

The effect of life style modification on women with Adenomyosis related pain

*Sabah A. Abd El Haleem, ** Hend Hassan Ali, ***Amal Talaat abd El wahed

*Fellow OF Community Health nursing in Obstetrics and Gynecological hospital. Ain Shams University

**Fellow OF Community Health nursing in Obstetrics and Gynecological hospital. Ain Shams University

*** Assistant professor of maternity & gynecological health nursing faculty of nursing –Ain shams university

Abstract: Adenomyosis is a condition in which the inner lining of the uterus (the endometrium) breaks through the muscle wall of the uterus (the myometrium). Aim of the study: to evaluate the effect of life style modification on women with adenomyosis related pain. Design: quasi experimental research design was used to conduct the study setting: outpatient clinics of Maternity and Gynecological Hospital. Ain shams university Sample: A purposive included 87 women diagnosed with adenomyosis was selected from the previous setting Tools of data collection: Two tools used for data collection the first tool women interviews questionnaire includes socio demographic & Knowledge Assessment Sheet and second tool Visual Analogue Scale (VAS). Results: There was a significant improvement in total knowledge regarding adenomyosis among the women in post test as compared to pre test assessment ($p < 0.0001$). There was a statistically significant correlation between pre educational program kind of diet with symptoms of adenomyosis $P=0.011$. While no correlation between three moths post education exercise and symptoms of adenomyosis. Conclusion: The current study supported the research hypotheses that the educational program sessions about lifestyle modification particularly dietary education was an effective and reduces adenomyosis pain. Recommendation: The study recommended that applying educational programs for women to raise their awareness about adenomyosis must be instituted in all communities with a view to bring about public awareness. A simplified and comprehensive booklet should be available for all women with adenomyosis.

Keywords: lifestyle modification, adenomyosis, pain

1. INTRODUCTION

Adenomyosis is a benign uterine disorder in which the endometrium gland and pathological stroma appear in the uterine muscle, (Taran et al., 2012). This is due to the Invading the uterine muscle by basal glands and stroma while destroying the structure of the normal uterine muscle (Kishi, et al., 2012). Adenomyosis is an important clinical challenge in the economics of gynecology and health care, and hysterectomy is often used to treat it in premenopausal women and the area around menopause., (Polina et al.,2012).Women affected by adenomyosis may present with abnormal uterine bleeding , dysmenorrhea, dyspareunia, and non-pelvic pain or infertility, (Kim et al.,2011).

An accurate determination of adenomyosis incidence or prevalence is unclear due to previous under-reporting and under-diagnosis. In women who undergo assisted reproductive technology (ARTs), adenomyosis prevalence is 20% to 25%. (Puente et al., 2016). Classically, adenomyosis is described as a disease of pre-menopausal, multiparous women in their thirties to forties, (Pinzauti, et al.,2015).Thus , Improvements in the diagnostic ability of ultrasound and MRI standards have led to more insight into the affected population (Struble , Reid Setal,2016).Although The most common risk factors that are increasingly diagnosed in young women are in women with infertility, have abnormal pain or bleeding in the womb (AUB), or both (Naftalin et al., 2016).

Adenomyosis It is negative impact that affect on woman's quality of life, high percentage of cases due to AUB and pain that requires a lifelong management plan through medical or surgical treatment, (Abbott, 2017) Regarding the current

management adenomyosis, there are no international guidelines for pursuing surgical or medical treatment of adenomyosis (**Andres et al. , 2017**) This will be of paramount importance in the future because the disease requires a lifelong management plan, including controlling pain and bleeding, maintaining fertility, and pregnancy outcomes, (**Vannuccini, et al. ,2017**).

Therefore, there is a theory that proves that dietary fats affect a woman's body's production of prostaglandins, and it is considered one of the chemicals that cause uterine contractions. And it is possible increased levels of prostaglandins can cause increased estrogen production, which affects the growth of endometrial tissue of the uterus another study found a relationship between estrogen levels and high-fat diets. Increased fat intake in the diet leads to an increase in estrogen production in a woman's body. This occurs when the woman is exposed to weight gain if they follow a diet low in vegetables and fruits rich in red meat. (**Parazini ., 2014**)

Foods rich in omega-3, vitamin D and resveratrol, as well as Increasing fruits and vegetables to eat, preferably organic and eating whole grains, has a protective effect, which reduces the risk of their development and the possibility of adenomyosis (**Halpern, et al 2015**). Another aspect of lifestyle such as exercise or physical activities, it seems that regular exercise has protective effects against symptoms of adenomyosis, exercises that affect women's health in general, and adenomyosis in particular, and it is known that exercises release endorphins. When the exercise is done, the brain releases "good feeling" chemicals called endorphins. These naturally occurring hormones act like pain relievers Regular exercise reduces the amount of estrogen in the body and the goal of adenomyosis treatment is to reduce estrogen levels to improve symptoms of adenomyosis (**Josh A, 2017**).

Lifestyle modifications included changing long-term habits, usually from eating or physical activity, and maintaining new behavior for several months or years is very important in understanding and management of adenomyosis related pain, so that an essential role of the nurse in adenomyosis management is providing health education in order to modify the unhealthy behaviors, Improve the physical condition of women, reduce pain intensity, and Prevent developments of adenomyosis and improve the health status of women,

Significant of the problems

Adenomyosis has a negative impact on women's Quality of life in a high incidence of cases due to abnormal uterine bleeding AUB and the pain required lifelong management plan through medical or surgical treatment (**Tosti et al., 2016**) Adenomyosis an important clinical challenge in gynecology and healthcare economics. Adenomyosis Prevalence varies widely ranging from 5% to 70%. In women who undergo reproductive assistive technologies (ARTs), the adenomyosis prevalence is 20 to 25%.

In Egypt the prevalence of Adenomyosis is difficult to determine because of lack of documentation or filling system for cases. Ultrasound unit's data at Ain Shams University Maternity and gynecological Hospital show the prevalence of 20.9% of ultrasound markers from adenomyosis in the general population (**2018**). Health care provider must be involved in provision of educational program about exercise and diet that can interfere with the pain of adenomyosis. In the opinion of researchers, there is a lack of evidence about the studies published in Egypt about the importance of the educational program in modifying the lifestyle that can affect the pain associated with adenomyosis and improves the health condition of the female of this study helped researchers to explore the critical areas in adenomyosis management that may not be discovered before, and a new way to manage the pain associated with adenomyosis

Aim of the study

The current research aimed to evaluate the effect of lifestyle modification on adenomyosis related pain through:

- 1) Assessing women knowledge and practices toward adenomyosis,
- 2) Assessing the level of pain intensity according to identify their need
- 3) Developing and implementing a program according to their need
- 4) Evaluating women life improvement after implantation the program

Research Hypothesis

Women who receive and follow educational program regarding modify their lifestyle such as exercise practices and food habits had higher knowledge and lesser adenomyosis associated pain than before implementing educational program

2. SUBJECTS AND METHODS

Research Design:

Quasi experimental design (time series) has been utilized in this study. One group pre-post test

Setting:

The present study was conducted among women with a adenomyosis in the outpatient clinics in maternity and gynecological hospital affiliated to Ain Shams University.

Sample type: A purposive sample was used

Sample size: The sample size (87) of women diagnosed with an adenomyosis according Inclusion criteria to collect the sample size, calculated based on confidence level = of 0.95 % and margin of error = 5%

Inclusion criteria; women with adenomyosis during their reproductive age even single or married, o and willing to participate

Exclusion criteria: women with adenomyosis who have chronic disease and women have other gynecological problem.

Ethical Consideration:

An official permission to carry out the study was granted from the director of maternity and gynecological hospital. All women were informed about the importance and aim of this study. All women were informed that their participation is voluntary and their rights to withdraw at any time, and confidentiality of the information obtained. Also, the women were informed that the collected data would be used only for the purpose of the present study, as well as for their benefit. Oral consent was obtained from all the participants.

Tools of the study:

Two tools for data collection were used in the present study

1. The first tool:

The interviews questionnaire was used in Arabic and developed by researchers based on the relevant literature, Aim of the study and the data needed to be collected. It is divided into three parts.

Part (1): It was used to assess socio demographic characteristic: such as age, educational level, marital status, residence, occupation and socioeconomic status.

Part (2): It was used to assess Obstetrical data including obstetrical & gynecological history; such as history of delivery, previous gynecological operations, Present obstetric complain such as Vaginal Bleeding and data related how adenomyosis was discovered.

Part (3): It was used to assess women's knowledge and practices about adenomyosis, that includes (10) questions (definition, causes, risk factor, symptoms; lifestyle assessment (exercise and diet) as kinds of food that influence pain associated with adenomyosis and kinds of exercise that influence pain associated with adenomyosis .

Scoring system: Knowledge questions were given scores for each item on the paper. Zero mark were given for No answer, one mark for false answer, two marks incomplete write answer and Three marks were given for write complete answer. And. Then all grades are summarized and it was assigned to each answer representing (good, moderate, poor) respectively. Total knowledge score was classified as: poor (<50%), average (50%-75%), good (> 75%).

2. The second tool:

Visual Analogue Pain Scale (VAS): It was adopted from (Freyd M, 1923), and used by the researchers to assess the subject's level of pain intensity. VAS consists of a straight line with endpoints that define extremes such as "no pain at all" and "pain as bad as possible" ". The measurement was from zero to 10, where zero means no pain while 10 shows the worst pain. The person verbally chooses the most consistent value with the severity of the pain they have experienced in the past 24 hours .VAS Rating Pain level from 0 to 10, Level (0) denoted no Pain, level from 1 to 3 denoted mild pain, a score from 4 to 6 denoted moderate pain and score from 7 to 10 indicated worst or severe pain.

A high reliability was proved by a strong correlation with a coefficient of 0.976 ($p < 0.001$). The high internal consistency of the VAS score was demonstrated by Cronbach-alpha at 0.9117. VAS Rating Pain level from 0 to 10, Level (0) No Pain, (1–3) Mild Pain, (4–6) Moderate Pain, and (7–10) Severe Pain, (Knop et al,2001),

Reliability: Alpha Cronbach's test was used Checks the stability of the tool's internal consistency.

Validity: The questionnaire was tested by panel of 3 experts of obstetrics and Gynecological staff and 2 nursing professors in the field of Maternal and Newborn Health Nursing, Community health nursing who reviewed the instrument for clarity, relevant, comprehensive and applicability for the sample

Pilot study: A pilot study was conducted on 10 % (12 women with adenomyosis) of the total study sample It was conducted to test study process and evaluate the clarity, feasibility, and objectivity of the tools. Modification was carried out based on the results of the pilot. The women participating in the pilot study were excluded from the sample as necessary adjustments done based on the pilot study findings such as (omission of some questions from tool and adding another) in order to strengthen their contents or for more simplicity and clarity. The pilot sample was included in the main study sample.

Field work

An investigator explaining the purpose of the study visited Data collection for this study was carried out through 8 months attending in outpatient unit at maternity and gynecology hospital Ain Shams University from 9 am to 12 pm to interview attended women under inclusion criteria, after obtaining the necessary permissions by each questionnaire it took 5 to 10 minutes to be performed.

At the beginning of the interview, the researcher presented herself to the women, explaining to the participants the goal of the study, and then verbally approving The women who obtained the current study were achieved in three stages: assessment phase (pre-test), implementation phase, follow up and evaluation phase (post-test).

1. Interviewing & Assessment phase:

Interviewing was carried out using structured interviewing questionnaire and pre-test of women knowledge assessment about adenomyosis.

The researchers identified themselves to the women and explained the study aim, benefits and the procedures to be performed. The woman who agreed to participate in the study and meet the inclusion criteria was contacted by the researchers.

Base line assessment of patient's socio demographic, medical & obstetrical data and knowledge about adenomyosis was performed using tool (I) using face to face interviewing session in order to plan for the next meeting, as well as trained women about how they use the VAS during their coming menstruation. Also, women were assessed for level of pain using tool (II) by using telephone call as most of the women refused to meet the researcher at that time. The time needed for completing the questionnaire was 20 minutes for each woman & VAS one min

Program objective: improve knowledge, their lifestyle changes (diet and exercise) related to adenomyosis, and level of adenomyosis related pain.

Content simple anatomy and physiology of uterus, definition, Signs and symptoms of a adenomyosis diagnosis &management. ways of management of its pain,

International Journal of Novel Research in Healthcare and Nursing

Vol. 7, Issue 1, pp: (1-13), Month: January - April 2020, Available at: www.noveltyjournals.com

Method: use method of teaching supported with booklet was used using Arabic understandable language used power point and video to maintain the attention & attraction of women. 1 theoretical session and 2 practical sessions were conducted.

Implementation phase:

In Implementation phase, the program was provided for women during their first meeting during follow up at outpatient gynecological clinic.

An oral instruction as a method of teaching supported with booklet was used using Arabic understandable language. There was a total of 3 sessions each one for 30 minutes. Each educational session had a maximum 3-5 women, & sometimes carried out individually especially during the second one. At the start of the session each woman obtained a copy of a simplified booklet that included information about adenomyosis & ways of managements of its pain.

In the first session, the researchers started to establish rapport with women, then verbal instructions about disease process as definition, signs & symptoms, diagnosis & management. Measures that important to reduce the disease related pain was introduced as diet that could affect adenomyosis related pain,

Advice women to start eating healthy diet which rich in fibers (fruits & vegetables) and healthy ways of cooked meals (boiled and grilled) and to increase diet that has anti-inflammatory and antioxidant actions like diet rich in Omega3. As well as education about negative impact of high salt, caffeine, fried food and fatty red meat on adenomyosis related pain. Also, an education related to type of exercises that could be used by women from 2-3 times per week for 20-30 minutes at least can be carried out through walking, or gymnastics, or aerobic, or bicycle, or running. During that session the researchers trained the women about how to mark their pain level on the line between the two endpoints on visual analogue scale and asked women to plot and rate their level of pain during its occurrence (e.g. during the menstruation, intercourse, defecation, etc.).

In the second session one month later, the researchers met women to ensure that they follow researchers' instructions as well as to respond for any questions.

The third session was by the end of the third month. Women were checked for acquisition of knowledge as well as to determine their improvement using VAS. Each woman was contacted at least one time / 2-3 weeks for about 3 months through telephone or direct contact in outpatient gynecological clinics during follow up to reinforce provided knowledge and respond to their questions if any. Sometimes women refused to come & prefer to use phone call because of their fatigue condition

Evaluation phase:

Each woman was evaluated two times: The first evaluation is in the interviewing and assessment phase using tools and the second evaluation was done 3-month post implementation of the health education sessions. All subjects were assessed for their knowledge, their lifestyle changes (diet and exercise) related to adenomyosis, and level of adenomyosis related pain.

Statistical analysis:

Organize the data collected. Classify and analyze it using SPSS). (Social Sciences Statistical Pack: SPSS version 16). The data was presented using descriptive statistics in the form of frequencies and percentages of the qualitative variables and the variables and standard deviations of the quantitative variables. Inferential statistics: Paired (t) test was used to determine the difference between pretest and post-test evaluations of the same group. Chi-square test (χ^2): was used to study association between two qualitative variables. Correlation between different variables was done using Pearson moment correlation. When p-value ≤ 0.05 , and high significance when p-value ≤ 0.001 and no statistical significance difference was considered when p-value > 0.05 .

Limitation of the study:

Certain obstacles faced the researchers during the implementation of health education such as; (one fifth from studied sample who accept to practice exercise as a modality to reduce severity of pain related to adenomyosis. Mean while they couldn't maintain practicing regular exercise all over the three months follow up, and the rationale of other four fifth from

studied sample was as they have severe pain, fatigue and were not able to either walk by regular manner during the study period. So, the effect of exercise did not reflect significantly on their pain intensity.

3. RESULT

Table (1): Distribution of women with adenomyosis regarding to their socio-demographic characteristics (n=87).

Socio demographic Characteristics	No=87	%
Age/year		
25-30	2	2.3
31-35	6	6.9
36-40	12	13.8
41-46	38	43.7
47-53	29	33.3
Mean \pm SD:42.3 \pm 0.43		
Educational level:		
Primary school	13	14.9
Secondary school	52	59.8
University	22	25.3
Marital status		
Single	2	2.3
Married	85	97.7
Residence		
- Rural	26	29.9
Urban	61	70.1
Occupation		
Employee	24	27.6
House wife	63	72.4
Socioeconomic Status		
Low	38	43.7
Moderate	40	45.9
High	10	11.4

Table (1): It illustrates distribution of the women with adenomyosis regarding to their socio demographic characteristics. Regarding women" age it ranges from 25-53 years old with mean age 42.3 \pm 0.43. Regarding level of education, 59.8% were secondary school. Concerning to residence, 70.1% were living in urban areas. Regarding marital status, of the women were 97.7 % married. Social and economic status 43% of women has a low income.

Table (2): Distribution of women with adenomyosis according to their obstetric history as women reported (n=87).

Item	No=87	%
Past obstetric history		
Number of deliveries		
Nullipara	10	11.5
Para1	32	36.8
Para2	45	51.7
History of Delivery		
Normal delivery	14	16.1
Cesarean delivery	46	52.9
No labor before	2	2.3
Abortion	25	28.7
previous gynecological surgery		
Ovarian surgery	10	11.4
Uterine Curettage	32	36.8
Hysteroscopy	15	17.3
Non	30	34.5
Present obstetric history		
Vaginal Bleeding		
Metrorrhagia	50	57.5
Intermenstrual bleeding	37	42.5
Methods of diagnosis of adenomyosis		
Magnetic resonance imaging	2	2.3
Transvaginal ultrasound sonography 3D	63	72.4
Hysteroscopy	22	25.3
Classification of adenomyosis		
Focal	58	66.7
Diffuse adenomyosis	29	33.3

Table (2) Reveals that 11.5% of women were nullipara, where is 36.8% were para one, 51.7% were multipara, 16.1% of them had history of normal delivery and 52.9% had cesarean delivery. 28.9% of women had history of abortion previously of abortion. Findings indicated that 11.4% of women had previous gynecological surgery as ovarian surgery, 36.8% had previous uterine Curettage, and 17.3% hysteroscopy. Regarding methods of diagnosis 72.4% were diagnosed by Tran’s vaginal ultrasound sonography. The finding indicated that Classification of adenomyosis, 66.7% of women had a focal adenomyosis. While 33.3% complains of diffuse adenomyosis.

Figure (1): Distribution of women related to adenomyosis symptoms as women reported

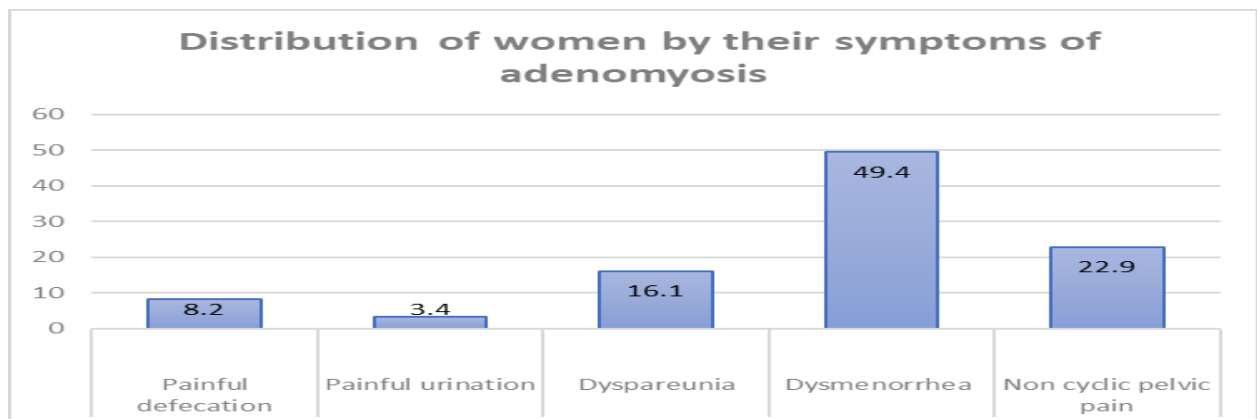


Figure (1) reveals adenomyosis symptoms reported by women were Painful defecation, painful urination, dyspareunia, and dysmenorrhea, non-cyclic pelvic pain (8.2%, 3.4%, 16.1%, 49.4%, and 22.9% respectively).

According to research hypothesis the next tables (3.4.5.6.7)

Table (3): Statistical differences of women by habits of diet Pre educational program and three months after educational program (n=87).

Item	Pre educational Program		Three months after educational program		Test
	No	%	No	%	
Habits of diet					$\chi^2 = 15.534$ P=0.166 NS
Fruit, Vegetables, Grains, Dairy and Herbs	3	3.4	57	65.5	
High Fructose, Lactose, Oligosaccharides and Polyols (FODMAP) Diet	18	20.6	2	2.3	
Mixed	3	3.4	20	22.9	
Food influence hormone regulation	43	49.4	2	2.3	
Red meat consumption (processed meat frozen meat, caffeine, Saturated and trans-fat, Chocolate dark					
Others food habits	20	22.9	6	6.8	
Spices, Junk food, Oily food, Salty food, Processed food					
Way of cooking women prefer	No	%	No	%	Test
Boiled	7	8.1	46	52.8	$\chi^2 = 5.103$ P=0.809 NS
Fried	45	51.7	2	2.3	
Grilled	5	5.7	37	42.5	
Foundry	30	34.4	2	2.3	

NS = No Significant difference

Table (3): Reveals that 49.4% of the sample was depended on food influence hormone regulation as a food habits and 51.7% of them depend on cooking food as fried way. While after three months after educational program 65.5% of the sample changed their food habits to depend on green vegetables & fruits in their diet, 52.8% was preferred boiling their foods and 42.5 % preferred grill their foods. No statistically significant difference for kind of food pre & post educational program.

Table (4): Relationship between adenomyosis Symptoms and habits of diet Pre educational program

Variable	Habits of diet												Test	
	Végétales		High FODMAP Diet		Food influence hormone regulation		Others food habits		Mixed		Total			
	No	%	No	%	No	%	No	%	No	%	No	%		
Symptoms														
Painful defecation	0	0	1	1.2	5	5.7	2	2.3	0	0	7	8.2	$\chi^2 = 41.001$ P= 0.01*	
Painful urination	0	0	0	0	1	1.2	2	2.3	0	0	3	3.4		
Dyspareunia	1	1.2	2	2.3	6	6.9	5	5.7	0	0	14	16.1		
Dysmenorrhea	2	2.3	12	13.8	20	22.9	6	6.9	3	3.4	43	49.4		
Non cyclic pelvic pain	0	0	3	3.5	12	13.8	5	5.7	0	0	20	22.9		

* Statistically significant difference

Table (4) reveals that the most common symptom was dysmenorrhea 49.4% of studied women, 22.9% of them depend on food influence hormone regulation as food habit. 13.8% of them depend on high FODMAP food (high, Fermentable Oligosaccharides Disaccharides, Monosaccharides, and Polyols), 22.9% of studied women had a non-cyclic pelvic pain; 13.8% of them also depend on food influence hormone regulation as food habit with statistically significant association between kind of food and adenomyosis symptoms ($\chi^2=41.001$, $P= 0.01$).

Table 5: Statistical differences of women regarding to their total knowledge about adenomyosis, pre and post educational program (n = 87)

Total Knowledge	Pre educational program		Post educational program		X2& P value
	No	%	No	%	
Low (< 50%)	81	93.1	0	0	
Moderate (50 - 75%)	4	4.6	10	11.5	
Good (75%)	2	2.3	77	88.5	
Mean ± SD	22.68±7.75		76.087 ±0.275		t = -15.774 P < 0.001**

** Highly statistically significant difference

Table 5: Illustrates distribution of the women related to their total knowledge regarding adenomyosis It was noticed that the mean of total knowledge score of the women in posttest after 3 months (76.087 ±0.275) was higher than the mean of pre-test score (22.68 ±7.75). There was a significant improvement in total knowledge regarding adenomyosis among the women in post test as compared to pre test assessment ($p < 0.0001$).

Table 6: Statistical differences of women’s regarding to their pain scores pre and post educational program (n=87)

pain level	Pre education		Post education Three months		Test X2& P value
	No	%	No	%	
Mild	0	0	12	13.7	
Moderate	18	20.7	55	63.2	
Sever	69	79.3	20	22.9	
Mean	7.56±1.43		5.1±1.43		t=10.432 P< 0.001**

** Highly statistically significant difference

Table (6) Illustrates distribution of the women with adenomyosis related to pain level score pre and post educational program. It was noticed that 79.3% of studied women had severe level of pain at pre educational program While 63.2% of studied women had moderate level of pain at post educational program using visual analogue pain scale, with highly statistically significant difference between pre & post educational program regarding the mean of pain level ($p < 0.001$).

Table 7: Correlation between pre and post educational program regarding to kind of diet, exercise and symptoms of adenomyosis (n=87).

Items	Kind of diet			Post educational program Exercise
		Pre educational program	Post educational program	
Pre educational program –kind of diet	R	-----	0.068	
	P	-----	0.531	
Post educational program – kind of diet	R	-0.068	-----	
	P	0.531	-----	
Symptoms of Adenomyosis	R	0.270	-0.162	0.072
	P	0.011*	0.134 NS	0.507 NS

NS = No Significant difference

* Statistically significant difference

Table (7) It noticed that there was a statistically significant correlation between Pre educational program kind of diet and adenomyosis symptoms ($p = 0.011$). While there was no correlation between kind of diet pre and post educational program ($p = 0.531$) as well as no correlation was found between post- program kind of diet with adenomyosis symptoms $p = 0.134$. No correlation was found between post program exercise and adenomyosis symptoms ($p = 0.507$).

4. DISCUSSION

Adenomyosis is a common gynecologic disorder, usually affects women during their reproductive years. It can be a long-term condition that can have a significant negative impact on women general physical health, emotional wellbeing and daily routine life owing to the symptoms such as pain.

As regard socio-demographic characteristics, the present study showed that women age it ranges from 25-53 years old with mean age (42.3 ± 0.43). The findings of the current study agree with (Silvia et al., 2019), who studied “Recent advances in understanding and managing adenomyosis” illustrated that, the epidemiological scenario has changed, and although the most a common risk factor profile included age of more than 40 years, multiparity, prior cesarean section, or uterine surgery the disease is increasingly diagnosed in young women .

The finding of the present study notices that more than half of women with adenomyosis were multipara. The Findings of the current study is supported by (shrestha, 2012) who study the association between parity and the risk of adenomyosis, and suggested an association between parity and the risk of adenomyosis is due to the history of caesarean section and miscarriage additionally more than half had history of cesarean section. Study finding on the same line with study done by (Rigoss et al., 2014) those who have studied "cesarean section is a risk factor for development of adenomyosis uteri?" revealed that there is strong association between adenomyosis and previous cesarean section

From the researcher's point of view, this occur due to a cesarean section that causes penetration of the muscle wall in the womb (uterus muscle) and causes severe menstrual bleeding and pain

As regards to relationship between adenomyosis symptoms and type of diet pre- program the present study reported that Less than half dysmenorrheal, the minority non-cyclic pelvic pain, less the one fifth dyspareunia. The findings of the current study are supported by (Stephan et al., 2018) who studied “Symptoms and classification of uterine adenomyosis “showed that the most frequent symptoms are dysmenorrhea half of women, and non-cyclic pelvic pain more than fifth Dyspareunia less the one fifth

Regarding distribution of the women according to their total knowledge score about adenomyosis. There was a significant improvement in total knowledge about adenomyosis in post test as compared to pre test assessment ($p < 0.001$). The finding was in agreement with (Joyce et al., 2010), who reported that The nurse plays an important, pivotal role in the primary care setting, not only in providing support and collaboration with the women to facilitate quality of care, but also providing program in order to modify the unhealthy behaviors, improve women’s quality of life, reduce pain and improve the women’s health. Hence, the finding of present study interpreted the results of the current study showed that

implementing a health education program was effective in increasing the level of women with knowledge about adenomyosis.

From the researcher's point of view, women with adenomyosis need improve knowledge in order to facilitate quality of care, modify unhealthy behaviors' and reduce pain and Regarding the correlation between kind of diet and adenomyosis symptoms, the current study showed correlation between pre educational program kind of diet and adenomyosis symptoms ,that was excessive in women who depend on food effect hormone regulation as food habit as depend on red meat rather than women who depend on fruits and vegetables ($\chi^2=41.001$, $P= 0.02$). Moreover, this present study finding agree with **Yamamo .et al (2018)** who studied that red meat consumption may be an important modifiable risk factor for adenomyosis, particularly among women with adenomyosis who had not reported infertility and thus were more likely to present with pain symptoms. Well-designed dietary intervention studies among women with adenomyosis could help confirm this observation. This finding was congruent with (**Joanna al., 2017**) who addresses "effect of diet on the risk of developing adenomyosis". Dietary factors that may decrease the risk of devolving adenomyosis Consumption of vegetables, antioxidant vitamins, group B vitamins, calcium-rich dairy products, vitamin D, fish oils, omega-3 fatty acids, and nutritional factors that may increase the risk of growth adenomyosis These include consuming unsaturated fatty acids, red meat, pork, as well as alcohol. Meanwhile the adult women who depend on eat more fruits, vegetables and healthy fats, while reducing their use of red meat and unhealthy fats, are less likely to develop adenomyosis Experts say there are many benefits to a healthy diet. Healthy foods help reduce symptoms of adenomyosis and reduce estrogen

From the researcher's point of view, Healthy nutrition plays an important role in maintaining overall health. Some foods can increase our immunity and protect the body of women from certain diseases. Women depend on a balanced diet with a increase of fruits and vegetables intake, whole grains and vegetable protein and depend on meat free of fats and healthy fats, it can get all the vitamins, minerals and other nutrients it needs to maintain its immune system., healthy diet can improve women overall health, which improve women adenomyosis symptoms. Consider depend on foods that are high in fiber, plant-based foods, and omega-3 fats, and low in saturated and Tran's fats always matins balance diet with exercise.

Furthermore, the finding of the current study reported that no significant correlation between post educational program exercise and adenomyosis symptoms ($r=0.072$, $p= 0.507$), In addition, the studied women didn't practice regular physical exercise before program. Unfortunately (one fifth from studied women who responded practice exercise as a way to reduce adenomyosis pain. They did not commit to exercising regularly over the three months after educational program. This result was supported by (**Koppan et al, 2010**) who assessed individual factors that influenced the quality of life and the severity of pain of women with adenomyosis. This may be related to the culture of women and their lack of awareness of the importance of exercising as well as their economic and social conditions that affect the social welfare of women who influence this issue.

The results indicate that the use of analgesics can be less effective in women with adenomyosis who exercise regularly, also (**Koppan A et al., 2010**) who studied healthy behavior is not only exercise , but also educational, cultural, mental and environmental factors that enable us to lead a healthier life in a related of adenomyosis related pain. The researcher did not point if in women with adenomyosis, the pelvic pain was a limiting factor for exercising. Their results showed that the use of analgesics could be less effective in patients with regular glandular exercise

From the researcher's point of view, the woman who performs the exercises improves her circulation by working to improve the blood pumping and flow to the body. Regular exercise decreases the body production of estrogens. Since the goal of adenomyosis management is to decrease estrogen levels, regular exercise can improve adenomyosis symptoms.

5. CONCLUSION

The current study concluded support the research hypotheses that the educational program sessions about lifestyle modification particularly dietary education was an effective and reduce adenomyosis pain. There was significant correlation between total knowledge pre and post educational program that improve women's' knowledge about lifestyle modification.

6. RECOMMENDATION

- Applying educational programs about adenomyosis for women to raise their awareness and the program must be instituted in all communities with a view to bring about public awareness.
- A simplified and comprehensive booklet should be available for all women with adenomyosis in health care setting
- Based on the results, detailed health education programs can be conducted in the hospital setup in outpatient clinic.

REFERENCES

- [1] **Abbott J. A. (2017):** Adenomyosis and Abnormal Uterine Bleeding (AUB-A)-Pathogenesis, diagnosis, and management. *Best Practice Research Clin Obstetric Gynecology*. 40:68–81.
- [2] **Andres MP, Borrelli GM, Ribeiro J. (2017):** Transvaginal Ultrasound for the Diagnosis of Adenomyosis. *Systematic Review and Meta-Analysis. J Minim Invasive Gynecol.*;25(2):257–64
- [3] Freyd, M. (1923): A graphic rating scale for teachers. *The Journal of Educational Research*, 8, 433-439.
- [4] **Halpern G, Schon G. (2015):** Nutritional aspects related to adenomyosis, p 513.
- [5] Joanna J, Przondziono, Magdalena Lemm.(2017):Influence of diet on the risk of developing adenomyosis, *Ginekol Pol.* ;88(2):96-102.
- [6] **Josh A,(2017):**Nutrition and Exercise Guides for adenomyosis. Posted under Health Guides. Updated 20 January 2017
- [7] **Joyce K. and Faan N.(2010):**Diagnosis and management of adenomyosis : The role of the advanced practice nurse in primary care,Practitioners; *Journal of the American Academy of Nurse Practitioners*, Volume 22, Issue 2.
- [8] **Kim K A, Yoon S W, Lee C. (2011):** Short-term results of magnetic resonance imaging-guided focused ultrasound surgery for patients with adenomyosis: symptomatic relief and pain reduction. *FertilSteril.*; 95:1152–1155.
- [9] **Kishi Y, Suginami H, Kuramori R. (2012):** Four subtypes of adenomyosis assessed by magnetic resonance imaging and their specification. *Am J Obstet Gynecol.*;207(2): 114.e1–7
- [10] **Knop C, M. Oeser, L. Bastian. (2001):** Development and Validation of the Visual Analogue Scale, (VAS) score,104(6), 1488-97.
- [11] **koppan A, HamoriJ, Vranics I. (2010):** Pelvic pain in adenomyosis: painkillers or sport to alleviate symptoms.;97:234–239.
- [12] **Naftalin J, Hoo W, Nunes N. (2016):** Association between ultrasound features of adenomyosis and severity of menstrual pain. *Ultrasound ObstetGynecol.*; 47(6): 779–83
- [13] **Parazzini F, Viganò P, Candiani M. (2014):** Diet and adenomyosis risk: a literature review, *Reproductive Bio-Medicine Online*, 28, 2014, 332– 336.
- [14] **Pinzauti S, Lazzeri L, Tosti C. (2015).** Transvaginal sonographic features of diffuse adenomyosis. *Ultrasound Obstet Gynecol.*; 46(6): 730–6.
- [15] **Polina L, Nyapathy V, Mishra A. (2012);** Noninvasive treatment of focal adenomyosis with MR-guided focused ultrasound in two patients. *Indian J Radiol Imaging.* 22:93–97. 14(1):60
- [16] **. Polina L, Nyapathy V, Mishra A.Noninvasive. (2012):** Treatment of focal adenomyosis with MR-guided focused ultrasound in two patients. *Indian J Radiol Imaging.*; 22:93–97.
- [17] **Puente JM, Fabris A, Patel J. (2016):** Adenomyosis in infertile women: prevalence and the role of 3D ultrasound as a marker of severity of the disease. *ReprodBiol Endocrinol*.
- [18] **Riggs JC, Lim EK. (2014):** Cesarean section as a risk factor for the development of adenomyosis uteri.*JReprod Med.Feb*;59(1-2):20-4.

- [19] **Shrestha A. (2012):** Risk Factors for Adenomyosis, Nepal Health Res Counc, Sep; 10(22):229-33
- [20] **Silvia. (2019):** Recent advances in understanding and managing adenomyosis, US National Library of Medicine, National Institute of Health; (1).; 8: F1000 Faculty Rev-283.
- [21] **Stephan Gordts, Grigoris Grimbizis.(2018):** Symptoms and classification of uterine adenomyosis, including the place of hysteroscopy in diagnosis, Global Journal of Reproductive Medicine; 109(3): 380–388.
- [22] **Struble J, Reid S, Bedaiwy MA. (2016):** Adenomyosis A Clinical Review of a Challenging Gynecologic Condition. J Minim Invasive Gynecol. Feb 01; 23(2):164-85.
- [23] **Taran FA, Wallwiener M, Kabashi D. (2012):** Clinical characteristics indicating adenomyosis at the time of hysterectomy: a retrospective study in 291 patients. Arch Gynecol Obstet.;285(6):1571–6
- [24] **Tosti C, Troia L, Vannuccini S. (2016):** Current and future medical treatment of adenomyosis. JE.; 8: 127–35
- [25] **Vannuccini S, Tosti C, Carmona F, et al (2017):** Pathogenesis of adenomyosis: an update on molecular mechanisms. Reprod Biomed Online. 35(5):592–601.
- [26] **Vannuccini S, Tosti C, Carmona F. (2017):** Pathogenesis of adenomyosis: an update on molecular mechanisms. *Reprod Biomed Online*. 35(5):592–601.
- [27] **Yamamoto, Harris HR ., Vitonis AF. (2018):**A prospective cohort study of meat and fish consumption and adenomyosis risk, Am J Obstet Gynecologic;Aug;219(2): 178.e1-178.e10.,Volume 22