Effect of supportive educational intervention on knowledge and quality of life among women with uterine fibroids

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Abstract

Background: Uterine fibroids (UFs) are a common gynecological problem among reproductive-age women and lead to poor quality of life (QOL). This research aimed to evaluate the effect of a supportive educational intervention on knowledge and QOL among women with UFs.

Methods: This quasi-experimental study (1 group/pre- and posttest), including supportive education intervention, was performed at the outpatient clinic, Gynecological Department, Benha University Hospital. The samples consisted of 100 women diagnosed with UFs. Three tools were used for data collection: a structured interviewing questionnaire, women's knowledge regarding UFs, and health-related QOL (HRQOL) questionnaire.

Results: There was a highly statistically significant difference in women's knowledge of UFs before and after the intervention (P = 0.0001). In addition, women had a high level of QOL score after the intervention. Moreover, there was a highly positive association between total women's knowledge and QOL score (P = 0.0001). Based on the pre- and post-intervention results, the mean difference for the variables of "total score of severity symptoms" and "total HRQL score" was -6.25 and +12.38.

Conclusion: Educational intervention has a positive effect on improving women's knowledge and enhancing QOL regarding UFs. It is suggested that an educational program should be incorporated as a nursing intervention to improve women's knowledge and QOL for those with UFs.

Highlights

What is current knowledge?

In Egypt, there is limited research available on the impact of uterine fibroids on quality of life in nursing studies, and few studies have been conducted on supportive educational interventions to improve quality of life.

What is new here?

The educational intervention has a positive effect in improving women's knowledge and enhancing the quality of life regarding uterine fibroids.

Introduction

Uterine fibroids (UFs) are noncancerous tumors of the female genital tract that affect the health and quality of life (QOL) for millions of women and may lead to many complications, such as excessive uterine bleeding, pregnancy-associated complications, infertility, polycystic ovarian syndrome, and recurrent abortions (1). The worldwide incidence of UFs is about 60% in women under the age of 45, 30% of whom are symptomatic (2).

The effect of UF-related symptoms on health-related QOL (HRQOL) in women was significant (3). As the number and intensity of symptoms grew, there was a greater effect (4). Uterine fibroids negatively impact the QOL of women. Most women with UFs reported fears about relationships, sexual function, and physical appearance. Additionally, they expressed feelings of loss of control and hopelessness. There were also worries about the fibroids growing and requiring a hysterectomy. (5). About two-thirds of women were worried about missing days from their jobs, and 24% of working respondents claimed that their symptoms hindered them from achieving their full potential in their careers. Women with UFs suffer from severe pain and are unable to function well or even leave beds for a prolonged length of time, causing them to lose touch with friends and colleagues (6). The economic burden of symptomatic fibroids is substantial, with an estimated total cost ranging from approximately $5.9 billion to $34.4 billion per year (7).

Uterine fibroid is a major health concern and has a strong relation with poor QOL because the symptoms are painful, uncomfortable, and unpredictable (8). This disorder is associated with a biochemical imbalance that leads to mood disturbances. In addition, it is associated with reduced sexual satisfaction, body pain, bleeding symptoms of menorrhagia and metrorrhagia, bulk symptoms of pressure, heaviness or discomfort in the pelvic area, back, flank, or leg, and urinary frequency (9). Despite the evidence that UFs significantly impact women's QOL, to date, few studies have been conducted to examine in detail this impact and compare their overall well-being to women without UFs. Also, significant knowledge gaps continue to persist, which hinder care for individuals with UFs (4). By the age of 50, the majority of women would have UFs, but there is little knowledge about the patient experience with fibroids and their significant impact on QOL (10). There is a significant lack of awareness among women regarding UFs (11).

Approximately 60% of women under 45 years old are affected worldwide, with 30% of cases being symptomatic. In Egypt, UFs occur in 20%-40% of women of reproductive age (12). In Egypt, there is limited research available on the impact of UFs on QOL in nursing studies, and few studies have been conducted on supportive educational interventions to improve QOL. Supportive educational interventions are a set of systematic interventions based on education and support and cognitive-behavioral therapy approaches with an emphasis on the needs of the patient and family, which is based on increasing the knowledge of the patient and family about the disease. Their adjustment to the disease focuses on the use of communication, coping, and problem-solving skills (13). This study aimed to evaluate the effect of a supportive educational intervention on the level of knowledge and QOL among women with UFs, as well as add to the body of research studies in this area.

Methods

Study Design

A quasi-experimental design (1 group/pre- and posttest) was used to achieve the aim of this research. The research was performed at the outpatient clinic, Gynecological Department, Benha University Hospital. The clinic provides free health care services to pregnant women and women who have gynecological problems or complaints. Additionally, the clinic provides premarital counseling and family planning services. Official permission from the authoritative personnel of the study setting was obtained for the fulfillment of the research. Ethical approval was obtained from the Research Ethical Committee of the Faculty of Nursing, Benha University. The researchers presented themselves to the women who fulfilled the inclusion criteria and explained the purpose, importance, and procedures of the research to gain their consent to participate in it. They also assured that the research posed no health risks to the women and that their participation was entirely voluntary. Written informed consent was

obtained from all participants, and all events that happened during data gathering were kept private.

Sampling

A purposive sample consisting of 100 women diagnosed with UFs was recruited. Sample size based on women's incidence of uterine fibroids. Flow rate at the previous year before conducting the current study in the predetermined hospital (134) women. The sample size was calculated using the present formula.

$$n = \frac{N}{1+N(e)2}$$

Where:
N= Total population number (134)
e= Margin error (0.05)

Inclusion and exclusion criteria

Inclusion criteria were women of all age groups who had been diagnosed with symptomatic UFs at least 1 year prior to the study, having no chronic diseases and psychiatric disorders, and being able to read and write. The study excluded women who underwent a surgical operation to treat UFs.

Data collection tools

Supportive educational intervention in this research means nursing education given to women with UFs to improve their knowledge and QOL. Quality of life was defined by the World Health Organization as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns."

Tool I: Structured interviewing questionnaire

The structured interviewing questionnaire was developed by researchers after an extensive review of the relevant studies (15) and consisted of 2 parts. Part I consists of women's general characteristics, such as age, marital status, educational level, occupation, place of residence, income, body mass index, and practicing exercise (7 questions). Part II consists of gynecological history, including contraceptive methods, type of contraceptive methods, previous complaint of UFs, history of myomectomy, family history of UFs, age of menarche, and duration of menstruation and dysmenorrhea (8 questions).

Tool II: Women's knowledge regarding UFs

Women's knowledge regarding UFs was developed by the researchers after reviewing related studies (14). This tool consists of 6 questions, including the definition of UFs, risk factors, symptoms, complications, medical and surgical management of UFs, and source of information about fibroids. It was used in the pretest and follow-up posttest. The knowledge scoring system used in this research was structured in a way that assigned a score of "3" for a complete correct answer, a score of "2" for an incomplete correct answer, and a score of "1" for an incorrect answer. The total knowledge level core was classified as the following:

- Low-level knowledge score: <60%.
- Average level knowledge score: 60%-75%.
- High-level knowledge score: More than 75%.

Tool III: Health-Related Quality of Life

HRQOL was adopted from Coyne et al (2012) (16) and divided into 2 sections. Section 1 (symptom severity) consists of 8 questions and uses a 5-point Likert-type scale ranging from 1 (not at all) to 5 (a very great deal). The data derived from this scale are at the ordinal level. The total scores for this section vary from 8 to 40 (with higher scores indicating more severe symptoms). The total score of the severity of symptoms is classified as follows:

- Low score <50%
- Moderate score 50%-<75%
- Severe score ≥75%

HRQOL (section 1): This scale consists of 6 subscales: concern, activities, energy/mood, control, self-consciousness, and sexual function. It includes 29 questions as follows: concern (5 questions), activities (7 questions), energy/mood (7 questions), control (5 questions), self-conscious (3 questions), and sexual function (2 questions). A 5-point Likert scale was used for the subscales, varying from 1 (none of the time) to 5 (all of the time). Participants were awarded points depending on their answers as follows: 1 point for none of the time, 2 points for a small portion of the time, 3 points for a portion of the time, 4 points for the majority of the time, and 5 points for all of the time. The total score of HRQOL is classified as follows:

- Poor score <50%
- Moderate score 50%-<75%
- High score ≥75%

Educational intervention material (Arabic leaflet booklet)

Educational intervention material was developed by the researchers after reviewing the related literature regarding the UF and its management to help women have a better understanding of the disease condition, its definition, causes/symptoms, complications, best modalities to treat fibroids and improve QOL, as maintain an appropriate weight and balanced diet, practicing exercises, correction of anemia and constipation. Also, the booklet contains colorful pictures to clarify information. Five experts in the fields of maternity nursing and gynecology medicine validated the booklet. The booklet was initially written in English and then translated into simple Arabic language.

Validity and reliability of the data collection tools

Data collection tools were tested for validity by a panel of 5 experts: 3 experts in the field of obstetrics and gynecology nursing and 2 professors in obstetrics and gynecology medicine to test the clarity, comprehensiveness, and applicability of tools. On 2 occasions, the same sample of women was given a test-retest, and the findings were compared. Cronbach's alpha coefficient reached 0.82 for knowledge and 0.7 for quality-of-life subscale questionnaires.

Pilot study

A pilot study was performed on 10% of the women with UFs from the previously mentioned study setting to test the clarity of the questions and examine the applicability and feasibility of the structured interview questionnaire. It also supported the researchers in determining the amount of time required to complete the forms. The tools were completed. Simple changes were made, such as rephrasing or eliminating certain questions, based on the findings of the pilot study. The pilot participants were subsequently incorporated into the main research sample without any further modifications.

Fieldwork

Once permission was granted to proceed with the study, the researchers started to prepare a schedule for collecting the data. The researchers visit the study setting 2 days per week (Monday and Tuesday) from 9 AM to 2 PM. The fieldwork was executed in 9 months. It extended from the first of December 2021 to the end of August 2022. This study's fieldwork took place in the following phases (preparation, assessment, planning, implementation, and evaluation). Preparation (phase 1): The researchers developed a supportive educational intervention in the form of a printed Arabic booklet to address women's lack of knowledge and measures to improve their QOL regarding UFs. The number of sessions and contents, as well as various teaching methods and educational media, were all calculated. The objectives of the supportive educational intervention were constructed. Assessment (phase 2): The researchers approached the eligible women individually, introduced themselves to all women, explained the study's purpose, duration, and knowledge, and explained how to fill out the questionnaires properly. Then, written informed consent was obtained from participants. The questionnaires were distributed by the researchers to determine the general characteristics of the participants (tool I) and their knowledge about UFs (tool II) and assess QOL (tool III). The data collection process required approximately 15 to 20 minutes. Implementation (phase 3): Depending on the assessment phase, findings were collected from women. The researchers conducted educational sessions. The recruited women were divided into 10 groups, with an average of 7-10 women attending each session. Precautions were taken to ensure compliance with COVID-19 safety measures during the sessions. Each session lasted roughly 30-45 minutes to facilitate the learning process, allow every woman to participate in the discussion, and ensure adequate supervision. Sessions were conducted in Arabic language to get simple information for women and to understand the program. The total number of sessions was 3 sessions for each group. The first session included the definition of UF in addition to risk groups of UFs, while the etiology of UFs, signs and symptoms, and source of information about UFs were discussed in the second session. Complications of UFs, medical/surgical management of UFs, and ways to help improve QOL among women with UFs were included in the third session. After each session, each woman was informed of the time of the next session. The next session began with a review of the prior session and the goals of the current session; at the conclusion of each session, women were addressed to clear up any misunderstanding. Discussion, demonstration, and remonstration for sessions were done among the various teaching methods. The total sessions for the entire study sample to complete the program were about 30 sessions for 10 groups. Evaluation (phase 4): The evaluation phase was performed to determine the impact of educational intervention on improving knowledge and QOL of women with UFs using the same tools used before implementation (posttest). The evaluation was conducted 2 months after the implementation of supportive educational intervention sessions.

Statistical analysis

To compare the mean of each variable between the 2 stages of the study (before and after the intervention), a paired samples t test was used at the significance level of 0.05. Then, using the chi-square test at a significance level of 0.05, knowledge items were compared between the 2 groups of people, including correct and incorrect respondents.

Results

The obtained results showed that 50% of the participants were in the age group of >40 years, with a mean age of 42.58 ± 9.23 years. Also, 91% of the participants were married, 41% had secondary education, 67.0% were employees, 75% were from the rural area, and 66% had not enough income. The mean score of the body

mass index was 33.25 ± 4.24 kg/m2 (Table 1). In addition, the findings showed that 86.00% of the participants did not engage in regular exercise.

Table 1. The Sociodemographic characteristics of the participants

Variables	General characteristics	Frequency	
		Number	Percentage
Age (year)	<20	7	7.0
	20 -	13	13.0
	30-	30	30.0
	≥40	50	50.0
	Mean ± SD	42.58±9.23	
Marital status	Married	91	91.0
	single	9	9.0
Educational level	Read and write	29	29.0
	Primary education	20	20.0
	Secondary education	41	41.0
	University education	10	10.0
Occupation	Working	67	67.0
	Housewife	33	33.0
Residence	Rural	75	75.0
	Urban	25	25.0
Income	Enough	34	34.0
	Not enough	66	66.0
Body mass index (kg/m^2)	Low weight <18.5	0	0.0
	Normal weight 18.5-	19	19.0
	Overweight 25-29.9	66	66.5
	Obese ≥30	15	15.0
	Mean ± SD	33.25 ± 4.24	

Based on the findings, 67% of the participants had their first menstruation at the age of 10-15 years. Regarding menstrual duration, 41.0% of them ranged from 7-10 days. Also, 73% of the participants had dysmenorrhea. Moreover, 85% of the participants used contraceptive methods, 51% of whom used hormonal methods. Also, 26% of the participants had a previous history of UFs, and 13% had a previous history of myomectomy (Table 2). According to the results, 67.0% of the participants had a family history of UFs. Also, 72.0% of the participants obtained their information about UFs from the medical team.

Table 2. The gynecological history of the participants

Variables	Gynecological history	Frequency
		Number (Percent)
Age of menarche (year)	10-15 years	67 (67.0)
	Unknown	33 (33.0)
Duration of menstruation	Less than 3 days	13 (13.0)
	3-6 days	39 (39.0)
	7-10 days	41(41.0)
	More than 10 days	7 (7.0)
Dysmenorrhea	Yes	73 (73.0)
	No	27 (27.0)
Contraceptive method	Yes	85 (85.0)
	No	15 (15.0)
Type of contraceptive methods (n=85)	IUD	31(36.5)
	Natural	7 (8.2)
	Hormonal	44 (51.8)
	Surgical	3 (3.5)
The previous history of UFs	Yes	26 (26.0)
	No	74 (74.0)
History of myomectomy	Yes	13 (13.0)
	No	87 (87.0)

Based on the findings, participants had a highly statistically significant difference in their knowledge about UFs pre- and post-intervention (Table 3). In addition, 83.0% of the participants had a high level of knowledge regarding UFs after the intervention. The findings showed that there was a highly statistically significant difference in their mean scores of severe UF symptoms before and after the intervention (P < 0.000); (Table 4). Also, 60% of the participants had a severe level of UF symptoms before the intervention compared to 13% after the intervention. According to (Table 5), there were highly statistically significant differences in the total mean score of QOL items before and after the intervention (P < 0.001). More than two-thirds of the participants had a high score of QOL after the intervention. According to, there was a highly positive association between total knowledge score and total score of QOL regarding UFs before and after the intervention (P ≤ 0.001).

Table 3. The distribution of the participants' knowledge about uterine fibroids before and after the intervention

Knowledge items	Before the intervention (n=100).						After the intervention (n=100).						Chi-square test	P-value
	Complete correct answer		Incomplete correct answer		Incorrect answer		Complete correct answer		Incomplete correct answer		Incorrect answer			
	No	%	No	%	No	%	No	%	No	%	No	%		
Meaning of UFs	19	19.0	40	40.0	41	41.0	81	81.0	12	12.0	7	7.0	77.6	0.001
Causes of UFs	17	17.0	41	41.0	42	42.0	88	88.0	8	8.0	4	4.0	101.6	0.001
Symptoms of UFs	22	22.0	47	47.0	31	31.0	79	79.0	12	12.0	9	9.0	65.03	0.001
Complications of UFs	18	18.0	52	52.0	30	30.0	83	83.0	10	10.0	7	7.0	84.5	0.001
The best way to treat UFs	24	24.0	29	29.0	47	47.0	86	86.0	9	9.0	5	5.0	79.3	0.001

**A highly statistically significant difference (P ≤ 0.001).
Abbreviation: UFs, uterine fibroids.

Table 4. Distribution of studied sample regarding severity of uterine fibroids symptoms score

Symptom severity items	Pre-intervention (n=100)	Post-intervention (n=100)	T	P-value
	Mean ± SD	Mean ± SD		
Heavy bleeding during menstrual period	4.33 ± 0.94	3.30 ± 1.00	13.3	0.000**
Passing blood clots during menstrual period	4.01 ± 1.29	3.21 ± 0.85	8.89	0.000**
Fluctuation in the duration of menstrual period	4.13 ± 1.13	3.21 ± 0.82	10.54	0.000**
Fluctuation in the length of the monthly cycle	3.81 ± 1.28	3.28 ± 0.84	5.79	0.000**
Feeling tightness or pressure in the pelvic area	3.94 ± 1.17	3.33 ± 0.91	7.48	0.000**
Frequent urination during daytime hours	3.34 ± 1.37	2.88 ± 0.91	3.88	0.000**
Frequent nighttime urination	3.10 ± 1.35	2.54 ± 0.71	3.85	0.000**
Feeling fatigued	3.76 ± 1.20	2.42 ± 0.58	9.66	0.000**
Total score of severity symptoms	30.42 ± 9.39	24.17 ± 5.36	8.82	0.000**

**A high statistically significant difference (P ≤ 0.001).

Table 5. Comparison of the mean score of quality of life regarding uterine fibroids at

Quality of life items	Range of possible scores	Pre-intervention (n=100)	Post-intervention (n=100)	T	P-value
		Mean ± SD	Mean ± SD		
Concern	5-25	12.90±5.27	15.50±6.13	9.96	0.000**
Activities	7-35	19.18±8.98	22.68±10.10	9.95	0.000**
Energy/ mood	7-35	19.46±8.53	21.07±8.92	5.43	0.000**
Control	5-25	12.15±5.37	15.30±6.22	10.86	0.000**
Self-conscious	3-15	8.82±3.71	9.96±3.51	7.79	0.000**
Sexual function	2-10	5.84±2.37	6.22±2.39	4.81	0.000**
Total HRQL Score		78.35±33.21	90.73±36.41	13.33	0.000**

pre-intervention and post-intervention.
**A high statistically significant difference (P ≤ 0.001).

Discussion

The present research revealed that the majority of participants did not engage in regular exercise. Our results are not consistent with the study by Ezeama et al (17), who found that UFs were most common in young women. This discrepancy might be due to different age groups, sample sizes, and settings.

However, our findings are consistent with the study by Monleón et al (18), who reported that most of the women were married. On the contrary, Ekine et al (19) revealed that more than half of the women were single.

This finding is also consistent with Pron (20), who showed that more than half of the participants were employees. On the other hand, this result is not consistent with Marwa et al (21), who found that most of them were housewives.

Concerning income, the research result is not consistent with Ismail and Mohamed (22), who revealed that a high percentage of the participants had enough income.

Regarding menstrual history, more than two-thirds of the participants had early menarche age of 10-15 years with a duration ranging from 7-10 days. This is consistent with the study by Wise et al (23), who proved that menarche at a young age increases the risk of developing fibroids and is also linked to other hormonally induced diseases, including endometrial and breast cancer.

Regarding gynecological history, most of the participants used contraceptive methods. More than half of them used hormonal methods. This finding is consistent with Flake et al (24), who showed that more than half of the women used contraceptive methods, such as pills. On the other hand, these findings are not consistent with Mehine et al (25), who showed no association or risk for oral contraceptive use; this controversy could potentially be attributed to women who take hormonal contraceptive pills, as they may experience a longer delay in diagnosing UFs. The symptoms of fibroids can be masked or hidden by the effects of oral contraceptive pills.

The research results indicated that approximately one-fourth of the participants had no previous history of UFs, and approximately two-thirds of the participants had a family history of UFs.

The current research revealed that more than two-thirds of the participants obtained their information about UFs from the medical team. This result disagrees with Adegbesan et al (26), who showed that a high percentage of their participants obtained their information about UFs from the media. This difference may be due to the difference in the country's culture, capabilities and available media, age, marital status, and occupation.

Regarding the total knowledge mean score, the current research proved that the majority of participants had a low level of total knowledge score regarding UFs before the intervention; however, after the intervention, their knowledge level significantly improved, reaching a high level of knowledge. These findings are consistent with Senthilkumar et al (27), who found that most women with UFs had a low level of knowledge in the pretest; in addition, they showed a statistically significant difference between the participants' knowledge levels before and after the intervention,

Regarding the symptoms of UFs, the current research showed that more than half of the participants had a high level of severe symptoms before the intervention. These results are consistent with Muawad et al (28), who showed that age over 40 years and obesity were associated with UFs. In the same line, Kiran et al (29) concluded that symptom severity scores gradually increased with lower socioeconomic levels. These findings are consistent with Ezeama et al (17), who stated that most of the participants had menorrhagia. In addition, Hervé et al (30) concluded that over two-thirds of the women reported moderate to severe fibroid-related symptoms.

Regarding the QOL of participants, the current research revealed that about two-thirds of the participants had low QOL scores; this may be attributed to the fact that more than half of our participants had a high level of severe symptoms. These findings are consistent with Ming et al (31), who found that women's QOL was negatively impacted by UFs regarding the self-care and typical activity aspects. This result is consistent with Soliman et al (4), who reported that HRQL among women with UFs was significantly impacted by UFs-related symptoms, and women who rated their UF symptoms as severe had significantly (P < 0.001) worse UFs-QOL scores than women with mild or moderate symptoms. Moreover, Hervé et al (30) showed that the degree of symptomatic fibroids' intensity had a significant impact on the women's personal QOL.

There was a highly statistically significant difference in the QOL items before and after the intervention; more than two-thirds of the participants had a high level of QOL scores after the intervention. These findings are consistent with Marwa et al (21), who found a statistically significant difference in the QOL items before and after the counseling intervention.

Conclusion

The findings of this study demonstrate that supportive educational intervention has a beneficial impact on enhancing women's knowledge and improving their quality of life (QOL) in relation to uterine fibroids (UFs). Consequently, several recommendations can be put forth: firstly, the implementation of educational programs as a nursing intervention targeting women with UFs to enhance their knowledge and QOL; secondly, the undertaking of a qualitative study to evaluate the experiences of women grappling with UFs; and finally, the evaluation of the effectiveness of alternative non-surgical treatments for managing uterine fibroids.

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Ethical statement

This study was approved by the Ethics Committee of Benha University, Benha, Egypt. Written consent was obtained from women. The anonymity and confidentiality of the patients were considered during the process of research.

Conflicts of interest

The authors confirm that there are no relevant financial or non-financial competing interests.

Author contributions

H.M.H.: Idea presentation, software, writing the original draft, writing review, and editing. A.D.K.G.: Supervision, methodology, project administration, and data curation. S.M.I., S.M. M., and A.E.S.: Formal analysis, methodology, and preparation of the first draft.

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