Effect of Educational Program on Knowledge Regarding Leiomyomas among Women in Reproductive Age

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Abstract

Background: Uterine fibroids (UFs), also called uterine leiomyomas or myomas, are steroid hormone-responsive, benign tumors of the smooth muscle compartment (myometrium) of the uterus. **Aim:** This study aim was to evaluate the effect of Educational Program on Knowledge Regarding Leiomyomas among Women in Reproductive Age. **Design:** Quasi experimental research design (one group pre-test, post-test) was utilized to fulfill the aim of this study **setting**: This study was carried out at outpatient clinic and inpatient department of Obstetrics and Gynecology at Minia University Hospital for Obstetric & Pediatric (MUHOP) Hospital. **Sampling:** convenient sample includes 134 women **Tools:** The data collection tool consisted of two tools: **the first tool:** Interviewing questionnaire which include demographic characteristics of the women, **the second tool:** knowledge assessment tool. **Results**: regarding women knowledge , the present study revealed that the women knowledge improved after the educational program and there are a highly statistical significance differences between women knowledge level before and after implementing the educational program with *P*-value = **0.000****respectively. **Conclusion**: the study concluded that the educational program was effective in improving women knowledge about leiomyoma .**Recommendation**: increase the number of educational programs about leiomyoma to improve women's knowledge also provide posters, booklets and leaflets.
Keywords: Educational Program, Leiomyoma, Reproductive Age

Introduction

Uterine fibroids (UFs), also called uterine leiomyomas or myomas, are steroid hormone-responsive, benign tumors of the smooth muscle compartment (myometrium) of the uterus. They are the most common neoplasm affecting women in their reproductive age. It is estimated that up to 77% of women develop UF in their life. UFs are one of the leading causes of hospitalisations for gynaecological disorders and are the most frequent reason for hysterectomy. According to relevant literature, 40%-60% of all the hysterectomies performed are due to the presentence of uterine fibroids **(Nashwa , 2020).**

General nursing management of uterine fibroids includes educating women about the causes, risk factors, and how to detect and manage it early.Also, they should provide education and care for Women will present to their doctors with a wide range of symptoms, fertility requirements, and social circumstances, as well as a wide range in the size and number of fibroids within their uteri.There are many treatment options available for treating fibroids, and these will be tailored to the individual woman based on the assessment of the physician, the woman's personal wishes, and lifestyle measures **(Abdelrahim , et al , 2015).**

Significance of the study.

The chances of the occurrence of uterine leiomyoma increase during the reproductive period and usually decrease after menopause. They are found in more than half of women over the age of 35 years but can also be present in adolescents. Their exact pathogenesis is still debatable, but hormonal stimulation by estrogen, progesterone, and other growth factors plays a pivotal role. (**Wong , et al, 2016).**

According to the National Institute of Health (NIH), uterine fibroid tumours affect up to 80% of women over the age of 50 (**Brindles et al., 2018).**

Every 10 minutes, 12 hysterectomies are performed in the United States. There are 600,000 hysterectomies performed annually in the US. 170,000 to 300,000 are due to uterine fibroids. .Over 250,000 uterine artery embolizations have been performed worldwide since 1996. Since fibroids are such a common problem that we might all face, it is essential that all women should be educated **(http://www.nuff.org/health_statistics.htm**, **2020).**

In Egypt, the prevalence of uterine fibroids ranged from 9.8% to 17.8% in the age group of 40–49 years, and about 25 % of them underwent hysterectomy due to uterine fibroids. **(Ragvendra, et al, 2018**).

Aims of the study:-

Evaluate the effect of educational program on knowledge regarding leiomyoma among women in reproductive age.

Research hypothesis

H: utilization of the educational program will be effective in increasing the knowledge regarding leiomyoma among women in reproductive age.

Subject and Method

This study was aimed to evaluate the effect of educational program on knowledge regarding leiomyomas among women in reproductive age.

Research Design

A quasi-experimental research design was used in the present study (pre and post) which was suitable for the nature of the existing research problem

Research Hypothesis:

- **H**: utilization of the educational program will be effective in increasing the knowledge regarding leiomyomas among women in reproductive age

Setting:

This study was carried out at outpatient clinic and inpatient department of Obstetrics and Gynecology at Minia University Hospital for Obstetric & Pediatric (MUHOP) Hospital.

- Obstetrics, Gynecology and Pediatric Minia University Hospital was built in 2005.. The bed capacity of the hospital is three hundred beds

Sampling

A convenient sample included 134 women accordingly. The sample size was estimated according to the Slovin's formula which is computed as

$n = N / (1+Ne^2)$; whereas:

n = sample size
N = total population
e = desired margin of error
$n= 202 / [1+ (202) (0.05)^2 = 134$ women

Subjects

Inclusion criteria

- All women at reproductive age from 18 to 49 years old.
- Women not diagnosed with uterine fibroids.
- Women that accepted to participate in the study.

Tools for Data Collection

To achieve the goal of the study, data was collected using two tools:

The first tool (interviewing sheet) is used to collect socio-demographic data from the woman, such as age, residence, educational level, phone number, and occupation, as well as medical data, such as family history of uterine fibroids, age of menarche, menstrual regulation, and source of information about uterine fibroids.

Second tool (knowledge assessment): (pre-post educational programme test): it is a self-interviewing tool developed by the researcher after reviewing relevant literature (**Doherty et al., 2014; Vilos et al., 2015; Bulun et al., 2015; Blitz et al., 2016; Donnez and Dolmans, 2016; Kalyan et al., 2018).**

Part 1 is concerned with women's knowledge of uterine anatomy and physiology. It contains nine sections. questions regarding anatomy & physiology of the uterus in the form of MCQ questions. 1-The uterus is one of the female genitourinary organs; 2-uterine wall layers; 3-uterine nutrition; 4-uterine nerves; 5-uterine function; 6-uterine wall function; 7-uterine size changes depending on the age of the female; 8-uterine cervix function; and 9-three stages of the endometrium.)

Part 2: It was consisted of 19 questions in the form of MCQs concerned with women's knowledge regarding uterine fibroids, for example (1-Definition of uterine leiomyoma, 2-First complaint of uterine leiomyoma 3-Signs and symptoms of uterine leiomyoma, 4-Effect of uterine leiomyoma on the uterus,5- occur when there is pain from uterine fibroid. 6-Causes of uterine leiomyoma , 7-Risk factors for uterine leiomyoma, 8-Precautions that limit the incidence of the uterine leiomyoma 9-Complications Complications of uterine leiomyoma , 10- Diagnosis of uterine leiomyoma , 11-Confirmation of the diagnosis of uterine leiomyoma , 12- Factors that alleviate signs and symptoms of the uterine leiomyoma, 13- Progress of the uterine leiomyoma to malignant tumor., 14- Medications that alleviate signs and symptoms of the uterine leiomyoma , 15-Surgical treatment of uterine leiomyoma , 16- Nutrition that can relieve anemia result from uterine leiomyoma , 17- Effect of menopause on uterine leiomyoma , 18- Fluids that help to shrink the size of uterine leiomyoma, and 19- Nutrition that help to prevent uterine leiomyoma).

Knowledge scoring system.

The uterine fibroid knowledge scoring system was classified as follows:Each correct answer is given a score of "one" and each incorrect answer is given a score of 'zero' respectively. For each area of knowledge, the scores of the items are summed-up and the total is divided by the number of the items, giving a mean score for each area. 28 questions, taking 28 scores.

- Satisfactory knowledge scored (≥ 60%) = (≥ 17)
- Un Satisfactory knowledge scored (< 60%) = (< 17)

(https://grants.nih.gov/grants/.../scoring_system_and_procedure.pdf).

Validity and Reliability

To establish validity, the questionnaire was piloted on a panel of 5 experts of Obstetrics and Gynecological staff, and Nursing professors who reviewed the instruments for clarity, relevance, comprehensiveness, understanding, applicability, and easiness, and was used alpha Cronbach's way to check the stability of the internal consistency of the Knowledge tool were 0.854 and .934.

Pilot Study:

A pilot study was conducted on 10% of women (13 women) at the previous mentioned setting to assess the current study tools for its clarity, and time required to be applied. According to the results of the pilot, all required and necessary modifications were done and the women who were tested in the pilot study were excluded in study sample.

Ethical consideration:

- Research proposal was approved from ethical committee and post graduate committee in faculty of nursing.
- An official permission was obtained from the Dean of the Faculty of Nursing and requested to the director of the hospital.
- Oral consent was obtained from women that are willing to participate in the study, after explaining the nature and purpose of the study.
- Study subject had the right to refuse to participate or withdrawal from the study without any rational any time.
- Study subject privacy was considered during collection of data
- Participants were assured that all their data are highly confidential.

- Do not contradict with the cultural, traditional and religious issues.
- No health hazards were being present.

Administrative design

An official written approval letter clarifying the purpose of the present study was obtained from the dean of the Faculty of Nursing, as well as the Director of the hospital as approval for data collection to conduct this study also an oral consent was obtained from included women in the study. It included a full explanation of the purpose of the present study, procedure, and rights for privacy and confidentiality.

Data Collection Procedure:

I. Assessment phase:

During the assessment phase, the researcher held the first meeting with women to introduce herself and give an explanation about the nature, purpose, and duration of the study. They were informed that participation in this study was voluntary.

After obtaining women's consent to participate in the current study, the researcher provided an overview and clarification of the assessment tool questions before distributing the self-interviewing questionnaire to each woman to assess data such as age, residence, education level, and source of information. Then the researcher distributed a pretest questionnaire to assess women's knowledge regarding anatomy and physiology of the uterus and women's knowledge regarding leiomyoma examples (definition, causes, ,risk factors, signs and symptoms, different types of food for uterine fibroid, complications , diagnosis, medical management, and nursing management.) were assessed. The questionnaire took about 15-20 minutes to complete.

Implementation phase:

After assessing women's knowledge regarding leiomyoma by means of a knowledge assessment questionnaire, the researcher met women two days per week (Sunday and Wednesday) from the beginning of the study. The research was conducted between the beginning of August, 2020, and the end of November, 2020.The researcher conducted face-to-face interviews in outpatient departments from 9:30 a.m. to 11:00 a.m. and inpatient departments from 11:00 a.m. to 1:00 p.m.

The total sample (134) was divided into small groups. The session number was around three sessions per day. The session lasted 45 minutes, from 9: 30 a.m. to 13:00 p.m., in the hospital escorts rest room, with five women present at each session.

Health education sessions were given to the women in the form of lectures and group discussions using the designed educational booklet and audio-visual aids. They emphasised improving women's knowledge regarding leiomyoma. For instance, (definition, causes, risk factors, signs and symptoms, various types of food for uterine fibroid, complications, diagnosis, medical management, and nursing management).and allowed women to ask, discuss, and reach a high level of understanding.

An additional 15 minutes were assigned at the end of the lecture for an open discussion with them about this topic. After the session, the researcher distributed the booklet to the women.

Supportive material (health education guidelines):

It was created to increase women's understanding of uterine fibroid.It was designed by the researcher in the form of a handout (booklet) using simple Arabic language and different illustrative pictures in order to facilitate understanding its content (definition, causes, risk factors, signs and symptoms, different types of food for uterine fibroid, complications, diagnosis, medical management, and nursing management.).

1. **Evaluation phase:**

For each woman, three evaluations were done, the first one at the beginning of the study as a baseline data (pre-test) for the pre-educational programme. The second evaluation was conducted immediately after the educational programme in order to detect the level of women's knowledge post-health education regarding uterine fibroid . The third evaluation was conducted after three months of the educational programme by communicating with women by telephone in order to detect the level of women's knowledge post-health education regarding uterine fibroid (posttest) for final evaluation . The same assessment tools were used during the pre and post-test.

Limitations of the Study

- The finding is less amenable to generalisation because the sample was selected from one geographical area in Egypt. As well, few Egyptian studies were done in this area of research.
- The findings of this study were limited to a small sample size of 134 as the study sample. Therefore, it may not necessarily be representative of the general population.
- Not empowering the researcher to apply the educational programme about leiomyoma to all patients in the hospital.

Statistical Design:

The collected data was tabulated, computerized, analysed and summarised by using descriptive statistical tests to test research hypotheses by using SPSS version (IBM 23) and excel for figures. Data was presented using descriptive statistics in the form of frequencies and percentages for qualitative variables and means and standard deviations for quantitative variables. The level of significance was accepted at $P< 0.05$ and was considered highly significant when the P-value was less than or equal to 0.01. A Fisher exact test/chi test was used to detect the relationship between women's knowledge based on their selected socio-demographic characteristics.

Correlation is used to test the nature and strength of the relationship between women's knowledge pre and post nursing instruction. The sign of the coefficient indicates the nature of the relationship (positive/negative), while the value indicates the strength of the relationship, as follows: A weak correlation of less than 0.25, a fair correlation of 0.25-0.499, a moderate correlation of 0.5-0.739, and a strong correlation of 0.740-0.99

Table: Daily educational Program Schedule about leiomyoma .

Time	Session number	Session content	Teaching	
			Methods	Media
45 minutes	One session	• Introduce myself to the participant • Orient the participant with the program aim and its expected outcomes • Discuss expectation of the participants • Fill socio-demographic and medical data • Assess woman's knowledge regarding uterine fibroid (second tool) as a pr-test • Discuss with the women knowledge about uterine leiomyoma using video aids and the educated booklet . • Assess woman's knowledge regarding uterine fibroid (second tool) as a post -test	Discussion	Data show Educated booklet

Results

Table (1): frequency Distribution of women according to socio-demographic characteristics. (n=134)

Demographic Characteristics	No.	%
Age		
18<25	33	24.6
25<30	48	35.8
30<35	50	37.3
35-49yrs	3	2.2
Mean ± SD	28.9+3.97	
Residence		
Rural	61	45.5
Urban	73	54.5
Occupation		
House wives	84	62.3
work	50	37.3
Educational level		
University educated	19	14.2
Basic education	27	20.1
Post university-educated	24	17.9
Read and write	64	47.8

X^2 = Chi-square test / *= statistically significant difference P – value ≤ 0.05 / **= high statistically significant difference P – value ≤ 0.01

Table (5) shows that the mean age of women is 28.9 ± 3.9 & 47.8 % of the women can read and write, also 62.3 % women were house wives .

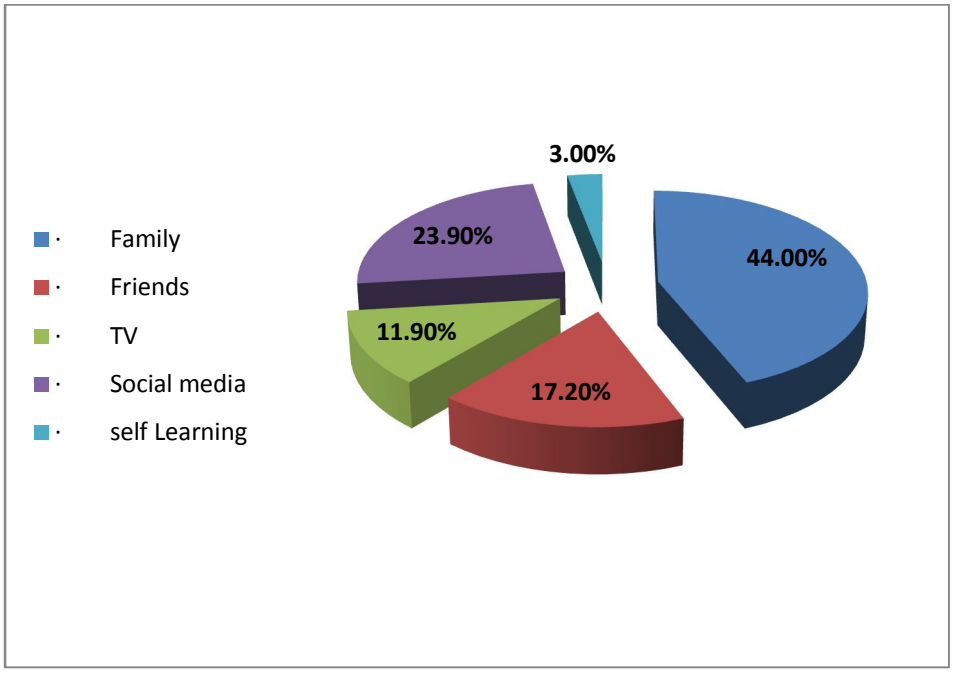

Figure (1): Distribution of Women According to Sources of Knowledge about Leiomyoma's (n=134)

Figure (1) illustrates that 44% of women gain their knowledge about uterine fibroid from their friends.

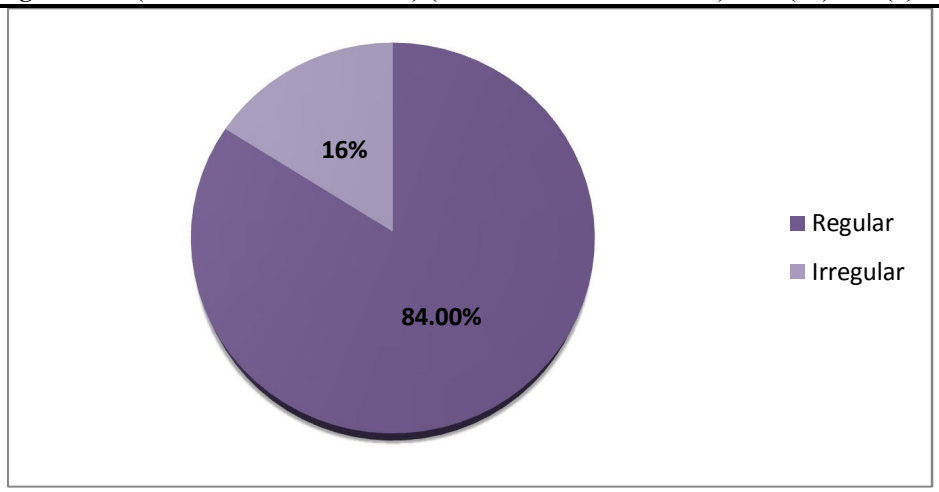

Figure (2): Distribution of Women Regarding their Menstrual Regularity (N=134)

Figure (2) reveals that 84% of women have irregular menstruation.

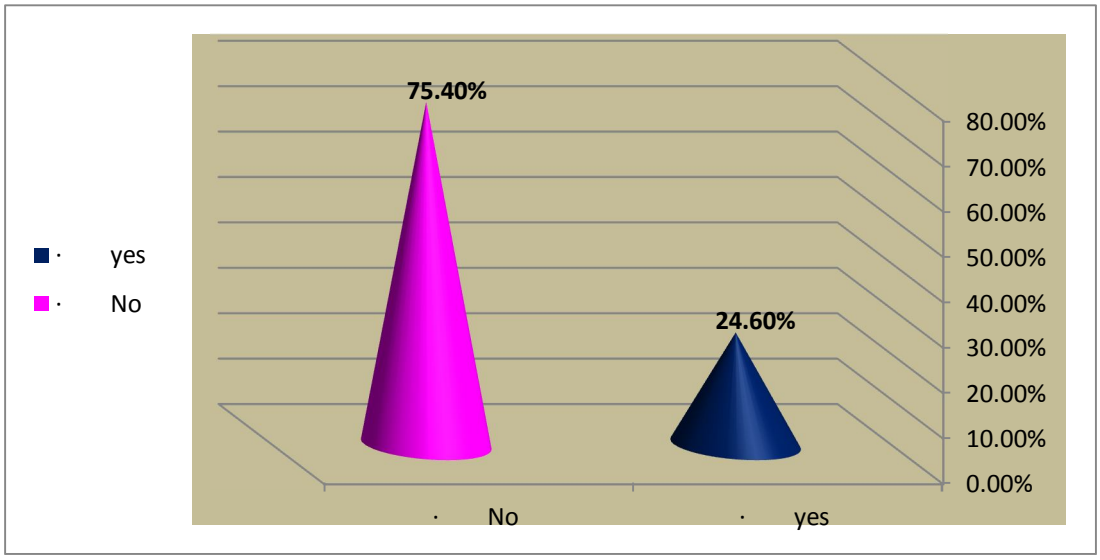

Figure (3): Distribution of Women According to their Family History of Leiomyoma's (N=134)

Figure (3) shows that 75% of women don't have family history of uterine fibroid

Table (2) : Frequency Distribution of Women 's Knowledge about leiomyoma in Pre and Post the Educational Program (N=134)

Knowledge About the uterine leiomyoma	Pre (n=134)				Post (n=134)											
					Immediately				X^2	(P-value)	After 3 months				X^2	(P-value)
	Incorrect		Correct		Incorrect		Correct				Incorrect		Correct			
	N	%	N	%	N	%	N	%			N	%	N	%		
Definition of uterine leiomyoma	99	73.9	35	26.1	44	32.8	90	67.2	19.96**	.000	60	44.8	74	55.2	5.39*	.043
First complain from uterine leiomyoma	99	73.9	35	26.1	44	32.8	90	67.2	21.3**	.000	63	47	71	53	5.37**	.003
Signs and symptoms of uterine leiomyoma	99	73.9	35	26.1	41	30.6	93	69.4	9.925**	.000	44	32.8	90	67.2	6.20*	.032
Effect of uterine leiomyoma on the uterus .	110	82.1	24	17.9	60	44.8	74	55.2	21.5**	.000	69	51.5	65	48.5	5.11*	.030
Problem occurred when there is pain from uterine fibroid .	88	65.7	46	34.3	63	47	71	53	5.10*	.053	63	47	71	53	7.39*	.022
Causes of uterine leiomyoma	88	65.7	46	34.3	41	30.6	93	69.4	12.59**	.000	63	47	71	53	17.37**	.000
Risk factors for uterine leiomyoma	88	65.7	46	34.3	41	30.6	93	69.4	6.15*	.032	63	47	71	53	4.37*	.030
Precautions that limit the incidence of the uterine leiomyoma	90	67.2	44	32.8	40	29.9	94	70.1	32.59**	.000	63	47	71	53	9.39*	.048

Table (2) : Frequency Distribution of Women 's Knowledge about leiomyoma in Pre and Post the Educational Program (N=134) **(Continued…)**

Knowledge About the uterine leiomyoma	Pre (n=134)				Post (n=134)										X^2	*P-value*
					Immediately				X^2	*P-value*	After 3 months					
	Incorrect		Correct		Incorrect		Correct				Incorrect		Correct			
	N	%	N	%	N	%	N	%			N	%	N	%		
Complications of uterine leiomyoma	67	50	67	50	40	29.9	94	70.1	4.2*	.040	40	29.9	94	70.1	4.2*	.040
Diagnosis of uterine leiomyoma	81	60.7	53	39.3	40	29.9	94	70.1	16.97*	.000	40	29.9	94	70.1	16.97**	.000
Confirmation of the diagnosis of uterine leiomyoma	81	60.7	53	39.3	41	30.6	93	69.4	15.97**	.000	40	29.9	94	70.1	16.37**	.000
Factors that alleviate signs and symptoms of the uterine leiomyoma	81	60.7	53	39.3	38	28.4	96	71.5	17.92**	.000	40	29.9	94	70.1	16.37**	.000
Progress of the uterine leiomyoma to malignant tumor.	90	67.2	44	32.8	41	30.6	93	69.4	14.73**	.000	41	30.6	93	69.4	14.73**	.000
Medications that alleviate signs and symptoms of the uterine leiomyoma	79	59	55	41	40	29.9	94	70.1	9.46*	.026	38	28.4	96	71.5	6.20*	.012
Surgical treatment of uterine leiomyoma	90	67.2	44	32.8	40	29.9	94	70.1	18.73**	.000	41	30.6	93	69.4	5.20*	.042
Nutrition that can relieve anemia result from uterine leiomyoma	90	67.2	44	32.8	40	29.9	94	70.1	22.8**	.000	41	30.6	93	69.4	19.1**	.000
Effect of menopause on uterine leiomyoma	102	76.1	32	23.9	40	29.9	94	70.1	33.62**	.000	46	34.3	88	65.7	18.39**	.000
Fluids that help to shrink size of uterine leiomyoma	102	76.1	32	23.9	41	30.6	93	69.4	17.46**	.000	46	34.3	88	65.7	18.39**	.000
Nutrition that help to prevent uterine leiomyoma	102	76.1	32	23.9	38	28.4	96	71.5	33.62**	.000	46	34.3	88	65.7	18.39**	.000

X^2 = Chi-square test / *= statistically significant difference *P* – value ≤ 0.05 / **= high statistically significant difference *P* – value ≤ 0.01

Table (2) presents that 70.1 % of Women's knowledge improved regarding Diagnosis of uterine leiomyoma, Factors that alleviate signs and symptoms of the uterine leiomyoma and Progress of the uterine leiomyoma to malignant tumor. Post educational program than the pre-educational program with highly statistically significance *P*-value = 0.000**respectively

Table (3): : frequency Distribution of women according to Mean Score of Knowledge about Anatomy and Functions of the Uterus and total knowledge about Leiomyoma among women in Pre and Post the Educational Program (N=134)

Items	Pre	Post					
		Immediately	X^2	*P-value*	After 3 months	X^2	*P- value*
	Mean+ SD	Mean+ SD			Mean+ SD		
Total Knowledge about the anatomy and functions of the uterus	3.75+1.46	7.76+4.06	19.7**	.000	6.21+1.68	15.8**	0.000
Total Knowledge about Leiomyomas	13.2+6.38	28.64+7.43	32.6**	.000	21.9+6.60	23.6**	0.000

X^2 = Chi-square test / *= statistically significant difference *P* – value ≤ 0.05 / **= high statistically significant difference *P* – value ≤ 0.01

Table (3) illustrated that there are a statistical significance differences between women mean knowledge level before and after implementing the educational program with highly statistically significance *P*-value = 0.000**respectively

Table (4): Comparison between pre and Post - educational program according to Total Knowledge score of women (n = 134)

Items	Pre educational program				Post educational program										X^2	(p value)
					Immediately				X^2	(p value)	After 3 months					
	Satisfactory		Un Satisfactory		Satisfactory		Un Satisfactory				Satisfactory		Un Satisfactory			
	N	%	N	%	N	%	N	%			N	%	N	%		
Total Knowledge score about the anatomy and functions of the uterus	43	32.1	91	67.9	104	77.6	30	22.4	24.046**	0.000	88	65.7	46	34.3	16.32**	0.000
Total Knowledge score about Leiomyoma	44	32.8	90	67.2	110	82	24	18	37.134**	0.000	94	70.1	40	29.9	20.12**	0.000

X^2 = Chi-square test / *= statistically significant difference *P* – value ≤ 0.05 / **= high statistically significant difference *P* – value ≤ 0.01

Table(4) shows that there is a highly statistical significance difference between women level of total knowledge post educational program then pre-educational program with a highly statistically significance P-value = .000 respectively

Table (5): Correlation between Socio-Demographic Characteristics and total Knowledge about Leiomyoma's among Women (N= 134)

Items	Total Knowledge											
	Pre-educational program				Post- educational program							
					Immediately				After 3 months			
	Un Satisfactory		Satisfactory		Un Satisfactory		Satisfactory		Un Satisfactory		Satisfactory	
	N	%	N	%	N	%	N	%	N	%	N	%
Age												
18<25 (33)	17	51.5	16	48.5	10	30.6	23	69.4	11	31.3	22	68.7
25<30 (48)	23	48.5	25	51.5	15	30.6	33	69.4	16	31.3	32	68.7
30<35(50)	28	55.2	22	44.8	13	26.9	37	73.1	15	30.6	35	69.4
35-49yrs (3)	2	66.7	1	33.3	1	33.3	2	66.7	1	33.3	2	66.7
R (P-value)	0.080 (0.356)				0.014(0.869)				.171(.291)			
Educational Level												
University educated(19)	12	60.4	7	39.6	5	28.4	14	71.6	9	47	10	53
Basic education (27)	22	82.1	5	17.9	12	44.8	15	55.2	14	51.5	13	48.5
Post university-educated (24)	16	65.7	8	34.3	7	30.6	17	69.4	11	47	13	53
Read and write (64)	49	76.1	15	23.9	19	29.9	45	70.1	22	34.3	42	65.7
R (P-value)	0.160(0.065)				0.194 (0.024*)				.163(.029*)			

Table (5) illustrates that there is a statistical significance correlation between women level of education their level of knowledge about **Leiomyoma's** post educational program with statistically significance *P*-value = .024 respectively

Discussion

Uterine fibroids or uterine leiomyoma (UL) are the most common disease in reproductive-age women. They are the commonest benign tumours of the smooth muscle of the uterus, taking their origin in the myometrium, and are typically round, well-circumscribed masses. They are usually multiple, and can range in size from a few millimetres to massive growths of 20 cm in diameter or more. The aetiology is largely unknown, but they are estrogen-and progesterone-dependent tumours that are very rare before menarche and frequently regress in size after menopause. **(Sparic, et al., 2016).**

From this concept of the importance of improving knowledge of women about uterine fibroid, this study aimed to evaluate the effect of an educational programme on knowledge regarding leiomyoma among women of reproductive age.

As regard to demographic characteristics among the women, the findings of the present study showed that the mean age of women was 28.9 ± 3.9 and less than half of the sample could read and write. Also, the highest percentage of the sample was housewives.

In a similar vein, **Tirupati et al. (2018)**, who studied uterine leiomyoma under the title "A Study to Evaluate the Effectiveness of Structured Teaching Programme on Knowledge Regarding Fibroid Uterus among Women at Gynaecology OPD, SVIMS, and SPMC (W) H," discovered that the mean age of the women was 28.9±3.9 years and that approximately half of the women were literate.

Moreover, the present study findings revealed that the majority of the women had early menarche at the age of 14 years. This is in line with the study done by **Tirupati et al. (2018),** who found that about 77 % of women had early menarche. So, he agreed that menarche at an early age increases the risk of developing fibroids and is also considered a risk factor for other hormonally mediated diseases, such as endometrial and breast cancers.

Concerning menstrual regularity, the result of the present study revealed that more than two-thirds of the women have a normal menstrual cycle. This disagrees with the finding of **Al-Talib et al. (2017)** under the title "Assessment of women's knowledge regarding pathophysiology and possible iatrogenic causes of leiomyoma**"** who found that an abnormal menstrual cycle was present in a third of the study subjects.

Regarding the family history of uterine fibroid among the study sample, results revealed that the majority of the sample had a positive family history. This finding agreed with **Al-Talib et al. (2017),** who found that about two thirds of the women had a positive family history of uterine fibroid, This effect may be due to more frequent screening of relatives of women with uterine fibroids than in the general population.

This may be due to women's ability to read and write, but they need an educational programme about leiomyoma, and this programme should be taught to the women in early menarche (about 14 years). A family history of leiomyoma is considered a major risk factor for leiomyoma. So, girls with a family history need more educational programs.

Concerning the level of knowledge about uterine fibroid**,** the present study revealed that the majority of women had a poor level of knowledge about uterine fibroid before implementing the educational program, while this level improved to a good level after implementing the educational program; this improvement reflects the effect of the education.

This comes in accordance with **Gowthami, (2018)** under the title "A Study to Evaluate the Effectiveness of Structured Teaching Program on Knowledge Regarding Fibroid Uterus among Women at Gynecology OPD, SVIMS, and SPMC (W) H**"**, who found that the majority of the women had inadequate knowledge of fibroid uterus pre education. While the majority of respondents had adequate to moderate knowledge of fibroid uterus following education.

Also, (**Senthilkumar & Girisha, 2017),** under the title "A Prospective Study on Knowledge, Attitude, and Perception towards Uterine Fibroids," showed that most of the respondents had low knowledge scores about uterine fibroids before counselling and most of the respondents had high knowledge scores about uterine fibroids after counseling.

The present study revealed that most women (after education) were aware that some women with uterine fibroids may be asymptomatic. This is agreed with **(Gowthami,, 2018)**, who found that the majority of womenwere aware that some women with uterine fibroids may have no signs orsymptoms.

The present study revealed that most women (after education) were aware that heavy bleeding during

menstruation; pressure, and pain in the pelvic area are the most common symptoms of uterine fibroids. This was agreed with by **Senthilkumar & Girisha (2017)**, who found that most women were aware that bleeding during menstruation and pain are the most common symptoms of uterine fibroids.

The present study revealed that most women (after education) were aware that causes of uterine fibroid include genetic mutations, hormones, and growth factors that affect the growth of muscle tissue.

This is agreed with **(Bizjak, Bečić & But, 2016)** under the title "Prevalence and risk factors of uterine fibroids in North-East Slovenia", **who reported that** most women'sknowledge had an increasedgenetic basis and that growth is related to genetic predisposition, hormonal influences, and various growth factors for fibroids.

The present study revealed that most women (after education) were aware that obesity, age, ethnicity, and family history are the common risk factors for uterine fibroids and that taking birth control pills can prevent them. Leiomyoma is more common in overweight women because of increased oestrogen from adipose aromatase activity. This is agreed with **(Bizjak, Bečić & But (2016),** who found that the significant risk factors for fibroid development were higher BMI and age between 35 and 50 years, whereas oral contraceptive pill use has a protective role.

The present study revealed that most women (after education) were aware that anemia is one of the complications of uterine fibroid. This was agreed with **(Millien (2019) under the** title of **"**Assessing Prevalence, Complications, and Risk Factors of Uterine Fibroids and Perceived Impact on Women's Lives in Rural Haiti,**"** who found that most women were aware that several debilitating complications such as chronic pelvic pain and anaemia are complications of uterine fibroid.

The present study revealed that most women were aware that iron supplements can relieve anemia caused by bleeding. This agrees with **Millien (2019),** who found that two thirds of women answered satisfactorily that iron is a treatment for anemia caused by bleeding. Maybe

Educational programmes improve the knowledge of women about leiomyoma (causes, risk factors, diagnosis, complications, and management). Also, it gives women notice that anaemia is considered a major risk factor for leiomynoa and that they should eat more foods rich in iron. They learned the necessary foods that prevent leiomyoma.

The present study revealed that there is a statistically significant difference between women's knowledge levels before and after implementing the educational program. This is agreed with **by Senthilkumar & Girisha (2017),** who studied knowledge, attitude, and perception towards uterine fibroids and found a statistically significant difference between the women's level of knowledge before and after counseling. Maybe

Educational programmes have a great effect on the knowledge of women about leiomyoma (causes, risk factors, diagnosis, complications, and management). And they learned quality-of-life practises that helped them avoid leiomyoma.

Conclusion

Based on the findings of the current study the following conclusions can be drawn: little of the women had good knowledge pre educational program compared with the most of them post-education program about Leiomyoma's , and total level of knowledge about the anatomy and physiology of the uterus improved from 32.1 % to 77.6 % immediately and to 65.7% after 3 months of educational program , their Total Knowledge score about Leiomyoma improved from 32.8 % to 82 % immediately and to 70.1 %after 3 months of educational program and all of the women had good knowledge near to two-thirds post-educational program with statistically significance differences with *P*-value = **0.000****respectively , with highly statistically significant correlation between women level of education and their total level of knowledge post educational program with statistically significance *P*-value = .025 .

Recommendations

- Providing training programs, posters, booklets, and leaflets for mothers about the leiomyoma.
- Identify the most effective specific types of guidance and motivation in the healthy diet that decrease incidence of leiomyoma.
- Apply further researches about leiomyoma in different setting with different sample.
- Try to Replication of the study on a larger probability sample from other geographical locations in Egypt to grantee the generalizability of the study.

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