

Gynecological Nursing Care for women Undergoing Hysterectomy: Effect of an Educational program on Nurses' Knowledge and Practices

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Abstract

Background: For women of reproductive age, hysterectomy is the most common gynecological surgical treatment. A woman having a hysterectomy should have a nursing care plan that reflects the nurse's understanding of the necessary medical and psychological support. This research sought to assess the impact of an educational intervention program. **Aim of the study:** The purpose of this study was to assess how an educational intervention program affected gynecological nurses' knowledge of how to care for women having hysterectomy patients. **Subjects and methods:** Research design: two research designs were used: (1) A quasi-experimental intervention study for nurses. (2) Descriptive research for women. **Sample:** The study sample included two groups: (1): All nurses work in the obstetric and gynecological departments and the gynecological operating room at Beni-Suef University Hospital (20 nurses). (2): A simple random sample of 50 women who were undergoing hysterectomy was divided into 2 groups. **Group I:** 25 women to assess nursing intervention before program application; **Group II:** 25 women to evaluate nursing intervention after program application. **Tools:** Five main tools were used: (1) a structured interview questionnaire for nurses and women; (2) a questionnaire for nurses knowledge; (3) observational check list practice for nurses; (4) a satisfaction scale for women's satisfaction with nursing care provided during hospital stays; and (5) an instructional booklet for nurses' knowledge about nursing care provided to female patients having hysterectomy. **Results** showed a significant improvement in nurses' knowledge and practice of nursing care for women undergoing hysterectomy in post-program implementation compared to pre-program. Additionally, women's satisfaction was higher with the program. **Conclusion:** The designed educational intervention program has a positive effect on improving nurses' knowledge and practice about nursing care for women undergoing hysterectomy. The improvement of nurses' knowledge and practices after the implementation of the educational program regarding the care of women having hysterectomy positively affected women's satisfaction with the care of hysterectomy. **Recommendation:** Reapplication of the study under different circumstances, including large sampling, other settings, measurements, and duration of management, in Egypt to ensure the generalization of the findings

Key word: Program, hysterectomy, Nurses' Knowledge and Practices, Women's satisfaction

Introduction

Every woman's uterus holds immense significance in her life since it is regarded as a symbol of femininity and fertility (Hassan, 2016). Uterus removal can be a difficult process for women to face emotional, psychological, and cultural factors and may affect women's identity as perceived changes in their body image, the feeling of mutilation of the body, emptiness, and feeling different from other women. A hysterectomy, which is the removal of the uterus,

is a common gynecological surgical surgery. Depending on the purpose of the surgery and the type of procedure, it can entail the removal of the ovaries and fallopian tubes (Goudarzi et al., 2022).

As reported in the current literature, around 10% to 30% of females in industrialized countries had been subjected to hysterectomy before the age of 65, and about 20% of females in the developing world had been subjected to hysterectomy by the

age of 55 (Manandhar et al., 2020). Hysterectomy is the most common non-pregnancy-related major surgery done in the United States. About 600,000 hysterectomies are performed annually in the United States, with more than half performed on women under 49 years old. According to Adam et al. (2023), hysterectomies account for 28% of all major gynecological procedures carried out in Nigeria, but Anwar et al. (2020) reported that the yearly incidence rate of hysterectomy in Egypt was 165.107.

Hysterectomy can be approached abdominally, vaginally, laparoscopically (with robotic assistance), or via an abdominal incision. Three main types of hysterectomy include total hysterectomy, partial hysterectomy, and radical hysterectomy. Total hysterectomy includes the removal of the uterus, including the cervix. The upper portion of the uterus is removed during a partial hysterectomy, also known as a subtotal or supra cervical procedure. The cervix is preserved, and the ovaries and fallopian tubes are not removed. However, all of the uterus, the cervix, the upper portion of the vagina, the tissue on both sides of the uterus, and the lymph nodes are removed during a radical hysterectomy (Ko et al., 2021).

The type of hysterectomy performed depends on the reason for the procedure. There are different reasons for performing a hysterectomy, including both benign and malignant conditions of the uterus. Benign indications for hysterectomy include uterine fibroids, menstrual disorders, adenomyosis of the uterus, endometriosis, uterine prolapse, abnormal uterine bleeding, chronic pelvic pain, uterine leiomyomas, septic abortions, pelvic inflammatory disease, ectopic pregnancy, and precancerous lesions of the endometrium and the cervix (Meek et al., 2022).

On the other hand, malignant indications for hysterectomy include cervical cancer, endometrial carcinoma, malignant ovarian tumors, and malignant disease of other adjacent organs. Hysterectomy is generally safe but increases the risk of complications, which has an intense effect on a woman's health as the woman stands facing physical, psychological, emotional, and social problems after the operation (Michael et al., 2020; Nady et al., 2018a; Mohammed et al., 2018; Nady et al., 2018b).

The possible physical complications of

hysterectomy include problems with anesthesia, surgical wound infection, fever, wound hematoma, excessive bleeding, risks of blood transfusion, urinary and bowel injuries, and injury to a major blood vessel. Physical complications also include urinary tract infection, nerve damage, loss of ovarian function, postoperative thromboembolism, early onset of menopause, myocardial infarction, pneumonia, sepsis, fluid imbalance, and metabolic imbalance (Luchristt et al., 2022; Abd Elati et al., 2018; Hassanine et al., 2017).

Additionally, some women may suffer from psychological problems such as anxiety, depression, and psychosexual problems, while the social effects of hysterectomy on women's quality of life include marriage problems, which in some cases ended in divorce. Thus, if gynecological nurses are ready to provide excellent pre- and post-hysterectomy care, they can significantly contribute to the improvement of the quality of life for women having hysterectomy surgery (López et al., 2023; Hassan et al., 2016).

A large number of the caregiving responsibilities for women having hysterectomy fall on gynecological nurses. In addition, they are crucial to the care a woman receives from the moment she is admitted to the hospital, during her stay, and even after she is released. Prior to discharge, the women and family should get verbal and written instructions on nutrition, wound care, personal hygiene, activity limits, medication administration recommendations, signs and symptoms of infection to report, and follow-up appointments (Hassan, 2020; Erdoğan et al., 2020; Hassan 2019a; Hassan et al., 2020).

The single most essential factor in lowering post-hysterectomy problems and preserving women's lives is the complete nursing care provided by a qualified nurse both before and after the procedure. As a result, gynecological nurses can educate hysterectomy patients before to surgery to improve their psychological health, reduce anxiety, and boost their sense of self-worth. On the same line, the implementation of postoperative care given by well-trained and skilled nursing staff will ensure the restoration of physiological functions, promote the healing of tissues, and recognize and manage complications (Stollendorf et al., 2020).

Significance of the study

Hysterectomy is a common surgical procedure in the world because of its high prevalence and is predominantly performed when women are between 30 and 50 years old. Approximately 96% of hysterectomies are performed to treat benign conditions. The prevalence is 7%–8% of rural women, and 5% of urban women have already undergone hysterectomy (Lungu et al., 2021). As well, caring for women who undergo hysterectomies is neglected in most hospitals, although complications following hysterectomy may expose women to morbidity and mortality. So, the current study will be conducted to evaluate the effect of an educational intervention program on gynecological nurses about nursing care provided to female patients having hysterectomy.

Aim of the Study

The study was conducted to evaluate the effect of an educational intervention program on gynecological nurses' nursing care provided to female patients having hysterectomy.

Specific objectives:

- Assess gynecological nurses' knowledge regarding nursing care for women undergoing hysterectomy.
- Assess gynecological nurses' nursing care practices for women undergoing hysterectomy.
- Design and implement an educational intervention program for gynecological nurses about the nursing care provided to female patients having hysterectomy.
- Evaluate the effect of the implemented educational intervention program on gynecological nurses' nursing care for women undergoing hysterectomy.
- Evaluate women's satisfaction toward gynecological nurses' practices regarding nursing care provided to female patients having hysterectomy.

Research hypothesis:-

- **H1:** Gynecological nurses' knowledge and nursing care practices regarding nursing care for women undergoing hysterectomy will be improved after the implementation the educational program.

- **H2:** Women undergoing hysterectomy will be more satisfied with nursing care after the implementation the educational program.

Subject and Method:

Design: Two research designs were used:

The first: is a quasi-experimental interventional study for nurses. A quasi-experimental design is mostly used to evaluate the effect of interventions (Thomas, 2024).

The second: descriptive research for women was utilized. A descriptive research design is used to describe or document the characteristics, behavior, attitudes, opinions, or perceptions of a group or population being studied (McCombes, 2023).

Research Setting: This study was conducted at the gynecological department and operating room of Beni-Suef University Hospital during the period of 6 months from January 1, 2024, to the end of June 2024.

Sample: The study sample comprised two groups:

Group one: nurses working in the gynecological department and operating room

Sample Type: Convenient sample

Sample Size: All nurses work in the obstetric and gynecological departments and the gynecological operating room at Beni-Suef University Hospital (20 nurses) with different qualifications, ages, and experiences at Beni-Suef.

Group two: Women undergoing hysterectomy

Sample Type: Simple random sample

Sample Size: The calculated sample size is 50 women; they were classified as follows:

Group I: 25 women to assess nursing care before program application.

Group II: 25 women to evaluate nursing care after program application.

The inclusion criteria to be included in the study were:

1. Women who are undergoing a hysterectomy operation,
2. Women with different causes of hysterectomy
3. Women attended the study setting and agreed to participate in the study during the study period.

Tools for data collection: Five main tools were

used, as mentioned below:

1. **Tool 1: A structure-interviewing questionnaire sheet for nurses' and women:** It was developed by the researcher based on current related literature (Pecorino, 2022) and translated into Arabic, which comprised three main parts:

Part (I): Demographic characteristics of nurses were used to collect nurses' general characteristics in the study, such as age, educational level, occupation, years of experience, attending training programs, and present teaching aids about caring for women who are undergoing hysterectomy.

Part (II): Demographic characteristics of women involved in the study were used to collect women's general characteristics, such as age, marital status, educational level, level of occupation, and obstetric and gynecological data.

2. **Tool (2): Nurses' knowledge questionnaire (pre-test and post-test):**

This tool was designed by the researcher in Arabic mainly to assess nurses' knowledge about the care provided to female patients having hysterectomy and was used before and after program application. This questionnaire was adapted from Abdul-Kareem and Kadhum (2022). It was modified by researchers and translated into the Arabic language. It was used to assess nurses' knowledge about the care provided to female patients having hysterectomy.

It included 70 items about knowledge related to hysterectomy, such as meaning, types, indications, physical and psychosocial problems associated with hysterectomy, preoperative, intraoperative, and post-operative nursing care for women undergoing hysterectomy, infection control, post-operative exercises, a discharge plan, and warning signs to seek medical care. The responses to the knowledge items were scored 1 for the correct answer and zero for the wrong answer, before and after the implementation of the program.

The scores of the knowledge test were expressed as a percent from a maximum of 70 points as follows: if the percent score was equal to or greater than 60%, the nurses' knowledge was considered satisfactory, and unsatisfactory knowledge was less than 60%.

3. **Tool (2): Observational checklist practice about nursing care provided to female patients having hysterectomy, which is used before and after program implementation.**

This checklist was adapted from Ibrahim et al. (2022). It was modified by the researcher and translated into the Arabic language. It aimed to evaluate nurses' practice in nursing care provided to female patients having hysterectomy before and after the implementation of the educational program. It comprised the following parts: Preparation of women before surgery (physical and psychological), preparation of the operating theater, and post-operative care (immediate and late). The preparation of women before surgery included regular preoperative screening tests, the absence of mechanical bowel preparation before surgery, preoperative fasting instructions, the administration of preoperative intravenous fluids, skin preparation and cleansing, the recording of voiding time and amount as bladder preparation, the removal of makeup, nail polish, dentures, and jewelry, post-procedure care, including position after hysterectomy, complications after the operation, and the implementation of post-operative nursing care. vital signs monitoring, assessment of signs of hemorrhage, incision site, and bowel sound, enhancement of early ambulation, provision of respiratory care, early urinary catheter removal, enhancement of early fluid intake, oral feeding, and measures to relieve postoperative pain. An observational checklist about nurses' practices was filled out by the researcher, which took time ranging from 15 to 30 minutes with each nurse.

The response for the practical items was scored: two scores were given for each correct step, one score was given if nurses' practices were incompletely done, and zero if nurses' practices were not done. After the observational checklist's scoring method was calculated, the sheet was assigned a grade out of a possible 253 points. The average score of three observations was calculated. Scores of practices were scored as a percent from a maximum of 506 points, as follows: satisfactory if the percent score was equal to or more than 60%, and unsatisfactory if the percent score was less than 60%.

4. Tool 4: Satisfaction Scale Regarding Nursing Care provided to female patients having hysterectomy.

This scale will be adopted from Ibrahim et al. (2022) in Arabic; it assesses the degree of satisfaction for women who underwent hysterectomy about the nursing care that was given to them. It consisted of statements that were along a continuum of rating scales. Satisfaction items are scored 2, 1, and zero for "yes," "sometimes," and "no," respectively. The sum of the item scores was added together, and the total was divided by the number of items, yielding a mean score. The results were then converted to a percentage. If the percentage score is 60% or more, women undergoing hysterectomy are satisfied with the provided nursing care; if it is less than 60%, women undergoing hysterectomy are unsatisfied with the provided nursing care.

5. Tool (5): Supported material (instructional booklet) for nurses about the nursing care provided to female patients having hysterectomy

To upgrade nurses' knowledge and practices pertaining to the nursing care provided to female patients having hysterectomy, researchers designed and implemented.

Validity and reliability of tools:

A panel of five experts in the fields of maternity, obstetrics, and gynecologic nursing reviewed tools to test their content validity. Modifications were made accordingly based on their judgment. The reliability was tested statistically by estimating their internal consistency using Cronbach's alpha coefficient. It was 0.84 for nurses' knowledge regarding care provided to female patients having hysterectomy, 0.85 for nurses' observational checklist practice regarding care provided to female patients having hysterectomy, and 0.79 for the satisfaction scale regarding care provided to female patients having hysterectomy.

Ethical and administrative considerations

The study was conducted according to the following steps: An official letter clarifying the purpose of the study was obtained from the

faculty of nursing at Beni-Suef University and submitted to the responsible authorities of the selected settings (Beni-Suef University hospital) for permission to carry out the study. All ethical issues were taken into consideration during all phases of the study. The approval of the ethical committee of the faculty of medicine at Beni-Suef University was obtained. All participants were informed about the purpose of the study. An informed consent was obtained from every participant in the study, which included the right to withdraw at any time. The researcher ensured that the nature of the study didn't cause any harm or pain for the entire sample. Confidentiality and privacy were taken into consideration regarding data collection.

Pilot Study:

A pilot study was conducted to test the clarity of the tools used and the validity and reliability of the tools. It was carried out on 10% of the sample (2 nurses and 5 women undergoing hysterectomy in the study setting) that were excluded from the study sample. The purpose of the pilot study was to evaluate the feasibility, application, and clarity of the study instruments and to determine how long they would take to complete. It also helped to identify any potential problems or barriers that would prevent the collecting of data. Based on the findings of the pilot study, certain modifications to the tools were made.

Field Work:

Data collection was conducted over a period ranging from the beginning of January 2024 to the end of June 2024, covering six months. Data were collected from the gynecological department and operating room of Beni-Suef University Hospital in morning and afternoon shifts until the predetermined sample size was collected. The researcher attended 3 days per week (Saturday, Sunday, and Monday) in the study setting. This study was conducted through the following sequential phases:

Phase I: Preparation:

A review of the current and past relevant literature using available local and international books and journals was done to identify the

nursing care provided to female patients having hysterectomy, develop study tools, and determine the contents of the educational intervention program.

Phase II: Assessment Phase:

The researcher met with nurses during morning and afternoon shifts at the gynecological ward of Beni-Suef University hospitals. Nurses were asked to participate in the study after explaining the aim of the study. After that, nurses were assessed using **Tool (1) Part I** to collect baseline data (general characteristics), and **Tool (2)** and **Tool (3)** were used to assess nurses' knowledge and practice related to nursing care of hysterectomy before and after implementation of the educational program.

Tools were used to get nurses' baseline knowledge and practice prior to the development of the program content and also post-implementation in order to compare the results of the pre- and post-tests to determine the level of improvement. Nurses' pre-tests were distributed at the beginning of the session using **Tool (2)** to assess nurses' knowledge related to nursing care for hysterectomy in the presence of the researcher for necessary clarification. **Tool (3)** is the observational checklist practice about nursing care for women's undergoing hysterectomy, which is used before and after program application. Nurses' knowledge was assessed individually for each nurse by an interview lasting 15-20 minutes for each nurse. Nurses' practice was assessed individually by the researcher for each nurse for every procedure.

Phase III (Planning Phase): Program Development Phase

General and specific objectives were designed after assessing all nurses for their theoretical background through a pre-test and also for their practical background through an observational checklist on the first group of women (25) that were undergoing hysterectomy.

Phase IV (Program Implementation):

The content of the educational intervention program related to the nursing care provided to female patients having hysterectomy was

designed to enable the program to meet its objectives. A supported material (instructional booklet) for nurses about nursing care provided to female patients having hysterectomy was designed to upgrade nurses' knowledge and practices pertaining to nursing care provided to female patients having hysterectomy and was designed and implemented by researchers.

The program was implemented in a friendly atmosphere in both Beni-Suef University hospitals in the gynecological department and operating room. It was carried out in different sessions (theory and practice) using different teaching strategies such as lectures and discussion demonstrations through models, role-play, case study, and remonstrations. All nurses were divided into 5 groups in each setting, and the content was implemented for each group separately. The duration of the program was 3 days per week.

At the beginning of the first session, an orientation to the program and general and specific objectives are explained. After each session, feedback about the previous session and the objectives of the new topic is given. The Arabic language was used to suit the nurses' level of understanding. Methods of teaching were modified: lectures, group discussions, demonstrations, and re-demonstrations. An instructional media was used, such as booklets, colored posters, and real objects, such as instruments of operation. Most nurses in the setting were cooperative with the researcher. They were interested in the topic. A number of 1-2 nurses were interviewed per day. Study tools were then explained to nurses, who were assured that all information would be kept private and utilized exclusively for the purpose of the study. Nurses filled in the sheet in their knowledge regarding the care given to female patients undergoing hysterectomy.

The researcher completed an observational checklist about nurses' practices about the care given to female patients undergoing hysterectomy. It took a time range of 15-30 minutes (initial assessment upon the woman's arrival in the hospital: the day before operation, preoperative psychological preparations, the day before operation, preoperative physical preparations, the day before operation, preoperative care steps for the hysterectomy patient, and post-operative care steps for the gynecological patient in the ward

room). The tool of the satisfaction scale regarding the care provided to female patients having hysterectomy was filled out by the researcher by asking the patient, and that was completed within 10–15 minutes.

Phase V: Evaluation phase

This is the last phase; it was implemented after the completion of the program to measure the effectiveness of the program. Evaluate nurses' knowledge using a posttest sheet (the same as a pretest) and nurses' practice using an observational checklist format during giving nursing care to the second group of women (25). The questionnaire format and the observation sheet were filled out again. In addition, the level of women's satisfaction with nurses' practice of nursing care for women undergoing hysterectomy was evaluated using a satisfaction scale.

Statistical analysis

Statistical tests were done using SPSS version 25.0. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables and means and standard deviations for quantitative variables. Tests of significance, The student t-test was used for the comparison of the means of two independent groups. For the evaluation, a person-correlation analysis was employed.

Results

Table 1 describes the demographic characteristics of the studied nurses; it shows that the mean age of nurses was 41.75 ± 6.23 , most of them were nurses and completed nursing technical diploma (95.0% and 70.0%, respectively). Moreover, a minority (10.0%) of the studied nurses had more than 10 years of experience in the gynecological field. None of the nurses attended training programs about caring for women who undergo hysterectomy and didn't take teaching aids (booklets) about caring for women who undergo hysterectomy.

Table 2 illustrates nurses' mean knowledge related to total items of knowledge about the care provided to female patients having hysterectomy. Results indicated that the mean scores of nurses' knowledge before the program's implementation for all items were generally deficient. Also, there

were statistically significant improvements related to pre-operative nursing care and hospital discharge plans.

Figure 1 demonstrates that, before the program intervention, the majority of nurses (80.0%) had an unsatisfactory level of knowledge about the care provided to female patients having hysterectomy, but afterward, 95.0% of them had a satisfactory level of knowledge.

Table 3 shows the distribution of nurses' mean practice related to total items of pre-, intra-, and post-operative care for women undergoing hysterectomy before and after the program. Results indicated a lack of mean scores for nurses' practice in the pre-program, while there was highly significant improvement in their practice post-program intervention.

Figure 2 shows the total score of the of the practice level of the studied nurses' about pre-, intra-, and post-operative care provided to female patients having hysterectomy before and after intervention. It reveals that, before the program intervention, the majority of nurses (70.0%) had an unsatisfactory level of practice regarding the care provided to female patients having hysterectomy, but afterward, 90.0%) of them had a satisfactory level of practice after the intervention than before.

Table 4 finds that the majority of women (84.0%) were satisfied in the post-program compared to the pre-program, with a highly statistically significant difference ($p < 0.05$).

Table 5 reveals a statistically significant positive correlation between the total score of nurses' knowledge regarding care of women having hysterectomy, nurses' practice regarding care provided to female patients having hysterectomy, and women's satisfaction with care provided to female patients having hysterectomy.

Table (1): Demographic characteristics of studied nurses (n = 20)

Items	No	%
Age (years) :		
<30	5	25.0
31-40	4	20.0
41-50	11	55.0
Rang	26-50	
Mean±SD	41.75±6.23	
Occupation :		
Nurse	19	95.0
Head nurse	1	5.0
Educational level :		
Nursing technical diploma	14	70.0
Health technical Institute	4	20.0
Bachelor of nursing	2	10.0
Years of experience in gynecological field:		
<5 years	5	25.0
5-10 years	13	65.0
>10years	2	10.0
Attending training programs/take teaching aids about caring of hysterectomy:		
yes	0	0.0
No	20	100

Table (2): Nurses' mean knowledge related to items of nursing care provided to female patients having hysterectomy before & after program (n=20)

Items	Mean± SD		t-test
	Pre-Program	Post-Program	
Genital organs	60.0 ± 0.7	73.3 ± 0.7	1.7
Hysterectomy	66.1 ± 0.5	72.0 ± 0.8	1.5
Tension & anxiety	60.0 ± 0.9	73.3 ± 0.8	1.4
Pre-operative nursing care	61.1 ± 0.6	81.0 ± 0.9	2.2*
Infection control measures	69.0 ± 0.6	81.3 ± 0.6	1.3
Post-operative nursing care	70.0 ± 0.9	82.1 ± 0.6	1.4
Exercise practice	64.7 ± 0.7	81.3 ± 0.6	1.4
Hospital discharge plan	43.0 ± 0.6	73.0 ± 0.6	11.1*

(*) Statistically significant at p level 0.05

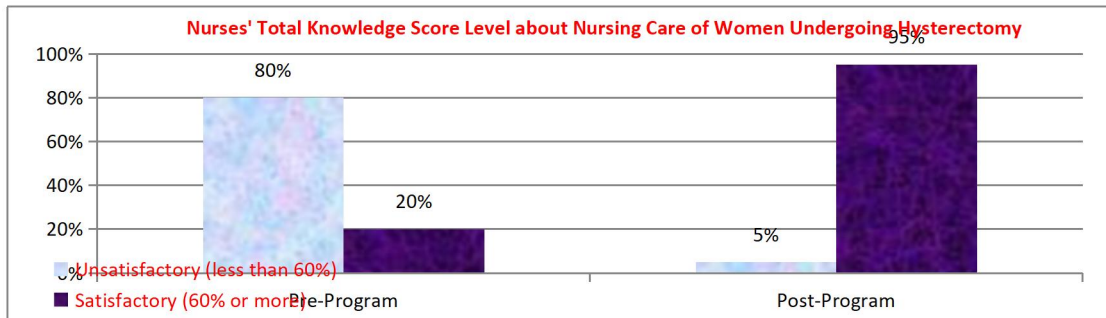


Figure (1): Percentage distribution of studied nurses' total knowledge score level about nursing care provided to female patients having hysterectomy before & after program (n=20)

Table (3): Nurses' mean practice related to items of practice pre, intra & post-operative care provided to female patients having hysterectomy before and after program (n=20)

Items	Mean± SD		t-test
	Pre-Program	Post-Program	
Pre-operative care	43.7 ± 6.7	78.3±9.6	13.4*
Intra-operative care	55.0±9.6	85.5 ±5.3	16.6*
Post-operative care	37.3±8.0	77.93.2±9.9	20.7*

(*) Statistically significant at p level 0.05

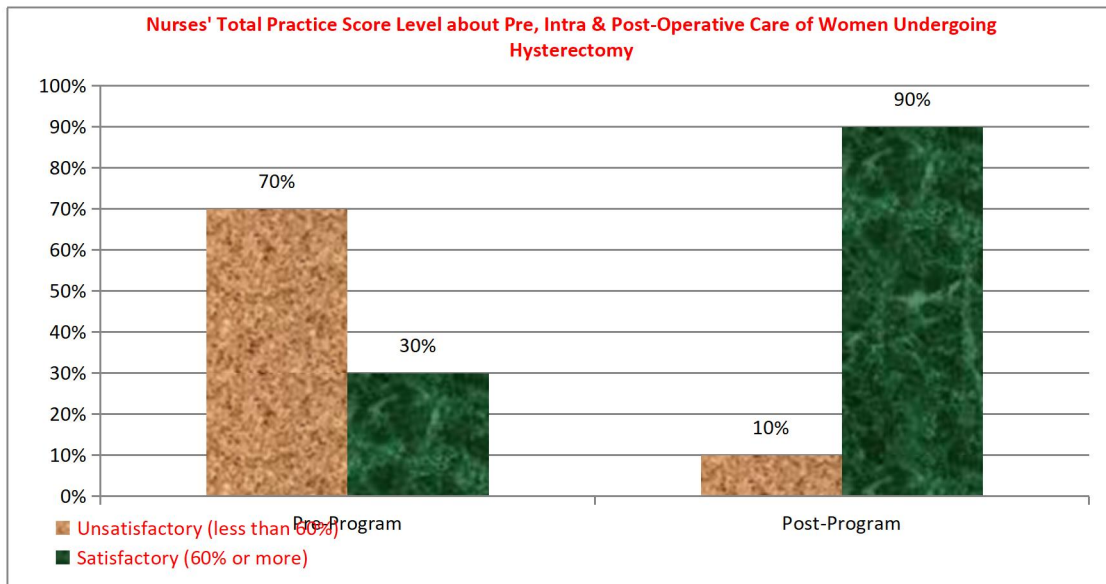


Figure (2): Percentage distribution of studied nurses' total practice score level about pre, intra & post-operative care provided to female patients having hysterectomy before and after intervention (n=20)

Table (4): Women's satisfaction about nursing care of women's undergoing hysterectomy (pre & post-program) (n=50)

Women satisfaction	Pre-program (n=25)		Post-program (n=25)		X ²
	No	%	No	%	
Satisfied	11	44.0	21	84.0	6.2*
Un satisfied	14	56.0	4	16.0	

(*) Statistically significant at p level 0.05

Table (5): Correlation between nurses' total score of knowledge, practice and women' satisfaction

Total score	Knowledge	practice	Satisfaction
Knowledge	--	r = 0.832 p = 0.021*	r = 0.741 p = 0.036*
practice	r = 0.832 p = 0.021*	--	r = 0.031 p = 0.763
Satisfaction	r = 0.741 p = 0.036*	r = 0.031 p = 0.763	--

*Significant (P<0.05)

Spearman's test for correlation

Discussion:

Worldwide, the reproductive health of women is considered an issue of vital importance and has wide-spread implications for health. However, reproductive disorders diminish the quality of life for affected women and families. By the time women reach the age of 65, about 37% to 39% of women have undergone a hysterectomy. Hysterectomy has an intense effect on a woman's health as the woman stands facing physical, psychological, emotional, and social problems after the operation (Bogani et al., 2022).

Hysterectomy is the most commonly used primary gynecological procedure for gynecological problems and is used for both malignant and benign conditions such as fibroids, endometriosis, adenomyosis, endometriosis, uterine prolapse, dysfunctional uterine bleeding, and cervical dysplasia (Casarin et al., 2021). Women are adequately informed about the reasons and effects of hysterectomy. A good attitude toward hysterectomy can prevent many issues. The frequency of hysterectomies has grown recently, depending on the procedure, and anesthesia may be difficult. Many women lacked awareness about hysterectomy and wanted additional details on the care of hysterectomy (Mathew, 2020).

Maternity nurses play a crucial role in improving the quality of gynecological care, which provides women with education and support. At the same time, the nurse can provide health promotion and psychosocial services, including assessment, health education, counseling, and appropriate referral (Mostafa et al., 2018; Said et al., 2018; Atwa et al., 2019).

The demographic traits of the nurses under investigation are described by the results of this study. The results of this study showed that the majority of the nurses under investigation had earned a nursing technical diploma. Furthermore, only a small percentage of the nurses under study had more than ten years' experience. None of them participated in courses on how to care for women who have hysterectomy. As well as ignoring educational materials (books) regarding how to care for women who had hysterectomy.

This finding agrees with Mahmoud et al. (2021), who studied "Effect of an educational program on gynecological nurses' performance hysterectomy pre and post hysterectomy surgery, in Tanta and found that slightly more than two-thirds of the studied nurses completed a nursing technical diploma, and the vast majority of the studied nurses didn't attend any training courses in obstetrical and gynecological nursing. This may be due to a lack of in-service education programs. This emphasized that a lack of nurses' education is considered a system failure that leads to health care errors. This result is in disagreement with Adugbire & Aziato (2018), who revealed that two-fifths of the studied nurses had (1–5) years of experience and three-quarters of them attended training sessions in nursing. These contradictions may be due to the ignorance of the importance of updating and refreshment courses for nurses to increase their knowledge in maternity hospitals.

According to nurses' mean knowledge related to items about the care provided to female patients having hysterectomy, the present study findings indicated that nurses' mean knowledge score before program application was poor and unsatisfactory. This may be due to the absence of a well-designed educational program that is provided to nurses. However, findings indicated that there was an improvement in nurses' mean knowledge after the program compared to those before the program application for all items. Also, there were significant improvements related to pre-operative nursing care and the hospital discharge plan. This could be attributed to the ability of nurses to gain knowledge easily and the effectiveness of the program. The foregoing findings confirm the positive effect of the educational program on improving nurses' knowledge about hysterectomy. This may be attributed to the fact that researchers simplify the information and help nurses apply their knowledge to practice.

This finding finds support in the study of Zagloul et al. (2020) in Port Said City, which mentioned that the majority of study subjects were not adequately equipped with knowledge concerning hysterectomy. The study emphasized initiating a continuing medical

education program at work to spread knowledge about hysterectomy. In this respect, Alshawish et al. (2020) stated that a well-designed health education program on hysterectomy would increase awareness among women. Similar findings supported the present study findings and showed the posttest mean was significantly higher than that of the pretest mean. These results were not in the same line as those of Ali et al. (2019), who studied the “surgical approach to hysterectomy for benign gynecological diseases” and found that more than two-thirds of respondents had low knowledge scores about uterine fibroids.

Regarding the nurse's total knowledge score level about women undergoing hysterectomy, the current study revealed that the majority of the studied nurses' knowledge level was unsatisfactory pre-educational program implementation. This might be related to the fact that the majority of the nurses have a nursing technical diploma, in which the content was limited in their curriculum, and they did not receive any previous in-service intervention programs about the care provided to female patients having hysterectomy. In addition, a reduction in nurses' knowledge could be due to a lack of updating knowledge and an overloaded area of work. These results also indicate the need to implement educational programs and workshops for nurses' about hysterectomy. There is an improvement in nurses' knowledge score levels about nursing care for women undergoing hysterectomy after intervention compared to before.

This result is in accordance with Abd-El Rahman et al. (2022) in Mansoura City, Egypt, who studied “effect of social media-based educational guidelines on knowledge and practice among women undergoing hysterectomy” and reported that, before the implementation of educational guidelines, the majority of women had an unsatisfactory level of knowledge regarding hysterectomy, but afterward, the vast majority of them had a satisfactory level of knowledge.

These findings were corroborated by Mahmoud et al. (2021) in Tanta and pointed out that three-fifths of the studied nurses had a low knowledge level before educational program implementation. These results were in

congruence with Senthilkumar & Girisha (2020), whose study was titled “A prospective study on knowledge, attitude, and perception towards uterine fibroids,” who reported that the majority of the nurses had inadequate knowledge of the fibroid uterus.

In relation to nurses' mean practice related to the total items of pre-, intra-, and post-operative care provided to female patients having hysterectomy before and after the program, the present study findings revealed a lack of mean scores for nurses' practice in the pre-program, while there is improvement in practice post-program intervention. This lack of practice may be attributed to the fact that most nurses do not perform pre-, intra-, and post-operative skills and rely on doctors for procedures, with no training about skills to prevent any complications. Similarly, Obol et al. (2021) studied “Knowledge, attitudes, and practice of cervical cancer prevention among health workers in rural health centers in Northern Uganda” and reported that there is a lack of nurses' performance during the insertion and removal of urinary catheters. In this respect, Luchristt et al. (2022) placed much reliance on the trained maternity nurse to take an active role in providing women undergoing hysterectomy with the needed support and care during such a critical period (the pre-operative period) to maximize the benefits gained from such surgery and ensure women's safety.

As regarding total nurses' practice score level about pre-, intra-, and post-operative care provided to female patients having hysterectomy before and after intervention, the result of the present study revealed that less than three-quarters of the studied nurses had an unsatisfactory level of practice in pre-educational program implementation. Unsatisfactory total nurses' practice owing to lack of orientation and periodic training programs for newly employed nurses. The majority of the investigated nurses had a satisfactory degree of practice throughout the post-educational program implementation, with an improvement in total practice ratings addressing the pre-, intra-, and post-operative care given to female patients undergoing hysterectomy.

The findings are in agreement with Gouda et al.'s (2019), who showed that less than three-quarters of the studied nurses had an unsatisfactory level of performance pre-educational program implementation. These results are partially in line with a study done by Puri et al. (2020), Hassan et al. (2019), and Abdelhamed et al. (2018) that reported nurses and women's satisfaction regarding practice about abdominal surgery and physical status.

On the other side, Thilagavathi and Rajeswari (2022) studied "the effectiveness of preoperative teaching protocols on selected postoperative outcomes in terms of anxiety and depression status among women who had undergone hysterectomy" and mentioned that slightly less than two-thirds of the studied nurses had an unsatisfactory level of practice related to uterine fibroids. The unsatisfactory practice of the studied nurses pre-program may be due to their poor level of knowledge and lack of updating in-service educational programs, which improved after the program due to frequent demonstrations and providing better teaching and learning materials that enabled learning and better communication about the care provided to female patients having hysterectomy.

The results of the current study declare an improvement in women's total knowledge and practices of nursing care for women undergoing hysterectomy; the pre-test of the present study revealed that most of the women had unsatisfactory knowledge and practice scores. This unsatisfactory score may be attributed to the fact that all of them were in secondary nursing school, and none of them attended training programs about caring for women who undergo hysterectomy and didn't take teaching aids (booklets) about caring for women who undergo hysterectomy. After the implementation of the program, the results indicated that there was an observable improvement in nurses' knowledge and practices. This improvement could be attributed to the fact that all of the studied nurses were committed to the program (Hassan, 2019b; Masters, 2013; Hassan et al., 2017; Gamel et al., 2020).

Regarding women's satisfaction with nursing care provided during hospital stays, the study

revealed that more than half of women were unsatisfied before the program. This may be due to the fact that most women were unaware of the effective care needed and nurses were careless by this point. Also, poor structure and skills result in inappropriate care provided to women, and if all needs are not met, the natural end result is poor quality. During post-program implementation, there was a highly significant improvement. These findings are supported by Cherak et al. (2020), who studied "the impact of social media interventions and tools among informal caregivers of critically ill patients after patient admission to the intensive care unit" and pointed out that patient satisfaction is generally considered to be an integral part of assessing quality nursing care.

The efficiency of service providers, interpersonal skills, and facility characteristics were positively associated with women's satisfaction; women's sociodemographic characteristics, stage of disease, and women's perceptions of trust relationships and feelings of being included in decisions regarding their care are all patient-related factors (Dimitrios, 2021). That might be because the majority of nurses present during the observation were competent with the care provided to female patients having hysterectomy, had knowledge about nurses' practice regarding the care of preoperative hysterectomy, and had knowledge regarding the care provided to female patients having hysterectomy upon discharge, which affected women's satisfaction.

In addition, Friedel et al. (2023) have demonstrated that women are more satisfied when they receive clear, detailed communication and easy-to-understand instructions from healthcare providers, with the nurse's communication being the strongest overall satisfaction predictor. Recent patient satisfaction surveys also revealed that the importance of doctors' interpersonal communication skills outweighs their technical ability, and it was suggested that providers' interpersonal and empathetic abilities be strengthened through training and evaluation.

The finding of the present study is in disagreement with Adhikary et al., (2018) who have studied "factors influencing patients' satisfaction at different levels of health

facilities in Bangladesh ” where emphasized that more than half of patient were satisfied with the care that received, and satisfaction levels varied by facility type and level; satisfaction levels in private facilities were found to be the highest; and patients were dissatisfied with the information and instructions provided by nurses, and that nurses believed that "information giving" was the role of physicians, and that nurses were afraid to provide information because of the power hierarchy between nurses and physicians.

Finally, the present study has also revealed a statistically significant positive correlation between the overall score for nurses' expertise and overall grade for their caregiving practice provided to female patients having hysterectomy, and women's satisfaction about care provided to female patients having hysterectomy. That means increased knowledge is positively associated with increased practice and satisfaction. This highlighted that dealing with women's stated information played a big part in women's satisfaction and stressed that nurses' information should be clear and straight-forward.

This may be due to the effect of educational intervention on knowledge and practice among nurses about the nursing care provided to female patients having hysterectomy. The foregoing findings confirm the positive effect of the educational program on improving nurses' knowledge about the care provided to female patients having hysterectomy. This may be attributed to the fact that the researcher used simple applications in order to simplify the information and help nurses apply their knowledge for practice.

Additionally, the Arabic booklets that were supplied were very helpful in acquiring and remembering knowledge and practices about nursing care (pre-, intra-, and post-operative care) during hysterectomy. Booklets are best used when they are brief, written in plain language, full of good pictures, and when they are used to back up other forms of education. This is consistent with the NTL's or Edgar Dale's Pyramid of Learning, which is cited by Masters. The pyramid shows that people can remember 20.0% of what they see and hear

(audiovisual) and 10.0% of what they read. According to the same source, one can remember 50.0% of what they learn from a conversation (Hassan & Naser, 2017; Nady et al., 2017; Masters, 2013).

The findings are in line with Farag et al. (2024) in Beni-Suef city, who have similarly reported that there was a positive, highly statistically significant correlation between total knowledge and attitude scores as well as total knowledge and total practice scores regarding cervical cancer at different times of assessment. These results are similar to those achieved by Ghant et al. (2020) in a study titled "An altered perception of normal: understanding causes for treatment delay in women with symptomatic uterine fibroids" and showed that there was a statistically significant positive correlation between total knowledge, total instruction, and total attitude scores regarding uterine fibroids.

The importance of providing continuing education for nurses has been emphasized by Glanick et al. (2020), who have reported that knowledge of care in a health-care environment that increasingly prioritizes patient happiness and attaches reimbursement to such ratings and the impact on patient satisfaction is very important. The figures point to the fact that measuring patient satisfaction provides important information about performance.

So, based on the findings of the present study, the research hypothesis that the implementation of the educational program resulted in a statistically significant improvement in nurses' knowledge and practice after program implementation, and this indicates that the hypothesis that the intervention program has an appositive effect on gynecological nurses' nursing care provided to female patients having hysterectomy after the application of the program was accepted.

Conclusion

Implementation of an educational program significantly improved nurses' knowledge and practice about nursing care for women undergoing hysterectomy. This improvement in nurses' knowledge and practices affected positively women's satisfaction with the care of hysterectomy. That means the current study results support the stated hypothesis.

Recommendations:

On the basis of the most important findings of the study, the following recommendations are suggested:

- A planned sustainable training program aimed to train nurses on how to improve the physical and psychological recovery of post-operative patients as rapidly as possible.
- Also, written policies, protocols of care, and guidelines should be developed to improve the quality of hysterectomy care and to upgrade nurses' skills and knowledge for the care provided to female patients having hysterectomy.
- Reapplication of the study should be done under different circumstances, including large sampling, other settings, measurements, and the duration of management in Egypt, to ensure the generalization of the findings.

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