrect knowledge about prevention of endometriosis. The study of Mohamed & hassan [10] corresponds well with the current study results as in the pre intervention test that only 19% of women defined endometriosis, 17.0% of them mentioned risk factors and 25 % of them knew prevention measures of endometriosis.

The same study displayed that more than half of studied women had complete knowledge about symptoms and less than half of them had complete knowledge about goal of treatment of endometriosis. These results were in conflict with Hassan [9] found that only 6% of women knew manifestation and 6% of them identified goal of treatment of endometriosis and the most corrected knowledge about risk factors and definition of endometriosis.

The same result clarified that less than half of women had incomplete knowledge about causes, sites and diagnosis of endometriosis. In the same line with [17] who performed a study about effectiveness of lifestyle modification on symptoms among reproductive age women and stated that 66.0% of women had incomplete knowledge about causes of endometriosis and Abd El-Mouty et al [20] on a study about raising awareness of working women in Mansoura university towards endometriosis and found that 54.4%.of women had incomplete knowledge about common sites of endometriosis. In complete knowledge may be related to insufficient educational program about disease.

The current result revealed that more than half of participant women had incomplete knowledge about genital organs and complications of endometriosis. In contrary with Fathy et al [17] who stated that (62.0% & 60.0% respectively) of women had incorrect knowledge about anatomy of genital organs and complications of endometriosis.

Regarding total knowledge, it is obvious in the present study that more than half of studied women had poor level of knowledge, less than one third of them had average knowledge and lower percentage of them had good knowledge regarding endometriosis. These results were approved by Ghonemy & El Sharkawy [21] who found that 68% of women had poor level of knowledge, 20.0% of them had satisfactory knowledge and only 12.0% had good knowledge about endometriosis. This lack of knowledge may be attributed that this disease is not common among a large number of women or due to insufficient educational programs regarding endometriosis.

As for type of pain, the present study revealed different type of pain. Dysmenorrhea was the most prominent pain among women with endometriosis followed by pelvic pain and dyspareunia in nearly three quarter of them. The result agree with Mohamed et al [22] in his study about effectiveness of adoption of positive coping strategies on women's knowledge and practices related to endometriosis and found that dysmenorrhea in 79.3% and painful intercourse in 77.3 % of them.

According to our study, painful urination and painful defecation were the least frequently symptoms associated with endometriosis. In agreement with the present finding, Kotowska et al [23] and stated that painful defecation and dysuria were the least frequently pain associated with endometriosis in (27% & 65% respectively).

According to characteristics of pain our study showed that nearly half of studied women had pressure pain, nearly one third of them had stabbing pain and nearly one fifth of them had aching pain. This agree with Abd el-Kader et al [24] who mentioned that 60% of participant reported pressure pain, 23.5% had stabbing pain and 16.5 % reported aching pain.

Regarding use of pain medication, nearly three quarters of studied women took pain medication and more than three fifth of them took it > once/day. In agreement with Abdulai et al [2] clarified that 76.6% of endometriosis women used analgesia on a regular basis (paracetamol, ibuprofen and naprogesic).

Regarding level of pain among the studied women, the present study found that half of the studied women had severe pain, while nearly one quarter of them had moderate pain and one fifth of them had mild pain. In agreement with Ghonemey & Elsharkawy [21] who stated that 74% of women had severe level of pain and 26% of them had moderate pain. The result supported by Fathy et al [17] who mentioned that 88% had severe pain, 12% of them had moderate and 0% of them had mild pain.

Concerning sleeping pattern, more than half of studied had trouble sleeping due to women couldn't sleep within 30 minutes or more, wakeup in the middle of the night or early morning, wake up to use bath room and had a pain three or more per week during the past month. The result agree with Arion et al [6] who found that 55% of women had trouble falling asleep within 30 minutes, 50% of them waked by pain during the night 50% wakened by pain in the morning.

The result also clarified that more than half of participant women used sleep medication, had difficulty stay awake or engage in social activity and hadn't enthusiasm to get things done three times or more during the past month.

Conversely, Yu et al [27] on a study about healthy life styles, sleep and fatigue in endometrial survivors in Taiwan and stated that the time needed to fall asleep was less than 30 min in 82.8% of women, 84.3% of them mentioned that they didn't use sleep medicine for sleep, 91.8% of them never experienced situations where they were unable to remain alert during mealtime, driving or social occasion and 78.4% of them didn't feel hard to stay awake to complete necessary tasks. These differences may be related to women in above mentioned study assumed healthy life style which lead to decrease in pain level and subsequently good sleeping pattern.

The present study also reveals that more than half of studied women reported mean of sleep quality 1.20 ± 0.72, sleep latency 1.30 ± 1.00, sleep duration 0.66 ± 0.6, sleep medication 0.30 ± 0.80, daytime dysfunction 0.99 ± 1.00, sleep efficiency 0.45 ± 0.70 and sleep disturbance 1.48 ± 0.73. In the same line with Youseflu et al [25] on his study about effects of endometriosis on sleep quality of women attended at Arash hospital in Tehran, Iran mentioned that the mean of sleep sub scales for studied women were subjective sleep quality 1.35 ± 0.82, sleep latency 1.60 ± 1.07, sleep duration 0.36 ± 0.68, day time dysfunction 0.97 ± 1.01, sleep disturbance 1.38 ± 0.63, sleep efficiency 0.47 ± 0.77 sleep medication 0.33 ± 0.81.

Also, Halici et al [28] on his study about analysis of preoperative and postoperative quality of life, sexual function, and sleep in patients with endometriosis at Istanbul and stated that PSQI subgroups were examined, the mean values of preoperative subjective sleep quality (1.34 ± 0.85), sleep latency (1.64 ± 0.98), sleep duration (0.54 ± 0.66), sleep efficiency (0.48 ± 0.71) sleep disturbance (1.48 ± 0.71), use of sleep medication (0.18 ± 0.47) and daytime dysfunction (0.80 ± 0.92) vs postoperative period were (0.77 ± 0.60,

0.89 ± 0.59, 0.30 ± 0.46, 0.21 ± 0.41, 0.75 ± 0.43, 0.04 ± 0.18, and 0.18 ± 0.43, respectively).

Concerning total sleep quality, more than three- quarters of participant women had poor sleep quality and less than one fifth of them had good sleep quality. The result agrees with Youseflu et al [25] who stated that 80% of women had poor sleep quality.

As for relation between personal data of the studied women and their total knowledge about endometriosis, the present study revealed that there was a significant relation between level of knowledge and level of education, occupation status and place of residence. The previous findings were supported by Mohamed & Hassan [10] who stated that there was statistically significant relation between the women's total level of knowledge and their educational level, residence, occupation. Higher percentage of average knowledge was found among secondary education, working women and urban residence (p=0.001, 0.001 & 0.001 respectively).

In the present study, there was significant relation between level of pain and total sleep quality. High percentage of moderate and severe pain were associated with poor sleep quality. These results were supported by Youseflu [25] who stated that poor SQ was statistically significantly associated with sever dysmenorrhea (p = 0.03), sever pelvic pain (p = 0.02), sever dyspareunia (p = 0.04).

Conclusion:

According to the findings of the present study, it can be concluded that the three research questions were answered. As for women knowledge regarding endometriosis, almost half of the studied women had poor level of total knowledge, while more than one third of them had average level and small percentage of them had good level of total knowledge. Regarding level of

pain, half of studied women had severe pain and one fourth of them had mild pain. Concerning sleep quality, more than three quarters of the studied women had poor sleep quality, while only small percentage of them had good sleep quality.

Recommendations:

In the light of the present study findings, it can be recommended that:

- It is very important to raise awareness and enhance women knowledge regarding endometriosis through mass media and educator nurse to provide knowledge either by given of written or oral guidelines in a simplified Arabic language to all women presented at gynecological outpatient units.

- Duplications of the study on large probability sample from various geographical regions.to increase attention and concentration on the diseases.

- Encourage pharmacological therapy methods for alleviating endometriosis-related symptoms (pain and poor sleep quality).

Table (1): Distribution of the studied women regarding to their personal data (n=132).

Personal data		No	%
Age	<20	9	6.8
	20-25	45	34.1
	>25	78	**59.1**
	Mean ±SD 32.45±5.24		
Education level	Illiterate	14	10.6
	Primary	7	5.3
	Secondary	52	39.4
	University	59	**44.7**
Occupation status	Working	43	32.6
	House wife	89	**67.4**
Marital status	Single	14	10.6
	Married	98	**74.2**
	Divorced	14	10.6
	Widow	6	4.6
Residence	Rural	57	43.2
	Urban	75	**56.8**

Table (2): Distribution of the studied women regarding to their obstetric, family history and main symptoms (n=118).

History		No	%
Gravidity	None	38	**32.2**
	1-2	62	52.5
	3-4	10	8.5
	5or more	8	6.8
Abortion	None	98	83.1
	1-2	18	**15.3**
	3	2	**1.6**
Parity	None	58	**49.2**
	1-2	44	37.2
	3-4	8	6.8
	5or more	8	6.8
Family history	Yes	93	**70.5**
	No	39	29.5
Symptoms	Severe pain	70	**53.1**
	Infertility	32	24.2
	Bleeding	30	22.7
Onset of symptoms	< 3 years	26	19.7
	4-6 years	40	30.3
	>7years	66	**50.0**
Time from diagnosis	1year	31	23.5
	2-3 years	45	34.1
	<2 years	56	**42.4**

* Single (14) cases were excluded.

Table (3): Distribution of the studied women regarding to knowledge regarding endometriosis (n=132).

| Variable	Complete		Incomplete		Incorrect	
	No	**%**	**No**	**%**	**No**	**%**
Genital organs	39	29.5	87	**65.5**	6	4.5
Definition	41	31.1	26	19.7	65	**49.2**
Risk factors	14	10.6	58	43.9	60	**45.5**
Symptoms	75	**56.8**	51	38.6	6	4.5
Causes	10	7.6	63	**47.7**	59	44.7
Sites of migration	14	10.6	63	**47.7**	55	41.7
Complications	19	14.4	74	**56.1**	39	29.5
Diagnosis	16	12.1	59	**44.7**	57	43.2
Treatment options	13	9.8	82	**62.1**	37	28.0
Goal of treatment	58	**43.9**	20	15.2	54	40.9
Prevention	18	13.6	37	28.0	77	**58.3**
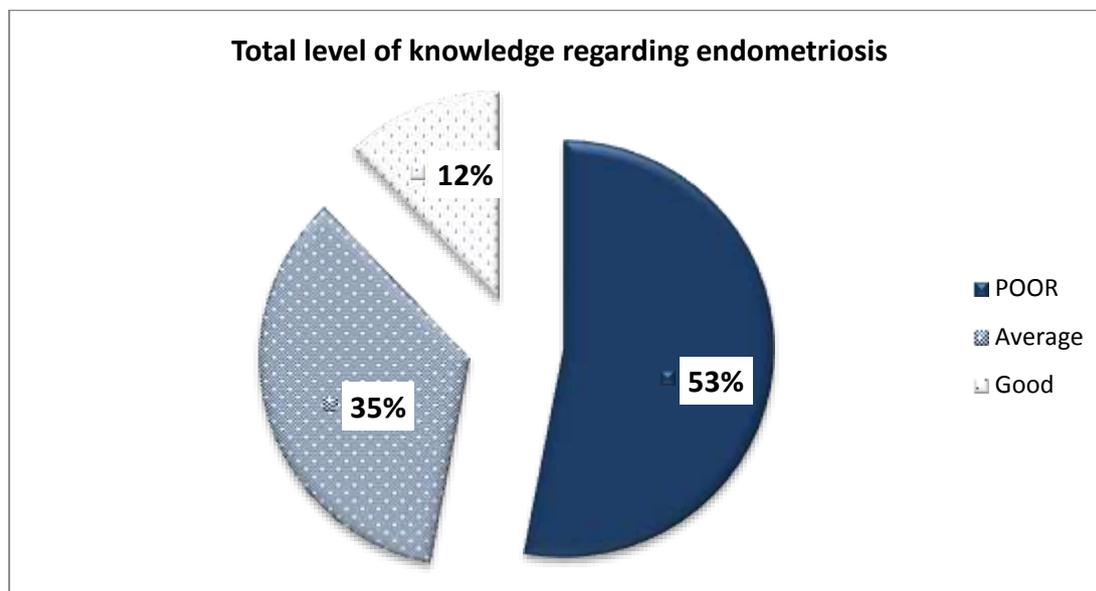
Figure (1): Distribution of the studied women according to total level of knowledge regarding endometriosis (n=132).

Table (4): Distribution of the studied women according to pain regarding endometriosis (n=132).

Variable	No	%
Type of pain*		
Dysmenorrhea	100	**75.8**
Premenstrual pain	66	50.0
Dyspareunia n=98	69	70.4
Pelvic pain	95	**71.9**
Painful urination	29	21.9
Painful defecation	18	13.7
Characteristics of pain		
Pressure	61	**49.1**
Aching	24	19.4
Stabbing	39	31.5
Pain medication		
Yes	96	**72.7**
No	36	27.3
Frequency of taking medication		
Once/day	36	37.5
>Once/day	60	**62.5**

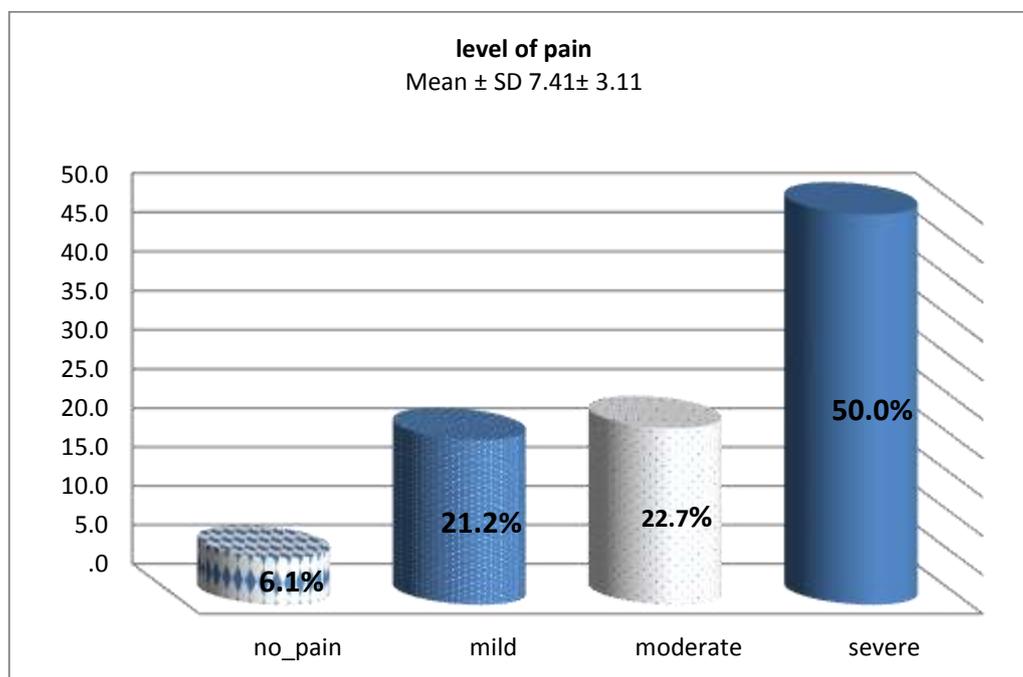*Result not mutually exclusive because the women may have different type of pain.

Figure (2): Distribution of the studied women according to level of pain regarding endometriosis (n=132).

Table (5): Distribution of the studied women according to sleep quality components (n=132).

| Components		No	%
Sleep quality	Very good	16	12.1
	Fairly good	15	11.4
	Fairly bad	14	10.6
	Very bad	87	**65.9**
	Mean ± SD=1.20 ± 0.72		
Sleep latency	0 (min; best)	13	**9.8**
	1	9	6.8
	2	26	19.7
	3 (max; worst)	84	63.6
	Mean ± SD =1.30 ± 1.00,		
Sleep duration	> 7 h	25	**18.9**
	7 h	10	7.6
	5–6 h	10	7.6
	< 5 h	77	58.3
	Mean ± SD= 0.66 ± 0.6		
Sleep efficiency	≥ 85%	11	**8.4**
	75–84%	10	7.5
	65–74%	21	15.9
	< 65%	90	68.2
	Mean ± SD =0.45 ± 0.70		
Sleep disturbances	0 (min; best)	6	**4.5**
	1	2	1.5
	2	40	30.3
	3 (max; worst)	84	63.6
	Mean ± SD =1.48 ± 0.73		
Use of sleeping medication	Not in past month	6	4.5
	< Once/week	7	5.3
	1–2 times/week	34	25.8
	≥ 3 times/week	85	**64.4**
	Mean ± SD =0.30 ± 0.80,		
Daytime dysfunction	0 (min; best)	19	14.4
	1	4	3.1
	2	23	17.4
	3 (max; worst)	86	**65.2**
	Mean ± SD =0.99 ± 1.00		
Total PSQI	< 5 (good SQ)	31	23.5
	≥ 5 (poor SQ)	101	76.5
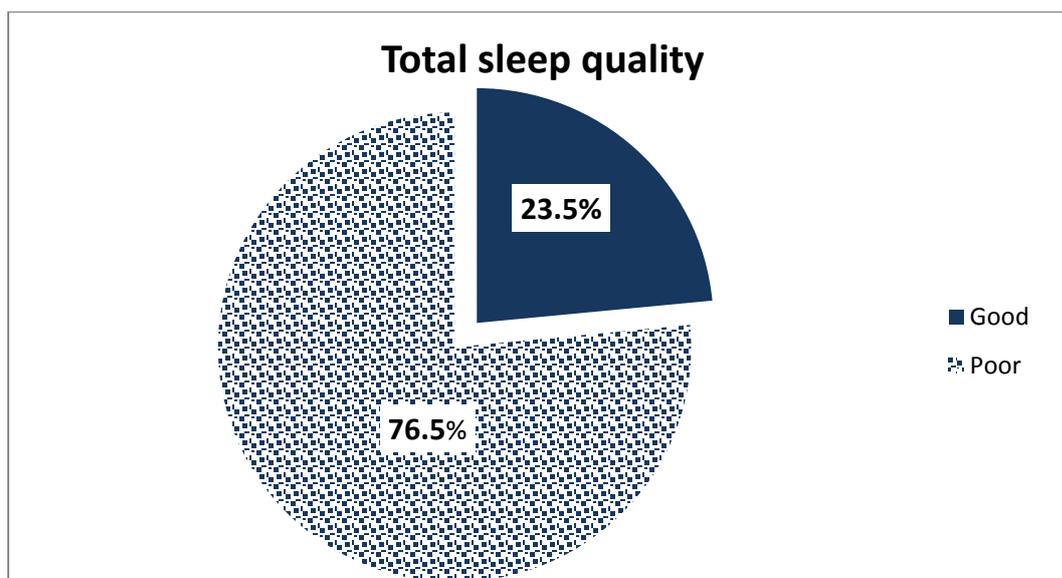
Figure (3): Distribution of the studied women regarding their total quality of sleep (n=132).

Table (6): Relation between personal data and total knowledge of the studied women (n=132).

Items		Total knowledge						X^2	P-Value
		Poor .N= 70		Average N=46		Good N=16			
		N	%	N	%	N	%		
Age	<20	5	3.8	4	3.0	0	0.0	4.82	0.306
	20-25	21	15.9	15	11.4	9	6.8		
	>25	44	33.3	27	20.5	7	5.3		
Education Level	Illiterate	14	10.6	0	0.0	0	0.0	36.2	0.000**
	Primary	7	5.3	0	0.0	0	0.0		
	Secondary	31	23.5	19	14.4	2	1.5		
	University	18	13.6	27	20.5	14	10.6		
Occupation	Working	11	8.3	24	18.2	8	6.1	19.31	0.000**
	Housewife	59	44.7	22	16.7	8	6.1		
Marital status	Single	7	5.3	4	3.0	3	2.3	6.91	0.329
	Married	48	36.4	37	28.0	13	9.8		
	Divorced	11	8.3	3	2.3	0	0.0		
	Widow	4	3.0	2	1.5	0	0.0		
Residence	Rural	45	34.1	10	7.6	2	1.5	27.46	0.000**
	Urban	25	18.9	36	27.3	14	10.6		

*Significantat p ‹0.05.　　**Highly significant at p ‹ 0.01.　　Not significant at p>0.05

Table (7): **Relation between menstrual history and total sleep quality of the studied women (n=132).**

Items		Total sleep Quality				X²	P-Value
		Good N= 31		Poor N= 101			
		N	%	N	%		
Age of menarche	≤11	23	17.4	61	46.2	1.95	0.162
	≥12	8	6.1	40	30.3		
Menstrual regularity	Regular	9	6.8	53	40.2	5.23	**0.022***
	Irregular	22	16.7	48	36.4		
Menstrual Duration	3-5 days	13	9.8	36	27.3	0.40	0.526
	>5 days	18	13.6	65	49.2		
Menstrual Amount	4 pads/day	3	2.3	6	4.5	5.24	**0.023***
	5-7pads/day	12	9.1	58	43.9		
	≥8 pads/day	16	12.1	37	28.0		
Painful menstruation		17	12.9	83	62.9	9.65	**0.002***

*Significant at p ‹ 0.05.   **Highly significant at p ‹ 0.01.   Not significant at p>0.05

Table (8): Relation between level of pain and total sleep quality of the studied women (n=132).

Items	Total sleep quality				X²	P-Value
	Good N= 31		Poor N= 101			
	N	%	N	%		
No pain	8	6.1	0	0.0	68.12	**0.000****
Mild	17	12.9	11	8.3		
Moderate	6	4.5	24	18.2		
Severe	0	0.0	66	50.0		

*Significant at p ‹ 0.05.   **Highly significant at p ‹ 0.01.   Not significant at p>0.05

Table (9): Correlation between total knowledge, level of pain and total sleep quality of the studied women (n=132).

Items	Total sleep Quality	
	r	P-value
Total knowledge	0.018	0.842
Level of pain	0.709	**0.000****

*Statistically significance p<0.05   r: Pearson correlation

References:

1. Shafrir, A. L., Farland, L. V., Shah, D. K., Harris, H. R., Kvaskoff, M., Zondervan, K., & Missmer, S. A. Risk for and consequences of endometriosis: a critical epidemiologic review. *Best practice & research Clinical obstetrics & gynaecology*, 2018; *51*, 1-15.

2. Abdulai, A. F., Howard, A. F., Yong, P. J., Noga, H., Parmar, G., & Currie, L. M. Developing an Educational Website for Women With Endometriosis-Associated Dyspareunia: Usability and Stigma Analysis. *JMIR Human Factor,* 2022; *9*(1).

3. Coxon, L., Horne, A. W., & Vincent, K. Pathophysiology of endometriosis-associated pain: A review of pelvic and central nervous system mechanisms. *Best Practice & Research Clinical Obstetrics & Gynaecology*, 2018; *51*: 53-67.

4. Loring, M., Kabelac, Z., Munir, U., Yue, S., Ephraim, H. Y., Morris, S. N. & Katabi, D. Assessing pain and sleep patterns in endometriosis: a pilot study using passive radio sensors. *Journal of Minimally Invasive Gynecology*, 2019; *26*(7).

5. Goksu, M., Kadirogullari, P., & Seckin, K. D. Evaluation of depression and sleep disorders in the preoperative and postoperative period in stage 4 endometriosis patients. *European Journal of Obstetrics & Gynecology and Reproductive Biolog,* 2021; *264*, 254-258.

6. Arion K, Orr NL, Noga H, Allaire C, Williams C, Bedaiwy MA, et al. Journal of Women's Health.ahead of print, 2019.

7. Martínez-Zamora, M. A., Coloma, J. L., Gracia, M., Rius, M., Castelo-Branco, C., & Carmona, F.Long-term follow-up of sexual quality of life after laparoscopic surgery in patients with deep infiltrating endometriosis. *Journal of Minimally Invasive Gynecology*, 2021; *28*(11), 1912-1919.

8. Hinkle, J.L., & Cheever, K.H. Brunner & Suddarth's, (2018), textbook of medical- surgical nursing (14th ed.). Wolters Kluwer.

9. Hassan, S. I. Effect of Guideline about Endometriosis on Enhancing Young Female Knowledge and Utilization of Health Services. *International Journal of Novel Research in Healthcare and Nursing*, 2018; *5*(2), 360-370.

10. Mohamed, W., & Hassan, H. Effect of instructional supportive guideline for improving women's awareness towards endometriosis. *American journal of nursing research,* 2020; *8*(1), 38-47.

11. Steven K. Thompson. Sampling' 3rd ed, John Wiley & Sons, 2012; p59-60.

12. Ansong, E., Arhin, S. K., Cai, Y., Xu, X., & Wu, X.Menstrual characteristics, disorders and associated risk factors among female international students in Zhejiang Province, China: a cross -sectional survey. BMC women's health,2019 ; 19(1), 1-10.

13. Schlorke, S. Undergraduate Nursing Students' Knowledge of Endometriosis, 2021; A Pilot Study.

14. Mohamed, A. M., Mehaseb, S. H., & Ibrahim, R. M. Effect of Instructional Nursing Strategies on Endometriosis Symptoms. Evidence-Based Nursing Research, 2021; 3(4), 9-9.

15. Hayes, M. H. S., & Patterson, D. G.Experimental development of the graphic scale. *Psychology Bullettin*, 1921; *18*, 98-99.

16. Buysse, D. J., Reynolds III, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J.The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry research,*1921; *28*(2), 193-213.

17. Fathy Heiba Eid Bakr, M., K Khalil, A., Mohamed Elhomosy, S., & ES, A. Effectiveness of Lifestyle Modification on Endometriosis Symptoms among Reproductive Age Women. *Egyptian Journal of Health Care,* 2022; *13*(3), 1060-1074.

18. Hemmert, R., Schliep, K. C., Willis, S., Peterson, C. M., Louis, G. B., Allen-Brady, K., ... & Smith, K. R.Modifiable life style factors and risk for incident endometriosis. Paediatric and perinatal epidemiology, 2019; 33(1), 19-25.

19. Brandes, I., Hillemanns, P., & Schippert, C. Differences in the time course of disease progression, quality of life and health service utilization in women with endometriosis. Journal of Endometriosis and Pelvic Pain Disorders, 2017; 9(1), 50-55.

20. Abd El-Mouty, S. M., Al_Wehedy, A., & Hassan, S. I. Raising awareness of working women in Mansoura University towards endometriosis: A follow up study. *IOSR journal of nursing and health science,* 2016; *5*(5), 15-23.

21. Ghonemy, G. E., & El Sharkawy, N. B.Impact of changing lifestyle on endometriosis related pain. *IOSR Journal of Nursing and Health Science,* 2017; *6*(2), 120-129.

22. Mohamed El Sayed, S. L., Mohamed El Sayed, M. L., & Badawy, A. S. Effectiveness of adoption of positive coping strategies on women's knowledge and practices related to endometriosis. Tanta Scientific Nursing Journal*,* 2022 ; 24(1), 157-174.

23. Kotowska, M., Urbaniak, J., Falęcki, W. J., Łazarewicz, P., Masiak, M., & Szymusik, I.Awareness of Endometriosis Symptoms—A Cross Sectional Survey among Polish Women. International Journal of Environmental Research and Public Health*,* 2021; 18(18), 9919.

24. Abd el-Kader, A. I., Gonied, A. S., Mohamed, M. L., & Mohamed, S. L. Risk Factors for Endometriosis Among Egyptian Infertile Women with Different Disease Stages. *SAGE Open Nursing,* 2022; *8*, 23779608221111718.

25. Youseflu, S., Jahanian Sadatmahalleh, S., Roshanzadeh, G., Mottaghi, A., Kazemnejad, A., & Moini, A. Effects of endometriosis on sleep quality of women: does life style factor make a difference? *BMC Women's Health,* 2020; *20*(1), 1-7.

26. Grandi, G., Barra, F., Ferrero, S., Sileo, F. G., Bertucci, E., Napolitano, A., & Facchinetti, F.Hormonal contraception in women with endometriosis: a systematic review. The European Journal of Contraception & Reproductive Health Care, 2019; 24(1), 61-70.

27. Yu, C. H., Wang, T. J., Chang, C. L., Liang, S. Y., Wu, S. F., Liu, C. Y., & Lu, Y. Y. Healthy life styles, sleep and fatigue in endometriosis survivors: A cross-sectional study. *Journal of Clinical Nursing,* 2020; *29*(7-8), 1372-1380.

28. Halici, B. N. A., Aktoz, F., Kabakci, M., Kiran, G., & Ozcan, P. (2023). Analysis of preoperative and postoperative quality of life, sexual function, and sleep in patients with endometriosis: a prospective cohort study. *Archives of Gynecology and Obstetrics,* 2023; *307*(1), 113-120.