- **Basic Research**

Effect of Self-Instructional Module on Adolescent Nursing Students' Awareness regarding Endometriosis: Challenges for prevention of Future Infertility

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Abstract

Background: In recent years, endometriosis in the adolescent has been discovered as a challenging problem in gynecology. Endometriosis is recognized as most common cause of infertility in young women representing 1 in 10 adolescents and women of reproductive age. Raising awareness of endometriosis in adolescence is receiving increasing attention now. **Aim:** The present research was aimed to evaluate the effect of self-instructional module on adolescent nursing students' awareness regarding endometriosis as challenge for prevention of future infertility. **Design:** A quasi-experimental research design was adopted to fulfill the aim of this study. **Setting:** The study was conducted at faculty of nursing, Benha University. **Sample**: A purposive sample of three hundred and sixty four adolescent female nursing students. **Tools:** Data were collected through three main tools: A Structured self-administered questionnaire, Student's awareness assessment sheet regarding endometriosis and Student's satisfaction sheet. **Results:** Showed that, less than one fifth of studied sample had adequate awareness score regarding endometriosis at pre-intervention phase while, about four fifths of the studied sample had adequate awareness score at post-intervention and at follow up phases ($P \leq 0.001$). Also, there was no statistical significant relation between total awareness score of studied sample and all personal data (age, mothers' education, mothers' occupation, residence and family history of endometriosis) at post intervention and follow up phases $p>0.05$.**Conclusion:** The research concluded that, hypotheses of research were supported and adolescent female exhibited improving awareness about endometriosis after implementation of self-instructional module. Also, high satisfaction among adolescent students were achieved. **Recommendations:** Raising awareness regarding endometriosis through provision of the instructional module for all female university students.

Keywords: *Adolescent nursing students, Awareness, Endometriosis, Infertility, Self-instructional module*

Introduction:

Endometriosis is a gynecological condition defined as the presence of endometrial glands and stroma outside the uterus associated with dysmenorrhea, chronic pelvic pain, dyspareunia and infertility. Endometriosis is a very common health problem occurring in adolescents and girls as young as 8 years of age and affecting an estimated 176 million women and teens **(*Angélica et al., 2020).***Women with endometriosis often report onset of symptoms during adolescence; however, the diagnosis of endometriosis is often delayed. By which time, destructive lesions have affected the tubo-ovarian structures and severely compromised fecundability ***(Missmer et al., 2021).***

The association between endometriosis and infertility is well supported throughout the literature, the prevalence of endometriosis increases to as high as 25%–50% in women with infertility and 30%–50% of women with endometriosis have infertility. The prevalence of endometriosis is estimated to be about one-third of adolescents with chronic pelvic pain and increase to 80% in adolescents with chronic pelvic pain who fail to respond to medical treatment. Acyclic pain is more common in adolescents than in adults. Atypical and subtle lesions are seen with red lesions being the commonest. The majority has early stage disease but a significant proportion up to 30% has advanced disease and ovarian endometrioma is the most common presentation with advanced disease (***Ramphal, 2019***).

Endometriosis likely impairs fertility in two ways: first, by causing distortion of the fallopian tubes so, causing inability to pick up the egg after ovulation, second, by creating inflammation that can adversely affect the function of the ovary, eggs, fallopian tubes or uterus. Many factors may play a role in disease progression, but the main reason is likely to be the delay in diagnosis. The fecundity rate in women with untreated endometriosis is estimated to be anywhere from 2% to 10%. Women with mild endometriosis have been shown to have a significantly lower probability of pregnancy over 3 years than women with unexplained fertility (36% vs. 55%, respectively). Invitro fertilization studies have suggested that women with more advanced endometriosis have poor ovarian reserve, low oocyte and embryo quality, and poor implantation ***(Missmer et al., 2021).***

Endometriosis' precise cause is unknown. A common theory holds that during the monthly menstrual period, some menstrual blood and endometrium travel backward from the uterus through the fallopian tubes and into the pelvis. The "retrograde menstruation theory" describes how this tissue develops and eventually settles in the pelvis. There are several other theories as well, and research is ongoing to find a cause for endometriosis ***(Robert, 2020).***

Factors associated with an increased risk of endometriosis include, long-term exposure to estrogen such as shorter menstrual cycles, early menarche, severe dysmenorrhea, late menopause as well as a family history of endometriosis. Moreover, exposure to toxins and

environmental pollutants. The most common sites of endometriosis are the ovaries, fallopian tubes, ligaments that support the uterus, pouch of Douglas, pelvis and abdominal peritoneum. In the case of deeply infiltrating endometriosis, disease foci also commonly occur in the bladder and intestines ***(Mabrouk et al., 2020).***

Endometriosis and its associated symptoms can greatly affect an adolescent's life leading to absenteeism from school, decreased socialization and sexual impairment. Although the pain may begin at a young age, even before the onset of menstruation, the diagnosis by laparoscopy is almost always delayed by several years .This delay may decrease the reproductive potential and functional outcomes ***(Cassandra et al., 2021)***. The time of diagnosis ranges from 2 to 12 years and can be three times longer for women whose onset of symptoms occurred during adolescence. Endometriosis continues to be misdiagnosed in this population, almost as a matter of routine. There are several reasons that include, adolescent girls are often told that periods are supposed to be painful and some minor cramping is considered normal by most. However, pain that forces girls to miss school or other activities is not normal and should be evaluated by a medical professional ***(Jhumka et al., 2018)***.

In many countries, most healthcare providers and the general public are unaware that painful and life-altering pelvic pain is not normal, leading to a normalization and stigmatization of symptoms and significantly delaying diagnosis. In addition, many knowledge gaps exist, and non-invasive diagnostic methods as well as medical treatments that do not prevent pregnancy are needed. At present, no method is known to prevent endometriosis. Increased awareness that followed by early diagnosis and management may slow or halt the normal progression of the disease and reduce the long-term burden of its symptoms ***(Agarwal et al., 2019***). So, it's important to increase awareness of adolescent female regarding endometriosis to help early detection, diagnosis and prevent future development and complications as infertility.

In addition, certain signs in adolescence are associated with later diagnosis of the disease which include severe dysmenorrhea chronic pelvic pain, dysmenorrhea resistant to drugs and oral contraceptives, and pain that affect the daily activity. Based on current knowledge, it should be possible to diagnose endometriosis before puberty, thereby relieving symptoms and possibly reducing unwanted squeals. To do this, adolescent girls' knowledge regarding endometriosis must be improved among both health care professionals and the public (***Christine et al., 2020).***

Nurses as a health care provider must be aware of the existence of adolescent endometriosis and should also be aware of the presenting symptoms. So, the adolescent can be appropriately referred to a gynecologist with medical and surgical treatment options ***(Marc et al., 2018)***. Moreover, it is important that health care providers help in increasing awareness regarding endometriosis among adolescent through health education in order to

avoid delay in diagnosis and management. Given that endometriosis is a progressive disease with increasing morbidity over time, an early diagnosis and optimal management during adolescence is warranted ***(Meenu and Sendhil, 2017).***

Nurses play an essential role in passing on direct health education to people in the community and hospital. Hence, raising nursing students' knowledge not only helps in directing health education to the patient but also, encourage to adjust lifestyle and reduce the possible complications of endometriosis ***(Missmer et al., 2021).***

Significance of research:

Despite the well supported association between endometriosis and infertility, the difficulty in establishing a causal relationship likely stems from the multiple mechanisms by which endometriosis can affect fertility. Also, little is known about endometriosis in adolescent women, which is problematic given that earlier detection could yield better outcomes and change the trajectory of this debilitating condition from a disease. Endometriosis in adolescent girls is often diagnosed after a long delay that can be associated with more advanced stages of endometriosis and with a higher likelihood of fertility problems at a later age ***(Baranov et al., 2018)***.Worldwide, the prevalence of endometriosis is about 176 million and about 8.5million women solely in the North America. Millions of women around the globe suffer from endometriosis, and often undiagnosed for many years. Shockingly, delay of almost 10 years from the first complaints until the disease is identified is common ***(Márcia and França, 2021).***

About70% to 90% of women with pelvic pain has endometriosis and up to 50% of women with infertility has endometriosis .About 70% of teens who are suffering from pelvic pain are later diagnosed with endometriosis ***(Akter, et al., 2020)***. Furthermore, in a study conducted at Dakahlia Governorate, Egypt the prevalence of endometriosis in adolescents with severe dysmenorrhea was 12.3% ***(Mohamed and Hassan, 2020)***.

Despite the growing realization that symptoms of endometriosis often begin in adolescence, research with adolescents rarely helps educate and raise awareness of female adolescents regarding endometriosis in gaining knowledge, early detection, and avoiding major problems such as infertility in the future. Therefore, there was a huge need to implement a self-education module for early detection and treatment of disease ***(Ahmed and Radwan, 2021)***.

1.2 Aim of the research:

The research aimed to evaluate the effect of self-instructional module on adolescent nursing students' awareness regarding endometriosis as challenge for prevention of future infertility.

1.3 Research hypotheses:

- H1- Adolescent nursing students will exhibit better awareness regarding endometriosis after implementation of self-instructional module.
- H2- Adolescent nursing students will be satisfied with self-instructional module regarding endometriosis.

1.4 Operational definitions:

Effectiveness: Refers to the desired outcome of the self-instructional module on awareness regarding endometriosis among adolescent female nursing students as challenges for prevention of future infertility.

Self-instructional module: Refers to the knowledge and adaptive health measures among adolescent female nursing students which includes anatomy, physiology of female reproductive system, menstrual cycle and endometriosis utilising audio-visual aids and printed Arabic booklet.

Adolescent students: Refers to the female students between the age of 17 and 19 years studying in the first academic year at Faculty of Nursing, Benha University.

2. Subjects and Method:

Methodology is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge.

2.1. Research approach:

Quantitative research approach was used to assess the effectiveness of self-instructional module on awareness of endometriosis among adolescent female nursing students.

2. 2. Research design:

A quasi-experimental research design (One-Group, Time series quasi-experimental design) was utilized to fulfill the aim of this research which specifies that an observation (called a pre-test) was assessed before intervention is introduced to individuals (or other units), the intervention subsequently introduced, and finally a second observation (called a post-test) was applied in different times. The difference between the pre-test and post-test observations is used to estimate the size of the effect of the intervention ***(Millsap and Olivares, 2009).***

2. 3. Research variables:

Dependent Variable, It refers to awareness of adolescent female nursing student regarding endometriosis.

Independent Variable, It refers to the self-instructional module which includes knowledge and adaptive health measures regarding endometriosis.

2. 4. Setting:

This study was conducted at the Faculty of Nursing, Benha University.

2.5. Sampling:

- **Sample type:** A Purposive sample was selected from the above mentioned study setting.
- **Sample size:** Total number of nursing students enrolled in first academic year 2021/2022 was (665); (241) Male and (424) Female. The total number of study sample was (364) female students and was chosen according to inclusion criteria: Female students who registered in first academic year, aged (17-19 years), agreed to participate in the research and were available at the time of data collection.

2.6. Tools of data collection:

Three main tools were used for data collection:-

2.6.1. Tool I: A structured Self-administered Questionnaire:

It was designed by the researchers after reviewing related literatures ***(Hassan, 2018 and Bush et al., 2017)*** and was written in simple Arabic language and included personal data of studied sample such as (age, mothers' educational level, mothers' occupation, residence and family history of endometriosis). (5 questions).

2.6.2. Tool II: Student's Awareness Assessment Sheet:

It was designed by the researchers after reviewing related literatures ***(Kotowska et al., 2021; Mohamed and Hassan, 2020 and Hassan, 2018)*** and was translated by the researchers into Arabic language. It involved 55 multiple choice questions designed to measure adolescent female nursing students' awareness regarding endometriosis. The tool was divided into 4 sections that included: students' awareness regarding anatomy and physiology of female genital system (16 questions), students' awareness regarding menstrual cycle (10 questions), students' awareness regarding endometriosis (20 items) and students' awareness regarding adaptive healthy measures toward endometriosis (9 questions).

Scoring system of knowledge:

Each question was assigned a score of (2) given when the answer was correct and a score (1) was given when the answer was incorrect. The students who checked an item (yes) was given a score of (2), while the one who checked an item (No) was given a score of (1). The total score of each section was calculated by summation of the scores of its questions. The total score for the student's awareness was calculated by the addition of the total score of all sections. As well as students' total awareness score was classified as the following:

- Adequate knowledge (≥75% of correct answers).
- Inadequate knowledge (<75% of correct answers).

2.6.3. Tool III: Students' satisfaction sheet:

It was adapted from ***Mansour et al., (2020)*** and the necessary modifications were done by the researchers. The scale was used to assess the adolescent female nursing students' satisfaction regarding the self-instructional module implementation, it was consisted of sex items as (the subject was interesting, the subject presented in a logical sequence, the scientific content was new and added to enhance my knowledge, the scientific material included in the booklet had been clear and easy to understand, your assessment of the organization and quality of printed material and the booklet language was easy to understand).

Scoring system:

The items were judged according to a five-point continuum of the Likert scale ranged from excellent (4), very good (3), good (2), accept (1) and weak (0). Summing up the scores of the items then the overall score gave total satisfaction score. Students' total satisfaction score was graded as;

- Satisfied ≥ 75%.
- Unsatisfied < 75%.

Supportive material :-(Arabic Leaflet booklet)

An educational booklet was developed after reviewing the related literature review related to the endometriosis to help the students' better awareness of disease state and provide them with knowledge regarding anatomy and physiology of female genital system, menstrual cycle, endometriosis and adaptive healthy measures toward endometriosis. The booklet is also provided with colorful pictures to clarify and explain the information. Booklet is already approved by three experts in the field of Obstetrics and Gynecology (Nursing and Medicine).

2.7.1. Administrative approval:

An official permission was obtained from the dean of faculty of nursing, Benha University to conduct the research after explaining its purpose.

2.7.2. Validity and reliability of the tools:

The tools' content validity was reviewed by a panel of three experts (one from Obstetrics and Gynecological Medicine and two from Obstetrics and Gynecological Nursing) and little changes in sentence wording were required. The reliability of the tools was done to check its internal consistency. The Cronbach's alpha coefficient for the tool II (students' awareness assessment sheet) was 0.86, and for the tool III (Students' satisfaction sheet) was 0.79.

2.7.3. Ethical Considerations:

The research approval was obtained from Scientific Research Ethical Committee, Faculty of Nursing at Benha University before starting the research. An official permission from the selected research settings was obtained for the fulfillment of the research. At the beginning of the interview and during the research periods, each student was informed of the purpose of the research and its benefits. Before data collection began written consent was obtained from each student. The students were assured that the data will remain confidential and will only be used for research purposes. The right of the students to autonomy and integrity was guaranteed. The students were also granted an unconditional right of withdrawal from the research at any time.

2.7.4. Pilot study:

The pilot study was carried out on ten percent of the total sample (37 students) to test the clarity and applicability of the research tools as well as estimate the necessary time to fill in the tools. Students in the pilot study were included in the main sample as no modifications were done in the tools.

2.7.5. Procedures:

To achieve the aim of the study, the following phases were adopted. Preparatory phase, interviewing and assessment phase, planning phase, implementation of the self-instructional module phase and evaluation phase. These phases were implemented from the beginning of September, 2021and completed at the end of May, 2022 covering nine months. The researchers visited the previously mentioned settings two days/week (Sunday and Tuesday) from 9 a.m. to 2 p.m. and according to the free time of the lecture for the students.

Preparatory phase:

It was the first phase of the research, it was carried out by the researchers by reviewing the relevant local and international literature on various aspects of the research problem. This helped the researchers to recognize the magnitude and severity of the problem, and directed the researchers to prepare the required data collection tools. The tools were distributed to three experts (one from Obstetrics and Gynecological Medicine and two from Obstetrics and Gynecological Nursing) to test its appropriateness, comprehensiveness, clarity, importance and applicability. The jury recommended omissions of some items and addition of other items which were done.

Interviewing and Assessment Phase:

This phase included conducting interviews with students to collect basic data, in the educational lecture hall of the Faculty of Nursing - Benha University, at the beginning of the interview, the researchers greeted each student, explained the purpose, duration and activities of the research. The student received the structured self-administered questionnaire (Tool I) to assess students' personal data. Then, the researchers distributed the awareness assessment sheet (Tool II) (pre-test) to assess their awareness regarding anatomy and physiology of female genital system, menstrual cycle, endometriosis and adaptive healthy measures toward endometriosis. The data obtained during this phase formed the baseline for further comparison to evaluate the effect of applying the instructional module. The average time to complete each student's self-administered questionnaire and awareness assessment sheet was approximately 30-45 minutes.

Planning phase:

Based on baseline data obtained from interviewing and assessment phase and relevant review of literatures, the self-instructional module regarding endometriosis was developed by the researchers in a form of printed Arabic booklet to manage the deficit knowledge of the studied students. Sessions' number and its contents, different methods of teaching, and instructional media were determined. Therefore, at the end of implementation of the instructional module sessions each student should be acquiring essential knowledge needed to improve awareness regarding anatomy and physiology of female genital system, menstrual cycle, endometriosis and adaptive healthy measures toward endometriosis. The objectives of self-instructional module were constructed and included the following:

General objectives: By the end of the self-instructional module sessions, each adolescent student will be able to acquire essential knowledge and adaptive healthy measures regarding endometriosis and satisfied with the self-instructional module regarding endometriosis.

Specific objectives: By the end of the self-instructional module sessions, each adolescent student will be able to:

- Identify anatomy and physiology of female genital system.
- Discuss menstrual cycle.
- Define endometriosis.
- Enumerate causes, risk factors of endometriosis.
- Discuss signs and symptoms of endometriosis.
- Identify diagnostic measures of endometriosis.
- Discuss complications of endometriosis.
- Identify medical and surgical management of endometriosis
- Demonstrate adaptive healthy measures regarding endometriosis.

Implementation phase:

Implementation of educational sessions lasted (28) weeks. The researchers sought to facilitate the method of teaching before implementing the educational sessions. The researchers divided the students into small groups (14 groups) of 26 students for each group. The distribution was made according to their free time, theoretical lectures and practical sections to facilitate their attendance of the sessions and to achieve their study duties. Each group received intervention from four interactive sessions (two days/week) for two consecutive weeks, for each group of students, with each session duration (60-90 minutes). Students were offered the instructional module sessions in the form of lectures and group discussions using audio-visual aids, focusing on increasing student's awareness of endometriosis. In order to establish the best communication, the first meeting began with an orientation to the instructional module, including the motivation, importance of the topics, contents, time, and place.

The anatomy and physiology of the female genital system was covered in the 1st session. In the 2nd session, the natural aspect of menstruation was discussed. The 3rd session concerned with endometriosis, while adaptive healthy measures regarding endometriosis were covered in the 4th session.

All female adolescent students were provided with an instructional Arabic booklet containing brief information regarding endometriosis to be used as a guide for them. Each adolescent student was informed of the time of the next sessions at the end of session. The subsequent session began with a feedback about the previous session and the objectives of the new session. At the end of each session, 15 minutes are allotted for an open discussion with the students to correct any misunderstandings.

Evaluation phase:

Three evaluations were done for each student, the first being at the beginning of the study as baseline information (pre-test). The second evaluation (post-test) was performed immediately after the intervention and the third evaluation (follow-up) one month later. The same evaluation tools were used during the first, second and third evaluations.

Statistical Analysis:

Data entry and statistical analysis were done using the Statistical Package for Social Science (SPSS version 22). Descriptive statistics included frequencies and percentages, means and standard deviations. Inferential statistics as (Chi-square test) was used. For all of the statistical tests done, p-value > 0.05 indicated no statistical significant difference, p-value ≤ 0.05 indicated a statistical significant difference, and p-value P ≤ 0.001 indicated a highly statistically significant difference.

3. Results:

Table (1): reveals that, 79.4% of the studied sample was in the age group of 18 - <19 years old with mean age of 17.89 ±0.44 years. Also, 39.6% of them had mothers with secondary education and 62.4% of the mothers were house wife. Moreover, 54.4% of the studied sample was lived in a rural area and 88.2% of them had no family history of endometriosis.

Figure (1): shows that, 89.3% of the studied sample had no information about endometriosis while 9.3%, 7.9%, 5.7% and 2.2% of them had source of information from social media, family members and relatives, friends and health team respectively. Taking into consideration the results are not mutually exclusive because the studied sample may have many sources of information at the same time.

Table (2): illustrates that, there was a highly statistically significant difference in relation to all items of studied sample's awareness regarding anatomy and physiology of female genital system at post-intervention and follow up phase compared to pre-intervention phase (P ≤ 0.001). The table also illustrates that, 25.3%, 84.1% and 81.6% of the studied sample had adequate total awareness score regarding anatomy and physiology of female genital system at pre-intervention, post-intervention and follow up phases respectively.

Table (3): clarifies that, there was a highly statistically significant difference in relation to all items of studied sample's awareness regarding menstrual cycle at post-intervention and follow up phase compared to pre-intervention phase (P ≤ 0.001). The table also clarifies that 29.7%, 84.9% and 81.6% of the studied sample had adequate total awareness score regarding menstrual cycle at pre-intervention, post-intervention and follow up phases respectively.

Table (4): shows that, there was a highly statistically significant difference in relation to all items of studied sample's awareness regarding endometriosis at post-intervention and follow up phase compared to pre-intervention phase ($P \leq 0.001$). The table also shows that 4.9%, 80.2% and 79.1% of the studied sample had adequate total awareness score regarding endometriosis at pre-intervention, post-intervention and follow up phases respectively.

Table (5): displays that, there was a highly statistically significant difference in relation to all items of studied sample's awareness regarding adaptive healthy measures toward endometriosis at post-intervention and follow up phase compared to pre-intervention phase ($P \leq 0.001$). The table also displays that 23.1%, 83.8% and 81.0% of the studied sample had adequate total awareness score regarding adaptive healthy measures toward endometriosis at pre-intervention, post-intervention and follow up phases respectively.

Figure (2): shows that 18.1% of studied sample had adequate awareness score regarding endometriosis at pre-intervention phase. While, 82.7% and 80.8% of the studied sample had adequate awareness score at post-intervention and at follow up phases respectively.

Table (6): reveals that 76.4%, 75.0%, 74.2%, 80.5%, 77.7% and 82.7% of the studied sample responded with a percentage of excellence for all satisfaction items.

Figure (3) illustrates that 85.2% of the studied sample were satisfied from the implemented self-instructional module.

Table (7): shows that, at pre intervention; there was no a statistical significant relation between total awareness score of studied sample and personal data (age, mothers' occupation and residence) ($p>0.05$). Also, at pre intervention, there was a statistical significant relation between total awareness score of studied sample and personal data (mothers' education and family history of endometriosis) ($p\leq0.05$). On the other hand, there was no a statistical significant relation between total awareness score of studied sample and all personal data (age, mothers' education, mothers' occupation, residence and family history of endometriosis) at post intervention and follow up phases ($p>0.05$).

Table (1): Distribution of the studied sample according to personal data (n=364).

Personal data		No.	%
Age (years)	17- 18- 19	56 289 19	15.4 79.4 5.2
	Mean ±SD 17.89 ±0.44		
Mother's education	Neither read nor write Read and write Primary education Secondary education University education	11 37 73 144 99	3.0 10.2 20.1 39.6 27.1
Mother's occupation	Working House wife	137 227	37.6 62.4
Residence	Rural Urban	198 166	54.4 45.6
Family history of endometriosis	Yes No	43 321	11.8 88.2

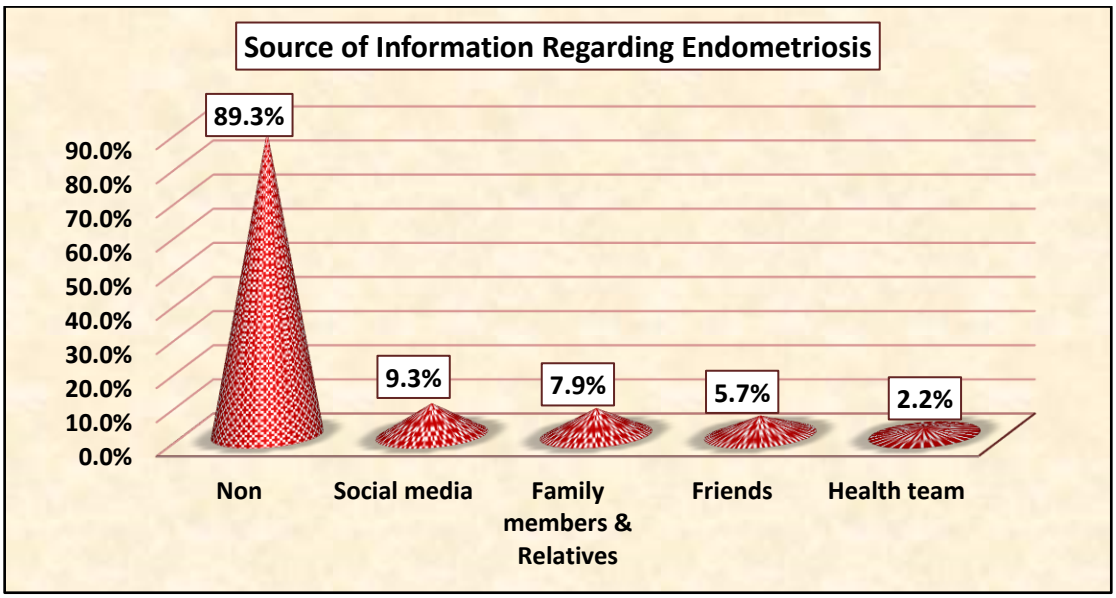

Figure (1): Distribution of studied sample regarding source of information about endometriosis (n=364)

Table (2): Distribution of the students' awareness regarding anatomy and physiology of female genital system at Pre- intervention, Post- intervention and follow-up phases (n=364).

Items	Pre-intervention				Post-intervention				Follow-Up				X^2 1	P-value	X^2 2	P-value
	Correct answer		Incorrect answer		Correct answer		Incorrect answer		Correct answer		Incorrect answer					
	No	%	No	%	No	%	No	%	No	%	No	%				
Components of female genital system	63	17.3	301	82.7	293	80.5	71	19.5	289	79.4	75	20.6	290.8	0.000**	0.13	0.71 ns
Composition of vulva	102	28.0	262	72.0	311	85.4	53	14.6	297	81.6	67	18.4	277.0	0.000**	1.9	0.16 ns
Components of internal genitalia	84	23.1	280	76.9	306	84.1	58	15.9	295	81.0	69	19.0	272.1	0.000**	1.15	0.28 ns
Components of external genitalia	72	19.8	292	80.2	299	82.1	65	17.9	292	80.2	72	19.8	283.2	0.000**	0.44	0.50 ns
Site of the uterus	49	13.5	315	86.5	275	75.5	89	24.5	273	75.0	91	25.0	284.0	0.000**	0.03	0.86 ns
Layers of the uterus	22	6.0	342	94.0	281	77.2	83	22.8	278	76.4	86	23.6	379.2	0.000**	0.06	0.79 ns
Function of the uterus	137	37.6	227	62.4	317	87.1	47	12.9	315	86.5	49	13.5	189.6	0.000**	0.04	0.82 ns
Site of the ovaries	142	39.0	222	61.0	326	89.6	38	10.4	318	87.4	46	12.6	202.5	0.000**	0.86	0.35 ns
Number of ovaries that present in female reproductive system	285	78.3	79	21.7	339	93.1	25	6.9	335	92.0	29	8.0	32.7	0.000**	032	0.57 ns
Function of the ovaries	131	36.0	233	64.0	333	91.5	31	8.5	331	90.9	33	9.1	242.5	0.000**	0.06	0.79 ns
Female hormones that produced by ovaries.	61	16.8	303	83.2	305	83.8	59	16.2	300	82.4	64	17.6	327.1	0.000**	0.24	0.62 ns
Site of the fallopian tube	86	23.6	278	76.4	293	80.5	71	19.5	291	79.9	73	20.1	235.8	0.000**	0.03	0.85 ns
Parts of fallopian tube	33	9.1	331	90.9	287	78.8	77	21.2	280	76.9	84	23.1	359.7	0.000**	0.39	0.53 ns
Function of the fallopian tubes	92	25.3	272	74.7	319	87.6	45	12.4	312	85.7	52	14.3	287.9	0.000**	0.58	0.44 ns
Site of the vagina	110	30.2	254	69.8	297	81.6	67	18.4	292	80.2	72	19.8	194.8	0.000**	0.22	0.63 ns
Function of the vagina	156	42.9	208	57.1	342	94.0	22	6.0	337	92.6	27	7.4	219.8	0.000**	0.54	0.46 ns
Total awareness score																
Adequate	92		25.3%		306		84.1%		297		81.6%		253.8	0.000**	0.78	0.37 ns
In adequate	272		74.7%		58		15.9%		67		18.4%					

Chi-square test (X^2); P >0.05 (No statistical significant); *P ≤0.05 (Statistically significant); ** P ≤0.001 (Highly statistically significant).

- X^2 1 between pre-intervention and post-intervention
- X^2 2 between post-intervention and follow-up

Table (3): Distribution of the students' awareness regarding menstrual cycle at Pre- intervention, Post- intervention and follow-up phases (n=364).

Items	Pre-intervention				Post-intervention				Follow-Up				X^2 1	P-value	X^2 2	P-value
	Correct answer		Incorrect answer		Correct answer		Incorrect answer		Correct answer		Incorrect answer					
	No	%	No	%	No	%	No	%	No	%	No	%				
Age at menarche	292	80.2	72	19.8	347	95.3	17	4.7	343	94.2	21	5.8	38.7	0.000**	0.44	0.50 ns
Frequency of menstruation	290	79.7	74	20.3	348	95.6	16	4.4	345	94.8	19	5.2	42.6	0.000**	0.27	0.60 ns
Duration of menstruation	294	80.8	70	19.2	350	96.2	14	3.8	347	95.3	17	4.6	42.2	0.000**	0.30	0.58 ns
Volume of menstrual cycle in ml	108	29.7	256	70.3	300	82.4	64	17.6	294	80.8	70	19.2	205.5	0.000**	0.32	0.56 ns
Length of menstrual cycle	298	81.9	66	18.1	348	95.6	16	4.4	345	94.8	19	5.2	34.3	0.000**	0.27	0.60 ns
The meaning of menstrual molimina	100	27.5	264	72.5	309	84.9	55	15.1	296	81.3	68	18.7	243.7	0.000**	1.65	0.19 ns
The meaning of polymenorrhea	65	17.9	299	82.1	296	81.3	68	18.7	292	80.2	72	19.8	293.2	0.000**	0.141	0.70 ns
The meaning of menorrhagia	68	18.7	296	81.3	299	82.1	65	17.9	295	81.0	69	19.0	293.0	0.000**	0.146	0.70 ns
General causes of abnormal uterine bleeding	76	20.9	288	79.1	301	82.7	63	17.3	297	81.6	67	18.4	278.5	0.000**	0.15	0.69 ns
Local causes of abnormal uterine bleeding	71	19.5	293	80.5	297	81.6	67	18.4	294	80.8	70	19.2	280.6	0.000**	0.08	0.77 ns
Total awareness score																
Adequate	108		29.7%		309		84.9%		297		81.6%		266.7	0.000**	1.41	0.23 ns
In adequate	256		70.3%		55		15.1%		67		18.4%					

Chi-square test (X^2); P >0.05 (No statistical significant); *P ≤0.05 (Statistically significant); ** P ≤0.001 (Highly statistically significant).

- X^2 1 between pre-intervention and post-intervention
- X^2 2 between post-intervention and follow-up

Table (4): Distribution of the students' awareness regarding endometriosis at Pre- intervention, Post- intervention and follow-up phases (n=364).

Items	Pre-intervention				Post-intervention				Follow-Up				X^2 1	P-value	X^2 2	P-value
	Correct answer		Incorrect answer		Correct answer		Incorrect answer		Correct answer		Incorrect answer					
	No	%	No	%	No	%	No	%	No	%	No	%				
Meaning of the endometrium	33	9.1	331	90.9	287	78.8	77	21.2	280	76.9	84	23.1	359.7	0.000**	0.39	0.53 ns
Meaning of endometriosis	22	6.0	342	94.0	281	77.2	83	22.8	278	76.4	86	23.6	379.2	0.000**	0.06	0.79 ns
Risk factors for endometriosis	17	4.7	347	95.3	285	78.3	79	21.7	281	77.2	83	22.8	406.4	0.000**	0.12	0.72 ns
Causes of endometriosis	19	5.2	345	94.8	287	78.8	77	21.2	284	78.0	80	22.0	404.9	0.000**	0.07	0.78 ns
Factors that determine the stage a woman suffers from endometriosis	15	4.1	349	95.9	291	79.9	73	20.1	287	78.8	77	21.2	429.4	0.000**	0.13	0.71 ns
Causes of endometriosis pain	12	3.3	352	96.7	290	79.7	74	20.3	285	78.3	79	21.7	437.3	0.000**	0.20	0.64 ns
Physical symptoms of endometriosis	17	4.7	347	95.3	288	79.1	76	20.9	283	77.7	81	22.3	414.4	0.000**	0.20	0.65 ns
Psychological symptoms of endometriosis	52	14.3	312	85.7	302	83.0	62	17.0	398	81.9	66	18.1	343.6	0.000**	0.15	0.69 ns
Types of bleeding due to endometriosis	13	3.6	351	96.4	284	78.0	80	22.0	281	77.2	83	22.8	417.6	0.000**	0.07	0.79 ns
Characteristics of dysmenorrhea due to endometriosis	18	4.9	346	95.1	292	80.2	72	19.8	286	78.6	78	21.4	421.7	0.000**	0.30	0.58 ns
Sites of endometriosis	9	2.5	355	97.5	292	80.2	72	19.8	288	79.1	76	20.9	453.6	0.000**	0.13	0.71 ns
Factors that reduce the risk of endometriosis	16	4.4	348	95.6	297	81.6	67	18.4	292	80.2	72	19.8	442.5	0.000**	0.22	0.63 ns
Diagnosis of endometriosis	49	13.5	315	86.5	275	75.5	89	24.5	273	75.0	91	25.0	284.0	0.000**	0.03	0.86 ns
Types of treatment for endometriosis	43	11.8	321	88.2	294	80.8	70	19.2	291	79.9	73	20.1	348.0	0.000**	0.07	0.78 ns
Hormonal therapy for endometriosis	12	3.3	352	96.7	296	81.3	68	18.7	294	80.8	70	19.2	453.9	0.000**	0.03	0.85 ns
Surgical treatment for endometriosis	9	2.5	355	97.5	293	80.5	71	19.5	289	79.4	75	20.6	456.4	0.000**	0.13	0.71 ns
Factors that affect choosing method of treatment	14	3.8	350	96.2	300	82.4	64	17.6	297	81.6	67	18.4	458.0	0.000**	0.08	0.77 ns
Complications of endometriosis	19	5.2	345	94.8	303	83.2	61	16.8	302	83.0	62	17.0	449.1	0.000**	0.01	0.92 ns
Foods should be consumed for women with endometriosis	47	12.9	317	87.1	307	84.3	57	15.7	306	84.1	58	15.9	371.7	0.000**	0.01	0.91 ns
Methods that reduce endometriosis pain	44	12.1	320	87.9	310	85.2	54	14.8	307	84.3	57	15.7	389.0	0.000**	0.09	0.75 ns
Total awareness score																
Adequate	18		4.9%		292		80.2%		288		79.1%		241.7	0.000**	0.13	0.71 ns
In adequate	346		95.1%		72		19.8%		76		20.9%					

Chi-square test (X^2); P >0.05 (No statistical significant); *P ≤0.05 (Statistically significant); ** P ≤0.001 (Highly statistically significant).

- X^2 1 between pre-intervention and post-intervention
- X^2 2 between post-intervention and follow-up

Table (5): Distribution of the students' awareness regarding adaptive healthy measures toward endometriosis at Pre-intervention, Post- intervention and follow-up phases (n=364).

Items	Pre-intervention				Post-intervention				Follow-Up				X^2 1	P-value	X^2 2	P-value
	Yes		No		Yes		No		Yes		No					
	No	%	No	%	No	%	No	%	No	%	No	%				
Doing exercise	100	27.5	264	72.5	309	84.9	55	15.1	296	81.3	68	18.7	68	18.7	1.65	0.19 ns
Decreased calorie intake	72	19.8	292	80.2	299	82.1	65	17.9	292	80.2	72	19.8	72	19.8	0.44	0.50 ns
Small, frequent diet (every day 4 – 5 times)	49	13.5	315	86.5	275	75.5	89	24.5	273	75.0	91	25.0	91	25.0	0.03	0.86 ns
Balanced meals with CHO, protein, fat	92	25.3	272	74.7	319	87.6	45	12.4	312	85.7	52	14.3	52	14.3	0.58	0.44 ns
Increase fiber intake (vegetables and fruits)	71	19.5	293	80.5	297	81.6	67	18.4	294	80.8	70	19.2	70	19.2	0.08	0.77 ns
Eating a diet rich in omega 3	61	16.8	303	83.2	305	83.8	59	16.2	300	82.4	64	17.6	64	17.6	0.24	0.62 ns
Decrease fat intake	86	23.6	278	76.4	293	80.5	71	19.5	291	79.9	73	20.1	73	20.1	0.03	0.85 ns
Avoid processed meat	108	29.7	256	70.3	300	82.4	64	17.6	294	80.8	70	19.2	70	19.2	0.32	0.56 ns
Limit salt intake	84	23.1	280	76.9	306	84.1	58	15.9	295	81.0	69	19.0	69	19.0	1.15	0.28 ns
Total awareness score																
Adequate	84		23.1%		305		83.8%		295		81.0%		269.6	0.000**	0.94	0.33 ns
In adequate	280		76.9%		59		16.2%		69		19.0%					

Chi-square test (X^2); P >0.05 (No statistical significant); *P ≤0.05 (Statistically significant); ** P ≤0.001 (Highly statistically significant).

- X^2 1 between pre-intervention and post-intervention
- X^2 2 between post-intervention and follow-up

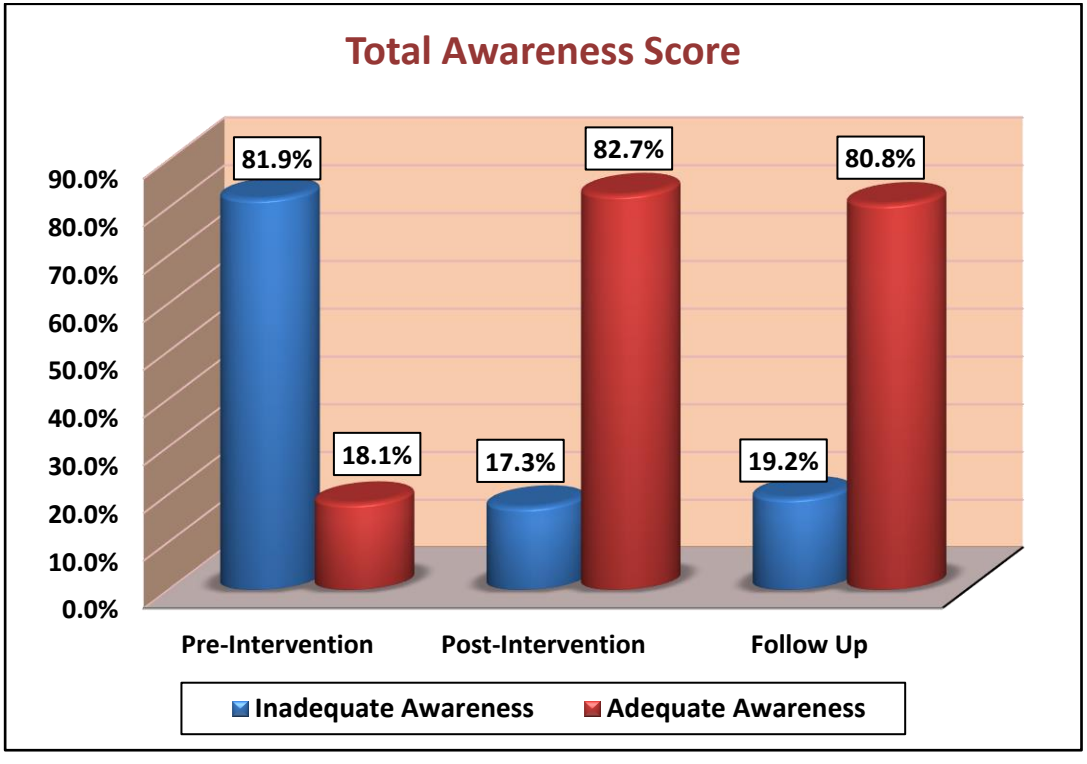

Figure (2): Distribution of studied sample regarding their total awareness score at Pre- intervention, Post- intervention and follow-up phases (n=364).

Table (6): Distribution of the studied sample according to their satisfaction about the implemented self-instructional module (n=364).

Satisfaction statements	Excellent		Very good		Good		Accepted		Weak	
	No	(%)	No	(%)	No	(%)	No	(%)	No	(%)
The subject was interesting	278	76.4	48	13.2	23	6.3	15	4.1	0	0.0
The subject presented in a logical sequence	273	75.0	39	10.7	30	8.2	22	6.0	0	0.0
The scientific content was new and added to enhance my knowledge	270	74.2	40	11.0	29	7.9	25	6.9	0	0.0
The scientific material included in the booklet had been clear & easy to understand	293	80.5	34	9.3	24	6.6	13	3.6	0	0.0
Your assessment of the organization and quality of printing material	283	77.7	36	9.9	29	7.9	16	4.4	0	0.0
The booklet language was easy to understand	301	82.7	28	7.7	22	6.0	13	3.6	0	0.0

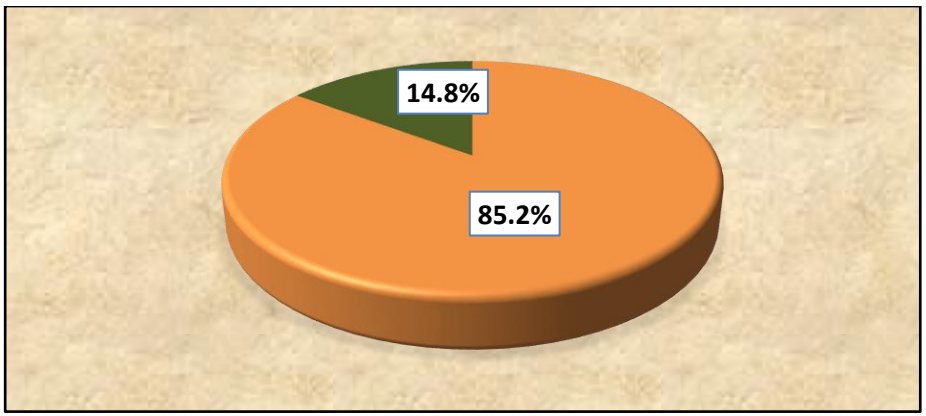

Figure (3): Distribution of studied sample regarding total satisfaction from the implemented self-instructional module (n=364).

Table (7): Relation between total awareness scores of studied sample and their personal data at Pre- intervention, Post-intervention and follow-up phases (n=364).

Items	Pre-intervention				Post-intervention				Follow-Up				X^2 1 P-value	X^2 2 P-value	X^2 3 P-value
	Adequate (n=66)		In adequate (n=298)		Adequate (n=301)		In adequate (n=63)		Adequate (n=294)		In adequate (n=70)				
	No	%	No	%	No	%	No	%	No	%	No	%			
Age (years)															
17-	11	16.7	45	15.1	47	15.6	9	14.3	45	15.3	11	15.7	1.07	5.3	4.0
18-	50	75.8	239	80.2	242	80.4	47	74.6	237	80.6	52	74.3	0.58	0.06	0.13
19	5	7.6	14	4.7	12	4.0	7	11.1	12	4.1	7	10.0			
Mothers' education															
Neither read nor write	2	3.0	9	3.0	10	3.3	1	1.6	9	3.1	2	2.9			
Read and write	2	3.0	35	11.7	31	10.3	6	9.5	30	10.2	7	10.0			
Primary education	7	10.6	66	22.1	60	19.9	13	20.6	57	19.4	16	22.9	17.5	7.2	8.6
Secondary education	25	37.9	119	39.9	126	41.9	18	28.6	126	42.9	18	25.7	0.002*	0.12	0.07
University education	30	45.5	69	23.2	74	24.6	25	39.7	72	24.5	27	38.6			
Mothers' occupation															
Working	27	40.9	115	38.6	123	40.9	19	30.2	119	40.5	23	32.9	0.12	2.5	1.37
House wife	39	59.1	183	61.4	178	59.1	44	69.8	175	59.5	47	67.1	0.72	0.11	0.24
Residence															
Rural	40	60.6	158	53.0	160	53.2	38	60.3	157	53.4	41	58.6	1.25	1.07	0.60
Urban	26	39.4	140	47.0	141	46.8	25	39.7	137	46.6	29	41.4	0.26	0.29	0.43
Family history of endometriosis															
Yes	15	22.4	28	9.4	32	10.6	11	17.5	32	10.9	11	15.7	8.81	2.3	1.2
No	52	77.6	269	90.6	269	89.4	52	82.5	262	89.1	59	84.3	0.003*	0.12	0.26

Chi-square test (X^2); P >0.05 (No statistical significant); *P ≤0.05 (Statistically significant); ** P ≤0.001 (Highly statistically significant).

- X^2 1 Pre-intervention
- X^2 2 Post-intervention
- X^2 3 Follow up

4. Discussion

Endometriosis is a disease characterized by the presence of tissue resembling endometrium outside the uterus. It causes a chronic inflammatory reaction resulting in the formation of adhesions and fibrosis within the pelvis and other parts of the body. Endometriosis can cause infertility due to the probable effects on the pelvic cavity, ovaries, fallopian tubes or uterus ***WHO, (2021)***. Prevalence of endometriosis from January 2012 to October 2014 in Dakahlia Governorate in Egypt for adolescents' girls with acute dysmenorrhea was 12.3% ***Mohamed and Hassan, (2020).***

Due to the elusiveness of symptoms, the most important component of early detection is proper and exhaustive knowledge ***Joanna and Magdalena, (2021)***. Management is challenging includes distraught adolescent girls and parents. There is no cure for endometriosis, but there are pharmacologic therapies and surgeries that can be done to manage symptoms. Pharmacologic therapy includes analgesic agents and hormonal therapy, such as oral contraceptives .Surgery is beneficial in treating pain with all stages of endometriosis and improving fertility in adolescents with infertility. Optimal and complete laparoscopic excision might slow disease progression. Postoperative medical therapy may have benefit to treat endometriosis pain but is not conclusive with regard to preventing disease progression or recurrence ***Ramphal, (2019***).

The present research aimed to evaluate the effect of self-instructional module on adolescent nursing students' awareness regarding endometriosis as challenge for prevention of future infertility. The present research results represented that there were significant improved of all items of awareness regarding endometriosis following application of self-instructional module and majority of adolescent students were satisfied with self-instructional module about endometriosis indicating that the self-instructional module was effective. The results of the present research were significantly accepted the research hypotheses.

The current research findings displayed that, more than three quarters of the studied sample with a mean age of 17.89 ±0.44 and nearly two fifths of sample's with secondary education also, nearly two thirds of the student's mothers not work. More than half of the studied sample was lived in a rural area and the majority of them had no family history of endometriosis. These results were consistent with ***Ahmed and Radwan, (2021)*** who revealed that nearly two thirds of the studied sample was young less than 20 years in their early reproductive years and majority of sample were lived in rural area. Also, ***Yousef et al., (2019)*** supported these results as near two fifth (38.5%) of studied sample's mother had secondary education and (83.7%) were house wife respectively.

On other hand, these findings were in contrast with ***Mohamed and Hassan., (2020)*** who said that; the mean age of the studied women was 30.45 ± 6.29. But, this difference

may be contributed to the difference in age group of target population included the study Also***, Dun et al., (2015)*** who stated that (92%) of studied sample had family history of endometriosis.

Concerning source of information about endometriosis, the present research results illustrated that the majority of sample not had any source of information regarding endometriosis while, minority of them had source of information from family, social media, friends and relatives, and health team. These results reflected that the endometriosis is unfamiliar health problems among the adolescent females.

On the same line, the current research revealed that, there was a highly statistically significant difference of the studied sample awareness regarding anatomy and physiology of female genital system and menstrual cycle post the self-instructional module implementation compared to pre intervention ($P < 0.001$). This improvement was also maintained up to the follow-up phase through the observed results. This lack of awareness at pre intervention phase may be due to that more than half of the studied sample lived in a rural area this point made them shameless to discuss issues related to reproductive organs among them. And this finding might be due to stigma around menstrual issues, which make teens, parents hesitant to see/refer to the gynecologist, especially in a non-sexually active young adolescent female and also lack of awareness among all age groups regarding menstrual health.

This result was supported by ***Mohamed and Hassan, (2020)*** who indicated that there was a highly statistically significant difference of the studied group awareness level at pre and post intervention regarding anatomy and physiology of female genital system, menstrual cycle and there was insignificant difference between post and follow-up phase ($P > 0.05$). This may be due to similarity of samples.

In relation to students' awareness regarding endometriosis meaning, causes , risk factors and all items related to endometriosis, the research findings proved that there were a highly statistically significant difference in relation to all items of studied sample's awareness regarding endometriosis at post-intervention and follow up phase compared to pre-intervention phase ($P \leq 0.001$) as most of studied sample had incorrect knowledge regarding meaning, causes, risk factors of endometriosis which improved at post intervention and follow-up phases ($P < 0.001$). This may be due to the use of simple language self-instructional module that played an effective role in helping adolescent female to acquire knowledge about endometriosis. Also, may be due to the female university students' ability to gain knowledge easily and they are interested in the research topic. These results came in the same line with ***Hassan, (2018***) who revealed that, the majority among studied sample had incorrect knowledge about the definition, risk factors, manifestation, sites, diagnostic test, prevention, complications and treatment.

Moreover, the finding of current research was also accepted by ***Mohamed and Hassan, (2020)*** who proved that all studied sample had decreased mean score of total awareness before intervention in all parameters (18.095±5.36) as definition, risk factors, sites, symptoms, causes, and complications. This may be due to that majority of sample was from rural area in which it was immoral to discuss issues related to reproductive organ among young female and explained that women in Egypt had little or no knowledge about endometriosis before. This lack of awareness can be related to the fact that the young women didn't receive any information regarding endometriosis.

Also, ***Abd El-Mouty et al., (2016)*** stated that; post implementation of educational session the most of participant's women had corrected awareness about endometriosis. This improvement could be contributed to that nursing student were be interested to attend the educational sessions and also, the long-term retention of knowledge, as well as wide actualities of the educational used methods.

Moreover, ***Ahmed and Radwan, (2021)*** illustrated that all sample had decreased mean score of awareness at pre-intervention phase in all parameters regarding signs and symptoms such as cyclical intestinal complainants, hemorrhage and depression (.00± 0.000, .12±0.33, &27±0.62 respectively). These were upturned post and follow up phases with highly satisfactory change post phase in all parameters. On other hand, these findings were contrasted with ***Stephanie, (2021)*** who indicated that a majority of participants have somewhat satisfactory knowledge of endometriosis as a majority of participants were able to identify what endometriosis is, risk factors and symptoms.

Concerning awareness of studied sample regarding adaptive healthy measures toward endometriosis, the present research proved that there was a highly statistically significant difference in relation to all items at post-intervention and follow up phase compared to pre-intervention phase ($P \leq 0.001$) this result was congruent with ***Salama and Elbana, (2018)*** who represented a highly statistically significant difference between total adaptive healthy measures score before and after implementation phases ($p<0.001$). Also, ***Lin, (2014)*** stated that some of the studied women had awareness of the effect of practicing exercises, decreasing the weight, taking contraceptives, and eating healthy diet contain fruit and vegetables on reliving symptoms.

Regarding total awareness of endometriosis among studied sample, the current research findings revealed that four fifths of the studied sample had adequate total awareness score at post-intervention and at follow up phases ($P \leq 0.001$) compared to less than one fifth of studied sample had adequate total awareness score regarding endometriosis at pre-intervention phase. This result agreed with ***Hassan, (2018***) who showed that majority among studied sample had incorrect knowledge about endometriosis pre intervention compared to highly significant improvement post and three months post intervention.

Additionally, ***Mohamed et al., (2021)*** indicated that nearly three quarters of both study and control groups respectively had poor knowledge score about endometriosis before program implementation. Meanwhile, more than three quarters of study group had good knowledge score about endometriosis and only (15, 1%) of control group had good knowledge score about endometriosis after program implementation. Moreover, these findings were in same line with ***Mohamed et al., (2021)*** who displayed a highly statistically significant improvement in women's knowledge regarding endometriosis after implementing instructional nursing strategies and at follow-up time compared to their knowledge before it. This finding might be due to using a simple, clear language for the instructional nursing strategies, which can be clearly understood by the study sample, enhancing their awareness about endometriosis.

Concerning relation between total awareness scores of studied sample and personal data at pre intervention phase, the results proved that, no a statistically significant relation were found between total awareness score of studied students and personal data (age, mother's occupation and residence) ($p>0.05$).on other hand, there was a statistical significant relation between total awareness score of studied sample and personal data (mother's education and family history of endometriosis) ($p\leq0.05$). These findings were supported by ***Ahmed and Radwan, (2021)*** who showed a significant relation between students' awareness level and family history of endometriosis ($P \leq 0.001$). Also, this result was in the line of ***Abd El-Mouty et al., (2016)*** who stated that there was a relationship between socio demographic data and score of women's knowledge regarding endometriosis. This average score of knowledge was significantly different between age groups at pre education session and after education, while it became not significantly different at follow up phase.

On the other hand, there was no a statistically significant relation between total awareness score of studied sample and all personal data (student's age, mother's education, mother's occupation, residence and family history of endometriosis) at post intervention and follow up phases $p>0.05$.

The present study finding had pointed out our attention toward significant improvement of young female awareness immediate post and one month post intervention compared to pre intervention.

In addition, endometriosis vague and not easy to detect, diagnose and differentiate it from other similar manifestation of other disease. Consequently, the present study findings stress on the importance of awareness raising program among adolescent girls. The findings of our research were supported by ***Brandes et al., (2017)*** who stated that in gynecological practice, special attention should be given to the very young female, as the early onset of

endometriosis symptoms and a long delay in diagnosis may indicate the risk of an unfavorable course of the patient's medical and socio-medical history over time.

Finally the present study finding had directed our attention that the self-instructional module is the most key excessively adopted health promotion strategies used for adolescent female and is almost universally represented as effective health promotion is better than cure this is when the young female has awareness. In addition, all supportive instruction guideline and educational sessions concentrate on change false concept and increase awareness of participant young female regarding health problem for early detection, management and prevention of further complications of endometriosis which was reflected upon their utilization of health services for early detection and management of endometriosis.

5. Conclusion:

The current research findings concluded that research hypotheses were accepted and adolescent female students exhibited better awareness about endometriosis post self-instructional module implementation and this support the first hypothesis. Also, the majority of adolescent female nursing students were satisfied with the self-instructional module regarding endometriosis and this support the second hypothesis.

6. Recommendations:

The following recommendations can be suggested: Based on the findings of the current research:

-Raising awareness regarding endometriosis through provision of the instructional module for all female university students.

-Educational programs about menstrual issues, what is normal and abnormal should be established to break cycle carless and delay for seeking health services.

-Designing health education programs about endometriosis and its related risk factors should be a priority to ensure early diagnosis of the disease.

Further researches:

Replicate the current study on another different setting and larger sample size.

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Conflicts of interest disclosure:

The authors declare that there is no conflict of interest.

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الملخص العربى

عنوان المقال

تأثير نموذج التعلم الذاتي على وعي طالبات التمريض المراهقات بشأن الانتباذ البطاني الرحمي: تحديات للوقاية من العقم في المستقبل

المقدمـــــة: في السنوات الأخيرة تم اكتشاف أن الانتباذ البطاني الرحمي لدى المراهقات يمثل مشكلة صعبة في أمراض النساء. يُعرف الانتباذ البطاني الرحمي بأنه السبب الأكثر شيوعًا للعقم عند السيدات صغيرات السن ويمثل واحد من كل عشر مراهقات وسيدات في سن الإنجاب. تحظى زيادة الوعي بالانتباذ البطاني الرحمي في مرحلة المراهقة باهتمام متزايد الآن.

الهدف من البحث: هدف البحث الحالي إلى تقييم تأثير نموذج التعلم الذاتي على وعي طالبات التمريض المراهقات بشأن الانتباذ البطاني الرحمي : تحديات للوقاية من العقم في المستقبل.

تصميم البحث : تم إعتماد تصميم بحث شبه تجريبي لتحقيق هدف هذه الدراسة.

مكان البحث : أجريت الدراسة بكلية التمريض جامعة بنها.

عينة البحث : عينة هادفة من ثلاثمائة وأربعة وستين مراهقة من طالبات التمريض.

أدوات البحث: تم جمع البيانات من خلال ثلاث أدوات رئيسية: استمارة استبيان ذاتي ، وورقة تقييم وعي الطالبات المراهقات فيما يتعلق بالانتباذ البطاني الرحمي وورقة مقياس رضا الطالبات المراهقات عن تنفيذ نموذج التعلم الذاتى الخاص بالانتباذ البطاني الرحمي.

النتائـــج: أوضحت الدراسة ان أقل من خُمس العينة اللاتي تمت دراستهن كان لديهن درجة وعي كافية بشأن الانتباذ البطاني الرحمي في مرحلة ما قبل التدخل مقارنةً بأربعة أخماس العينة كان لديهن درجة وعي كافية في مراحل ما بعد التدخل وفي مراحل المتابعة .كما لا توجد علاقة ذات دلالة إحصائية بين مجموع درجات الوعي للعينة اللاتي تمت دراستهن وجميع البيانات الشخصية (العمر ، تعليم الأمهات ، مهنة الأمهات ، محل الإقامة والتاريخ العائلي للانتباذ البطاني الرحمي) في مرحلتي ما بعد التدخل والمتابعة.

التوصيات: نشر الوعي حول الانتباذ البطاني الرحمي من خلال توفير نموذج تعليمي لجميع طالبات الجامعة.