Effect of Educational Program about Clinical Gynecological Examinations on Nurses′ Performance

Faten Abd-Elhamied Saad [1], Alya Mohamed El-Refaey [2], Manal Abdalla Gaheen [3], Rabaa El-Sayed Shaban [4]

[1]Demonstrator in Maternity Neonatal Health Nursing, Faculty of Nursing, Tanta University,
[2] Lecture of Maternity Neonatal Health Nursing, Faculty of Nursing, Tanta University, Egypt
[3] Prof. of Maternity Neonatal Health Nursing, Faculty of Nursing, Tanta University, Egypt.
[4] Assisst.Prof. of Maternity Neonatal Health Nursing, Faculty of Nursing, Tanta University, Egypt.

Abstract: Clinical gynecological examinations are one of the most important component of women' health as it help in early detection and management of several gynecological disorder. Nurses play a pivotal role before, during and after gynecological examinations, so; there is urgent need to increase nurses' knowledge and practice regarding clinical gynecological examinations. **The aim of this study** was to evaluate the effect of educational program about clinical gynecological examinations on nurses′ performance. **Design**: A quasi-experimental research design was used. **Subjects and method:** The study was carried out at outpatient clinics and in-patient gynecological departments of Tanta University Main Hospital and El-Menshawy General Hospital. All nurses (80 nurses) who were working in the previously mentioned study settings were included in the study. **Two tools were used for data collection. Tool (I):** Nurses' knowledge regarding clinical gynecological examinations individual questionnaire. It included **Part one:** Nurses' socio demographic characteristics and **Part two:** Assessment of nurses' knowledge regarding clinical gynecological examinations. **Tool (II):** Nurses' practice observational checklist. It included **Part one:** Pelvic examination observational checklist and **Part two:** Breast examination observational checklist. **Results:** Poor level of knowledge as well as unsatisfactory level of practice regarding clinical gynecological examinations was reported among the studied nurses before implementation of the educational program, compared to fair and good level of knowledge as well as satisfactory level of practice post implementation of the educational program. **Conclusion and recommendations**: Reapplication of the study should be done under different circumstances including (large sampling and other settings) in Egypt to ensure the generalization of the findings.

Keywords: Gynecology, Examinations, Program, Nurses, Performance.

Introduction

Gynecology is a branch of medicine which deals with prevention, diagnosis and treatment of female reproductive system pathology. Gynecological nursing is the branch of nursing deals with nursing care provided to women with gynecological diseases. Proper gynecological examinations are essential strategy for effective diagnosis and management of gynecological disorders. [1,3]

Gynecological examinations are physical examinations of the female reproductive organs include pelvic and breast structures.

[4,5] These examinations are essential for early screening and detection of reproductive organs abnormalities. In addition, gynecological examinations provide proper information and confidential answers for any questions concerning sexuality. Furthermore, it also provides education and reassurance of women about gynecological issues. [6,8]

Moreover, gynecological examinations indicated for diagnosing the underlying cause in several gynecological conditions such as; abnormal persistent vaginal discharge, amenorrhea, abnormal vaginal bleeding, lower abdominal pain and evaluating suspected or reported rape and sexual assault. [9,10]

There are different types of gynecological examinations which include pelvic examination, Pap smear, perineal examination, vulvar examination, rectovaginal examination and breast examination but the most commonly performed gynecological examinations are pelvic examination, breast examination and breast self-examination. [11,12]

Although, gynecological examinations are very important but improper performance of it can lead to serious physical and psychological complications. The physical complications include hemorrhage, ascending infection, ureteric and bladder injury and potentially delaying diagnosis of diseases such as breast cancer which estimated that in Egypt 2021, 33% of female complain from breast cancer and more than 22,000 new cases of breast cancer diagnosed yearly and also 1320 women are diagnosed with cervical cancer, 744 of them die from the disease. [13,15]

Therefore, all the gynecological health care providers include nurses needed for high level of skills, which enable them to reduce the gynecological disorders as well as maintain health promotion of women. Nurses play a crucial role in caring of women seeking gynecological examinations; before examination they must take complete history, provide a complete explanation of the procedure for the woman and also provide necessary specific instructions for adequate preparation. [16,18] While during the examination, the nurse reassures the woman, perform steps of nursing procedures under aseptic technique then after examination; the nurse must discuss the results of the exam, arrange for any follow up or consultation needed, instruct women regarding laboratory investigations, and finally ask women for any further explanation they need as well as health education regarding the gynecological problem. [18,19]

The Implementation of educational program play a significant role in the advancements of routine clinical nursing practice. It is also important for proper performance of gynecological examinations through providing adequate knowledge as well as empowering perfect practices. [16, 17, 20]

The prevention and treatment of gynecological disorders through proper gynecological examinations can be a live saving and consider as a vital step toward improving the health of the woman and the achievement of the sustainable development goals therefore nurses need to be engaged in educational training programs for developing and maintaining up to date knowledge, proper clinical skills and judgment based on universal guidelines protocols for the early detection of gynecological disorders.[21,23]

Significance of the study

Periodic and regular gynecological examination is very important to maintain and improving women's health because it lead to early diagnosis of gynecological disorders that threat woman's life. The gynecological nurse as a member of the health team could play a crucial role in promoting compliance with program before, during and after gynecological examinations. The gynecological nurse has a vital role to assume responsibility for the management of gynecological care essential for low-risk women through proper observation, assessment, notifications to physician and interventions to render the highest quality of gynecological care.[2,22]

The aim of this study was to evaluate the effect of educational program about clinical gynecological examinations on nurses′ performance.

Research Hypothesis: Nurses′ performance will expected to be improved after implementation of the educational program about clinical gynecological examinations.

Subjects and method

Study Design: A quasi-experimental research design was used. Such design fits the nature of the study, in which the researcher tried to determine the effect of educational program about clinical gynecological examinations on nurses′ performance without use of control group.

Setting: The study was carried out at outpatient clinics and in-patient gynecological departments of **Tanta University Hospital (Main Hospital) and El-Menshawy General Hospital** affiliated to the Ministry of Health and population.

Subjects: All nurses **"convenient sample"** (80 nurses) who were working in the previously mentioned study settings were included in the study and divided as follow-:

- Nurses who were working at **Tanta University Main Hospital** (**50 nurses**).
- Nurses who were working at **El-Menshawy General Hospital** (**30 nurses**).

Tools of data collection:

Tool (I) Nurses' knowledge regarding clinical gynecological examinations individual questionnaire: This tool was developed by the researcher after reviewing the related recent literatures [16-22] **It comprised the following two parts**:-

Part one: Nurses' socio demographic characteristics

This part was used to collect nurses' basic data such as; name, age, marital status, residence, level of education, years of experience, any previous training program regarding the clinical gynecological examinations.

Part two: Assessment of nurses' knowledge regarding clinical gynecological examinations. It includes;

Nurses′ knowledge about the anatomy of external and internal female genital organs included name, function and anatomical position of each organ.

Nurses′ knowledge regarding clinical gynecological examinations including; It included 8 open and 23 closed ended questions about definition of clinical gynecological examinations, objectives, different types of gynecological examinations such as; **pelvic examination** (definition, importance, indications, contraindication, appropriate age for women to start performing it, frequency of performing it, its parts, ethical consideration, complication of ignoring it, specific preparation for the woman before performing the examination**,** equipment

used during pelvic examination and role of nurse before, during and after performing it). **Also nurses were asked about breast examination** (definition, indications of performing it, changes to look out for it during examination, types, definition of clinical breast examination, the best time and frequency for performing it, definition of breast self-examination, the best time and frequency for performing it, and role of nurse before, during and after performing clinical breast examination).

Scoring system of nurses' knowledge regarding gynecological examinations:

The scoring system of knowledge was categorized as the following: -

- **Correct and complete answers** were scored as **(2).**
- **Correct and incomplete answers** were scored as **(1).**
- **Incorrect answers** or don't know were scored as **(0).**

The total score of nurses' knowledge was calculated as follows:

- **High level of knowledge**: 80-100%.
- **Moderate level of knowledge**: 60 -<80%.
- **Low level of knowledge**: < 60%.

Tool (II) Nurses' practice observational checklist

This tool was adapted by the researcher from **Qaseem etal (2014) [25,26] and Lowdermilk D (2020)** [27] It comprised two parts (pelvic examination and breast examination): -

Part one: Pelvic examination: It include three main tasks: -

a. Pre-procedure tasks: it includes: -

- Preparation of the equipment, woman, environment and nurse.

b. Procedure steps/tasks: it includes four main subscales: -

1) Examination of abdomen: - (six items) it included:(**positioning** of the woman, **exposing** entire abdomen, **observe** any changes in the abdomen, **palpate** the abdomen using light pressure, **palpate** the abdomen using deep pressure**, removing** gloves and washing hands).

2) Examination of external genitalia:- (eight items) it included: (**wash** hands and wear gloves, **positioning** of the woman, **expose** external genitalia, **inspection** of suprapubic hair to determine its distribution and presence of lice, **inspection** and palpation of the mons pubis, labia majora, labia minora, clitoris, urethral opening and vagina for normal and abnormal finding, **palpation** of Skene's and Bartholin's glands for signs and symptoms of inflammation and infection, **note** any bulging of the vaginal walls, **removing** gloves and washing hands).

3) Examination of internal genitalia:- it included:- Speculum Examination:- (nine items) it included: (**Wash** hands and wear gloves, **choose** the suitable size of speculum and adjust it to the woman's body temperature, **ask** the woman to take deep breathe when inserting the speculum, **insert** the sterile speculum into the vagina, **inspect** the vaginal walls, and note any inflammation, ulcers or sores, **inspect** the cervix and its external os, **obtain** a specimen for tests if ordered**, remove** the speculum**, removing** gloves and washing hands).

Bimanual Examination: - (four items) it included: (**Wash** hands and wear gloves, **prepare** the lubricant for the doctor**, assist** the doctor while performing a bimanual examination through manipulating the equipment and providing reassurance to the woman and ask the doctor about normal and abnormal findings of the bimanual examination and document them).

4) **Examination of the rectum:** (five items) it included: (**Wash** hands and wear gloves, **inspection** of the perineum and the anus, **lubricate** the index and middle fingers with k-y jell, **insert** the index finger into the vagina and the middle finger into the rectum and ask the woman to bear down in order to find out any abnormalities and **remove** the index finger and rotate the middle finger 360 degree to find out any rectal tenderness or masses).

c. **Post-procedures tasks:** (six items) it included: (**Redress** the woman, **help** the woman to be in a comfortable position, **remove** the equipment, **remove** the gloves and wash hands, **document** the finding and **provide** health education regarding the importance of routine pelvic examination).

Part two: Breast examination: **It contains three main tasks: -**

a. **Pre-procedure tasks: -**

- Preparation of the equipment, woman, environment and nurse.

b. **Procedures steps/ tasks: it included two main tasks: -**

1) **Inspection of the breast:** (five items) it included: (**Ask** the woman to undress from her waist up, **positioning** of the woman, **inspect** breast for size, shape, symmetry, contour and elasticity, look at the nipples and note type, size and shape, **repeat** inspection in sitting position with arms raised over the head and **palpate** from clavicular to axillary regions through and check for enlarged lymph nodes, tenderness, discoloration, swelling or lesions).

2) **Palpation of the breast**: (six items) it included: (**Repositioning** of the woman, **make** imaginary division of breast into 4 quarters, **palpate** the breast tissue starting from outer edge of the upper quadrant at 12 o'clock wise use circular manner toward the nipple, **examine** pendulous breast in between two hands, **gently** spread the areola and squeeze the nipple between fingers and **repeat** with the left breast and note any differences from the right breast).

c. **Post procedure tasks:** (seven items) it included: (Redress the woman, **help** the woman to be in a comfortable position, **remove** the equipment, **remove** the gloves and wash hands, **document** the finding, **inform** the woman about the procedure findings and **provide** health education about breast self-examination).

Scoring system for nurses' practice was classified as follows:

- Completely done were scored as (2).
- Incompletely done were scored as (1).
- Not done were scored as (0).

The score of each item of practice skills were summed up and converted into percent score as follows: -

- Satisfactory practice: (≥ 80%).
- Unsatisfactory practice: (< 80%).

Method

The study was implemented according to the following steps-

1. **Administrative design:**

An official letter clarifying the purpose of the study was obtained from the Faculty of Nursing and submitted to the responsible authorities of the selected setting for permission to carry out the study.

2. **Ethical consideration**

- An approval of the ethical committee at Faculty of Nursing was obtained (code 35/2/2022). All participants were informed about the purpose of the study. An informed consent was taken from every participant in the study including 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.

3. **Tool development**

- Tool I was developed in Arabic and Tool II was developed in English after reviewing recent and related literatures.
- The study tools were be tested for content and construct validity by 5 experts in obstetric and gynaecological nursing field.
- Corrections and modifications were done accordingly. The face validity of the questionnaire was calculated based on experts' opinion and it was 94.8% and the content validity index of its items was 95% for sociodemographic, 93.12% for knowledge questionnaire, 92.45% for practice questionnaire. To assess reliability, the questionnaire was tested by the pilot subjects at first session for calculating Cronbach's Alpha which was 0.895 for knowledge questionnaire and 0.877 for practice questionnaire.

4. **Pilot study:** A pilot study was carried out on 10% of the sample (8 nurses) who came back from vacations and were excluded from the study sample.

   The purposes of the pilot study were to:- Ascertain the feasibility and applicability of the developed tools. Determine any obstacles that may be interfere with the process of data collection.

   Results of the pilot study: The pilot study revealed that the statements were clear and relevant. Few words were rephrased and modified then the schedule made ready for use.

5. **Data collection (field work): -**

- Tool, I part two and Tool II were used to assess nurses' performance regrading gynaecological examinations before, immediately and three months after implementation of the educational program.
- Data collection was conducted in a period of eight months ranged from the beginning of July 2022 to the end of February 2023**.**
- Data were collected from **EL-Menshawy General Hospital** followed by **Tanta University Main Hospital** in the morning and the afternoon shifts, until the predetermined sample size was collected. The researcher attended 3 days per week in the study settings.

6. **The educational program:** It was conducted through four phases **(Assessment, planning, implementation and evaluation)**

   Phase I: Assessment phase:-

- The researcher met with nurses who were working in the gynecological outpatient clinics at the morning shifts and nurses who were working in the inpatient wards at the afternoon shifts.
- Nurses were asked to participate in the study after explaining the aim of the study. After that, **nurses** were assessed using **Tool (I) part one** to collect baseline data (socio-demographic characteristics) and **Tool (I) part two was** used to assess nurses' knowledge regarding anatomy of female genital organs and clinical gynecological examinations. **Tool (II) part one** and **two** was used to assess nurses' practice regarding pelvic and breast examination before implementation of the educational program.
- Nurses' pre-test was distributed before the beginning of the session using **Tool I Part II** to assess nurses' knowledge regarding clinical gynecological examinations in the presence of the researcher for necessary clarification. **Tool II** the observational checklist **part I and II** was used to assess nurses' practice regarding pelvic and breast examination before implementation of the educational program.

- Nurses' knowledge were assessed individually for each nurse by an interview lasted 15-20 minutes for each nurse**.**

Phase II: Planning phase: -

a. Preparation of the educational program sessions:

- The educational program included 3 sessions for each group (one session for theoretical part and two sessions for practical part). It was carried out in the previously mentioned settings. The total numbers of nurses are (80 nurses), they were divided into 10 groups. Six groups at Main Tanta University Hospital (four groups include 8 nurses and two groups include 9 nurses) and four groups at El-Menshawy General Hospital (two groups include 8 nurses and two groups include 7 nurses); the educational program were conducted over three days per week. The duration of each session ranged from 30 to 45 minutes including periods of discussion at morning and afternoon shift.

b. Setting the goals and objectives of the program:

The goal of the educational program was to:

- Enhance nurses' performance regarding clinical gynecological examinations.

Objectives of the educational program:

After implementation of the educational program the nurses were be able to:

- Identify different types of gynecological examinations.
- Determine indications and contraindications of different types of gynecological examinations.
- Knowing best time for start performing pelvic examination and frequency of its performing.
- Detect equipment needed during pelvic examination.
- Differentiate between clinical breast examination and breast self-examination.
- List changes to look for during breast examination.
- Mention best time for performing clinical breast examination and breast self-examination.
- Demonstrate different types of gynecological examinations.

c. Prepare the content of the program:

- An educational booklet was developed by the researcher based on nurses′ performance from the assessment phase, using recent relevant literature available locally and internationally (books and magazines). The booklet was distributed to every nurse to increase nurses' knowledge about gynecological examinations and care measures needed, as well as for encouragement and being a reference.
- Different methods of teaching were used to conduct the educational program such as; lecture, group discussion, posters, power point, demonstration and re-demonstration and video scenarios presentation.

Phase III: Implementation phase:-

The educational program was implemented by the researcher through the following four sessions.

The first session:

The researcher explained parts and functions of external and internal female reproductive system and provided knowledge regarding clinical gynecological examinations.

The second session:

This session was included demonstration by the researcher and re-demonstration by the studied nurses' for proper and needed practical skills regarding pelvic examination including:

A. Pre-procedure tasks: it will include four preparation: -

- Preparation of the equipment, woman, environment and nurse.

B. Procedure steps/tasks: it will include four main items: -

1) Abdominal examination.

2) Examination of external genitalia.

3) Examination of internal genitalia: it was include assisting the physician in the following: -

- Speculum examination of internal genitalia.
- Bimanual examination of internal genitalia**.**

4) Examination of the rectum.

C. Post-procedures tasks: which was include the following: Redress the woman, help the woman to be in a comfortable position, remove the equipment, remove the gloves and wash hands, document the finding and provide health education regarding the importance of routine pelvic examination.

D. The third session:

This session was include demonstration by the researcher and re-demonstration by the studied nurses' for proper and needed practical skills regarding breast examination including:

A. Pre-procedure tasks: it was include four preparation: -

- Preparation of the equipment, woman, environment and nurse.

B. Procedures steps/ tasks: it was include**: -**

a) Inspection of the breast.

b) Palpation of the breast.

C. Post procedure tasks: which was include the following: Redress the woman, help the woman to be in a comfortable position, remove the equipment, remove the gloves and wash hands, document the finding, inform the woman about the procedure findings and provide health education about breast self-examination.

Phase IV: Evaluation phase: -

The evaluation of the implemented program was done through:

- Assessment of nurses' knowledge was done individually by self-filling Tool I part II before, immediately and three months after implementation of the educational program.
- Assessment of nurses' practice by using **Tool II part I and II (observational checklist)** while conducting pelvic and breast examination, each nurse was observed individually three times to assess their practice before, immediately and three months after implementation of the educational program.
- Comparison was done three times before, immediately and three months post program to identify the effect of the educational program on nurses' performance regarding clinical gynecological examinations.

7. Statistical analysis:

The collected data were coded, entered, tabulated and analyzed using SPSS (Statistical Package for Social Science) **version 25** (IBM Corporation, Armonk, NY, USA). For quantitative data, the range, mean and standard deviation were calculated. For qualitative categorical set of the data frequency, percentage or proportion of each category and comparison between two groups were done using Chi-square test (χ^2). For comparison between means of two groups of parametric data of independent samples, student t-test was used. For comparison between means of three related groups

(pre, immediate post and three months post educational program) (χ^2 value) was calculated for non-parametric data. Correlation between variables was evaluated using Pearson's correlation coefficient (r). Significance was adopted at $p<0.05$ for interpretation of results of tests of significance.

Results

Table (1): Show distribution of the **studied nurses according to their socio-demographic characteristics.** It was observed that nurses' age ranged from 20-59 years, with a mean age **41.06±11.50** years. As regards their social status, the majority (90.0%) of the studied nurses were married. Concerning their workplace, more than three fifth (62.5%) of them were working at Tanta University Main Hospital. The table also revealed that more than half (53.7%, 52.5% respectively) of them were from rural area and completed diploma in nursing technician.

Moreover, the table also demonstrate that more than three fifth (63.7%) of the studied nurses had 15 years of experience or more. It also found that the vast majority (92.5%) of them did not take any training courses regarding clinical gynecological examinations.

Figure (1): Portrays distribution of the studied nurses' **total score level of knowledge about anatomy of female genital organs and clinical gynecological examinations** before, immediately and three months after implementation of educational program. It was detected that less than three quarter (71.3%) of the studied nurses had low level of knowledge regarding anatomy of female genital organs and clinical gynecological examinations before implementation of educational program. While the vast majority (92.5%) of them had high level of knowledge immediately after program implementation, which decreased to 87.5% three months after implementation of educational program.

Figure (2): Stands for distribution of the studied nurses' total score level of practice regarding performance of pelvic examination before, immediately and three months after implementation of educational program. It was observed that the studied nurses' satisfactory level of practice regarding pelvic examination before, immediately and three months after implementation of the educational program were (**15%, 91.3% & 87.5%** respectively) **with high significant change (χ^2 value = 151.690, p = 0.0001*).**

Figure (3): Stands for distribution of the studied nurses' total score level of practice regarding performance of **breast examination** before, immediately and three months after implementation of educational program. It was noticed that the studied nurses' satisfactory level of practice before, immediately and three months after implementation of the educational program were (**22.5%, 92.5% and 90%** respectively) with high significant change **(χ^2 value = 116.611, p = 0.0001***).

Figure (4): Portrays distribution of the studied nurses' **total score level of practice regarding performance of gynecological examinations** before, immediately and three months after implementation of educational program. It was detected that the studied nurses' satisfactory level of practice regarding clinical gynecological examinations before, immediately and three months after implementation of the educational program were (23.8%, 91.2% and 83.8%

respectively) with high significant change (χ^2 value = 97.945, p= 0.0001*).

Table (2): Displays the **relation between the studied nurses' socio- demographic characteristics and their total score level of knowledge** before, immediately and three months after implementation of educational program. It is observed that there is significance relationship between studied nurses' total knowledge score with their age, educational level and experience years before implementation of educational program regarding clinical gynecological examinations where P- value = (0.010*, 0.045*and 0.014*respectively).

In addition, there is significance relation between studied nurses' total knowledge score with their educational level immediately after program implementation where p value = 0.021*.

Table (3): Displays **relation between the studied nurses' socio- demographic characteristics and their total score level of practice** before, immediately and three months after implementation of educational program. It is observed that there is significance relationship between studied nurses' total practice score with their age, educational level and experience years before implementation of educational program regarding clinical gynecological examinations where P-value = (0.047*, 0.023* and 0.021*respectively).

Table (4): Reveals the **correlation between studied nurses' total score of knowledge and their total score of practice immediately** after implementation of educational program regarding clinical gynecological examinations. The table revealed significance positive correlation between total knowledge score and total practice score of the studied nurses immediately after program implementation (r= 0.256, p = 0.022*)

Table (5): Reveals the **correlation between studied nurses' total score of knowledge and their total score of practice three months after implementation** of educational program regarding clinical gynecological examinations. The table revealed significance positive correlation between total knowledge score and total practice score of the studied nurses three months after program implementation (r**= 0.332, p = 0.003*)**

Table (1): Distribution of the studied nurses according to their socio-demographic characteristics (n=80).

Sociodemographic characteristics	The studied nurses (n=80)	
	N	%
-Age years		
20-30	20	25.0
>30-40	17	21.3
>40-50	23	28.7
>50-59	20	25.0
Range	20-59	
Mean±SD	41.06±11.50	
-Social status		
Single	3	3.7
Married	72	90.0
Widow	5	6.3
-Place of work		
Tanta University Main Hospital	50	62.5
El-Menshawy General Hospital	30	37.5
-Residence		
Urban	37	46.3
Rural	43	53.7
-Educational level		
Diploma in nursing technician	42	52.5
Nursing technical institute	33	41.3
Bachelor of nursing	5	6.2
-Experience years		
<5	10	12.5
5-<10	11	13.8
10-<15	8	10.0
15 or more	51	63.7
-Took any training courses about clinical gynecological examinations		
No	74	92.5
Yes	6	7.5
-If yes, the name of this training course		
Breast examination	5	83.3
-The organization that organized this course		
Ministry of Health and population	5	83.3
-Presence of educational aids (books, poster, brochure, display screens) about clinical gynecological examinations at the department		
No	74	92.5
Yes	6	7.5
-If yes: mention its type?		
Booklets	6	100

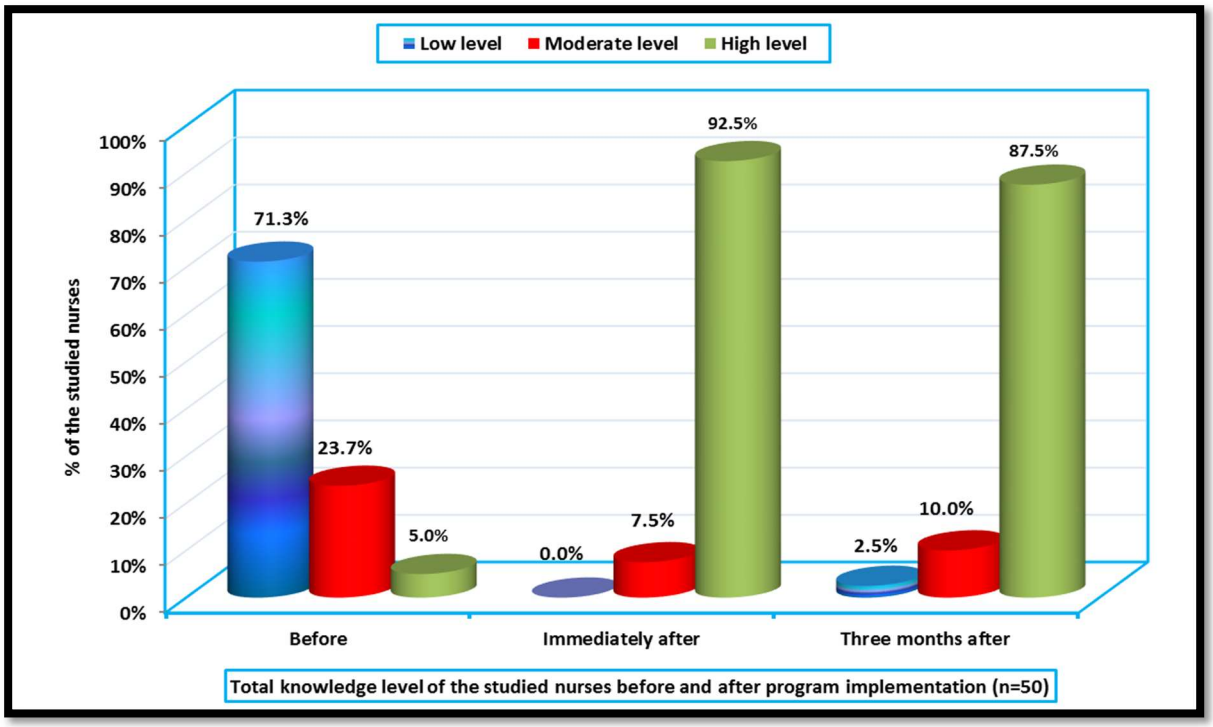

Figure (1): Distribution of the studied nurses' total score level of knowledge about anatomy of female genital organs and clinical gynecological examinations before, immediately and three months after implementation of educational program (n=80).

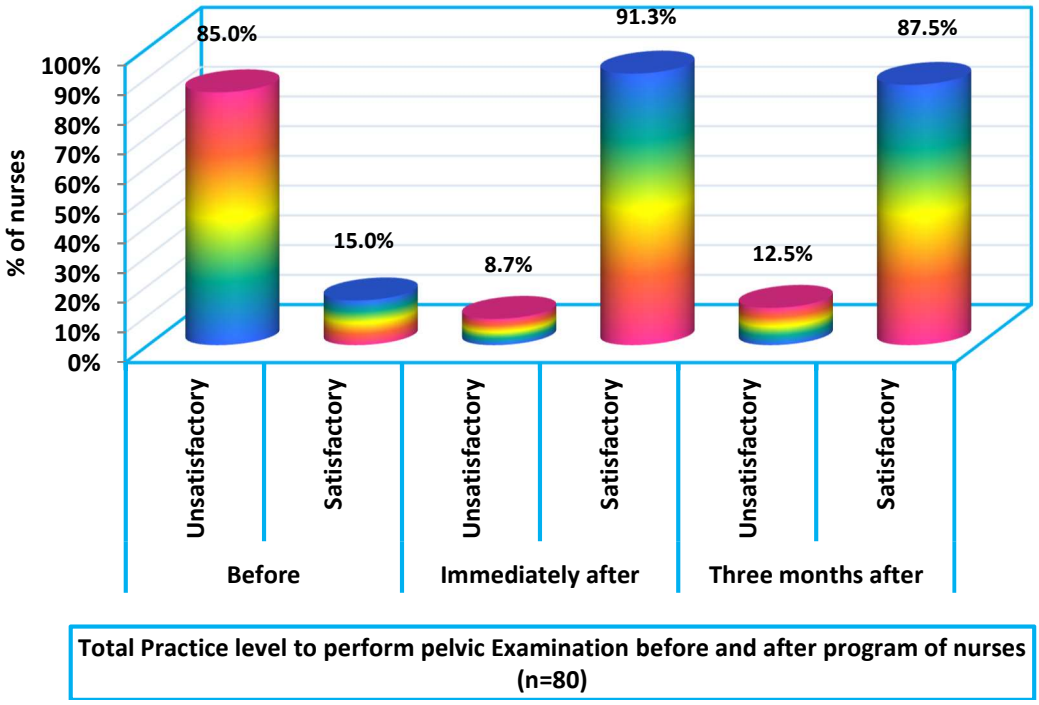

Figure (2): Distribution of the studied nurses' total score level of practice regarding performance of pelvic examination before, immediately and three months after implementation of educational program (n=80).

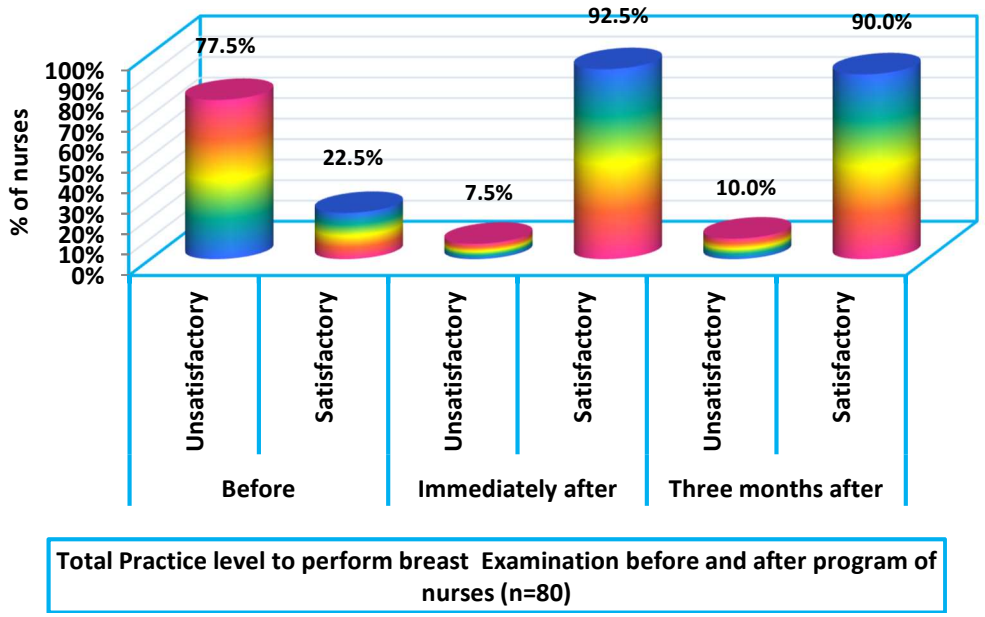

Figure (3): Distribution of the studied nurses' total score level of practice regarding performance of breast examination before, immediately and three months after implementation of educational program (n=80).

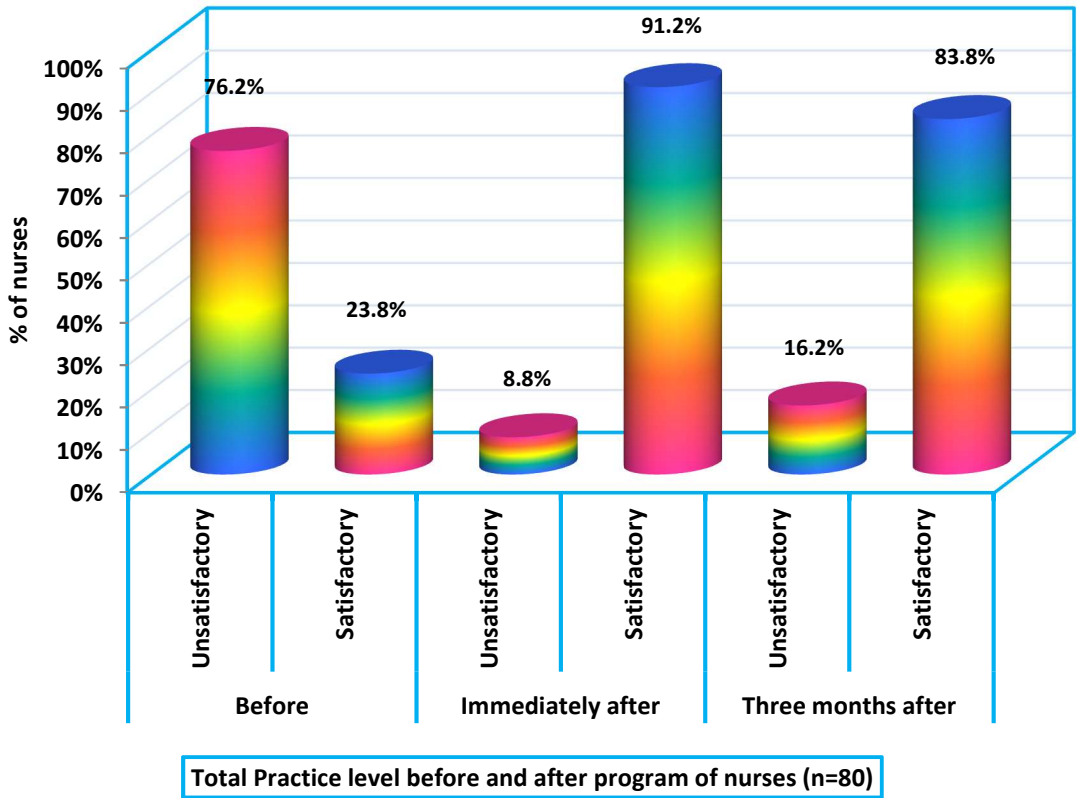

Figure (4): Distribution of the studied nurses' total score level of practice regarding performance of gynecological examinations before, immediately and three months after implementation of educational program (n=80).

Table (2): Relation between the studied nurses' socio- demographic characteristics and their total score level of knowledge before, immediately and three months after implementation of educational program (n=80).

Sociodemographic characteristics	Total knowledge scores of the studied nurses before and after program implementation (n=80)					
	Before		Immediate after		Three months after	
	Mean±SD	Z value or χ^2 value P value	Mean±SD	Z value or χ^2 value P value	Mean±SD	Z value or χ^2 value P value
♦Age years						
20-30	31.05±12.50	10.112	68.35±3.64	2.474	66.35±4.45	3.186
>30-40	23.59±17.80	0.010*	67.70±4.92	0.480	66.41±4.49	0.364
>40-50	23.04±10.75		67.04±4.50		64.61±6.73	
>50-59	22.35±10.53		67.70±4.77		66.00±7.32	
♦Educational level						
Diploma in nursing technician	23.76±12.68	6.206	65.40±6.77	7.753	64.78±7.14	1.090
Nursing technical institute	24.82±13.9	0.045*	66.81±4.95	0.021*	65.40±6.02	0.580
Bachelor of nursing	36.40±7.13		69.12±2.63		67.09±3.65	
♦Experience years						
<5	34.10±12.07	10.581	69.00±2.49	5.043	66.50±4.83	0.610
5-10	27.54±12.22	0.014*	67.91±4.39	0.169	66.36±4.10	0.894
>10-15	18.62±19.75		69.50±1.07		66.50±4.87	
>15	23.65±11.59		67.08±4.93		65.39±6.62	

Table (3): Relation between the studied nurses' socio- demographic characteristics and their total score level of practice before, immediately and three months after implementation of educational program (n=80).

Sociodemographic characteristics	Total practice scores of the studied nurses before and after program implementation (n=80)					
	Before		Immediate after		Three months after	
	Mean±SD	Z value or χ^2 value P value	Mean±SD	Z value or χ^2 value P value	Mean±SD	Z value or χ^2 value P value
♦Age years						
20-30	96.30±43.76	7.958	202.70±9.16	6.806	195.85±13.46	3.337
>30-40	102.59±5.93	0.047*	197.88±13.39	0.078	188.76±17.30	0.343
>40-50	78.00±45.59		193.91±14.84		188.74±17.79	
>50-59	78.40±43.19		201.00±9.92		196.40±8.01	
♦Educational level						
Diploma in nursing technician	78.09±47.16	7.515	196.59±13.40	3.054	192.74±13.09	2.233
Nursing technical institute	94.88±47.14	0.023*	197.60±17.61	0.217	190.61±15.54	0.327
Bachelor of nursing	112.20±51.99		201.61±9.80		202.00±2.55	
♦Experience years						
<5	122.80±48.22	9.725	200.60±12.47	5.779	198.00±12.83	3.656
5-10	68.27±12.91	0.021*	205.09±3.39	0.123	195.00±14.33	0.301
>10-15	121.25±65.03		203.00±4.37		188.12±17.31	
>15	78.88±44.73		196.31±13.83		191.47±13.51	

Table (4): Correlation between studied nurses' total score of knowledge and their total score of practice immediate after implementation of educational program (n=80).

Practice subitems scores	**Total knowledge scores of the studied nurses immediately after program implementation (n=80)**			
	Knowledge about pelvic examination	Knowledge about Breast examination	**Total knowledge scores about clinical gynecological exam.**	**Total knowledge scores**
	r P	r P	**r** **P**	**R** **P**
•Total practice scores of pelvic examination	0.215 0.055	0.250 0.025*	**0.246** **0.012***	**0.286** **0.010***
•Total practice scores of breast examination	0.120 0.288	0.110 0.331	**0.054** **0.812**	**0.024** **0.832**
♦ Total practice scores	0.157 0.164	0.269 0.016*	**0.225** **0.024***	**0.256** **0.022***

Table (5): Correlation between studied nurses' total score of knowledge and their total score of practice three months after implementation of educational program (n=80).

Practice subitems scores	**Total knowledge scores of the studied nurses three months after program implementation (n=80)**				
	Total knowledge about anatomy of female genital organs	Knowledge about pelvic examination	Knowledge about Breast examination	**Total knowledge scores about clinical gynecological exam.**	**Total knowledge scores**
	r **P**	r P	r P	**r** **P**	**R** **P**
•Total practice scores of pelvic examination	**0.094** **0.405**	0.334 0.002*	0.403 0.0001*	**0.397** **0.0001***	**0.398** **0.0001***
•Total practice scores of breast examination	**0.027** **0.813**	0.062 0.586	0.022 0.847	**0.050** **0.661**	**0.044** **0.701**
♦ Total practice scores	**0.065** **0.568**	0.288 0.010*	0.328 0.003*	**0.334** **0.002***	**0.332** **0.003***

Discussion

Gynecological examination is an essential part of any women's health care and must be accessible for all women to meet their health needs. Gynecological services must comply with the best available scientific evidence for the provision of high-quality care. Nurses with improved knowledge and skills help to improve their abilities to provide safe and effective quality care for the women undergoing gynecological examination. [28,29]

Concerning the studied nurses' general characteristics, the finding of the present study revealed that less than one third of them were 40 to less than 50 years old in age where their mean ±SD age were (41.06±11.50), This finding align with **Belal Gh et al., (2016)** [30] who found that more than one quarter of the studied nurses were more than 45 years old with mean ±SD were (38.12 ± 9.24). The similarity between current study and this study may stem from the studies on the same subjects at the same setting. On the other hand, this finding is dissimilar to **Urasa M et al., (2011)** [31] a study to assess nurses' knowledge and practice regarding cervical cancer screening. They found that more than three fifth of studied nurses were 40 years to less than 50 years old in age. Additionally, **Hjörleifsson S et al., (2019)** [32] a study to evaluate the performance of the gynecological examination among Norwegian general practitioners. They reported that two fifth of studied nurses' participant are 40 to less than 50 years old. Moreover, **Mahrous M et al., (2017)** [7] who assessed knowledge, practice and attitude regarding gynecological examination among maternity nurses at Banha university. They pointed out that the minority of the studied nurses were aged from 40 to 50 years old with mean age of 30.52±6.87. From the researcher point of view, this contradiction may be due to different characteristics of the study sample and different health setting. As regards their **social status,** the present study revealed that the vast majority of them were married. This finding is consistent with **Mahmoud A et al., (2021)** [33] who evaluated the effect of educational program on gynecological nurses′ performance pre and post hysterectomy surgery and **Belal Gh et al., (2016)**. [30] They stated that the majority of studied nurses were married. This similarity may be due to the studies nearly on the same subjects and setting.

In relation to **educational level** of the studied nurses, slightly more than half of them had completed diploma in nursing technician. This finding in agreement with **Shehab M et al., (2022)** [34] who stated that more than half of the studied nurses had completed nursing diploma. In addition, **Mahmoud A et al., (2021)** [33] who found that less than two third of the studied nurses had diploma in nursing technician. This finding is contradicted with **Mahrous M et al., (2017)** [7] and **Elbana H, (2018)** [15] who revealed that slightly more than half of the studied nurses completed bachelor of nursing. Also, study conducted by **Abu shabana K et al., (2021)**. [16] To evaluate the effect of gynecological examination educational guidelines on maternity nurses' knowledge, practices. Who noticed that three quarter of the studied nurses had a technical institute in nursing. In addition, **Kol E et al., (2017)** [35] a study to assess Training needs of clinical nurses at university hospital in Turkey. They found that less than two third

of the studied nurses had completed bachelor degree.

Regarding **years of experience**, less than two third of them had 15 years of experience or more. This finding in agreement with **Mahmoud A et al., (2021)** [33] and Shehab **M et al., (2022)** [34] who found that less than two third of studied nurses had 15 years of experience or more. Moreover, **Abu shabana K et al., (2021)** [16] who reported that three fifth of the studied nurses had more than ten years of experience.

This finding inconsistent with **Mahrous M et al., (2017)** [7] and **Kol E et al., (2017)** [35] who stated that more than half of the studied nurses had five years of experience. In addition, **Elbana H, (2018)** [15] a study to evaluate the effect of educational intervention on maternity nurses' performance regarding gynecological examination. Who pointed out that nearly two third of studied nurses had five to less than ten years of experience.

Referring to attending training courses about clinical gynecological examinations, the vast majority of studied nurses did not take any training courses regarding clinical gynecological examinations. This finding in line with **Mahrous M et al., (2017)** [7] who mentioned that the vast majority of the studied nurses did not attend any special specific courses of gynecological examinations.

Concerning studied nurses' total score level of knowledge regarding clinical gynecological examinations, the finding of the present study revealed that before implementation of educational program; less than three quarter of the studied nurses had low level of knowledge regarding clinical gynecological examinations; it can be attributed to the fact that more than the half of the studied nurses had only nursing technical diploma in which the content was limited in their curriculum and the majority of them did not attend any previous training courses regrading clinical gynecological examinations. In addition, reduction of nurses' knowledge could be due to lack of updating knowledge and overloaded area of working. This high lightened that the educational training was highly indicated.

This result is in agreement with **a study by Mahrous M et al., (2017)**[7]. They pointed out that less than three quarter of nurses had inadequate knowledge regarding gynecological examinations. In addition, study conducted by **Elbana H, (2018)** [15] who noticed that more than half of studied nurses had poor level of knowledge regarding gynecological examinations.

On the other hand, the finding of the present study contradicts with **Abu shabana K et al., (2021)** [16] who revealed that more than half of the studied sample had correct knowledge about gynecological examinations at the pre-intervention phase. From the researcher s' point of view, this difference might be related to the fact that half of the studied nurses in their study were in the age group of 20-30 year and about more than one third of them had attended training program regarding gynecological examinations.

Concerning the effect of educational program on nurses' knowledge, the present study findings illustrated that there was significantly improvement of nurses' total score level of knowledge regarding clinical gynecological examinations

immediately and three months post implementation of educational program**.** This result is supported by **Elbana H, (2018)** [15] who stated that there was significantly improvement of nurses' knowledge regarding gynecological examinations immediately post-educational intervention. In the same context, **Abu shabana K et al., (2021)** [16] also pointed out that there was a marked improvement in knowledge of the studied nurses about gynecological examination post-implementation of an educational guideline with a highly statistically significant difference at (P= < 0.01) between pre and post-implementation of an educational guideline.

From the researcher s' point of view, this lack of knowledge about clinical gynecological examinations before implementation of the educational program may be due to absence of in-service training programs regarding clinical gynecological examination. Also, this may be related to low level of education, as more than half of the studied nurses were nursing diploma and graduated since long period of time. This might lead them to lose too much of their basic graduation knowledge and skills. While, improvement of knowledge post program in the current study may be attributed to the effect of the educational program as well the ability and interest of the studied nurses to gain and update their knowledge.

Concerning studied nurses' total score level of practice regarding performance of gynecological examinations, the finding of the present study revealed that slightly more than three quarter of studied nurses had unsatisfactory practice level before implementation of educational program. On the other hand, immediately and three months after implementation of educational program there was a high significant improvement in their practice **(χ^2 value = 97.945, p= 0.0001*).**

This finding match with **Abu shabana K et al., (2021)** [16] who stated that there was a marked change in overall practices as less than three quarter of the studied nurses, had unsatisfactory practices about total gynecological examinations at the pre-intervention phase. But post-intervention the percent of nurses who had unsatisfactory practice practices decrease to reaches to less than one fifth. While the majority of them had satisfactory practical skills about gynecological examinations at post-interventions. Moreover, **Elbana H, (2018)** [15] proved that the majority of the studied maternity nurses had un satisfactory practice regarding the gynecological examinations at pre-intervention phase, which has been strongly increased immediately post-intervention.

From the researcher point of view. Unsatisfactory performance of the studied nurses pre-program may result from they have poor level of knowledge, lack of updating in-service educational program, lack of orientation programs for newly employees and lack of a system for supervision and evaluation of nursing practice. While, the findings significantly improved immediately and three months after implemention of the educational program may probably due to frequent demonstration and providing better facilities and supplies that enable learning and better communication, the use of different audiovisual material, colored booklet and power point presentation which enhanced the retention of the information and has positive impact on

their practices. However, three months later, the nurses' scores were somewhat reduced but still significant which may probably due to nurse's work overload, lack of the resources as well as the absence of the continuing training and education.

Concerning the relation between the studied nurses' socio- demographic characteristics and their total score level of knowledge and practice; it was noticed that there was a significance relationship between studied nurses' total knowledge score with their age, educational level and experience years before implementation of educational program regarding clinical gynecological examinations. Also, there was a significance relation between their total knowledge score and educational level immediately after program implementation. In addition, there was a significance relationship between studied nurses' total practice score with their age, educational level and experience years before implementation of educational program. This result was consistent with **Abu shabana K et al., (2021)** [16] who stated that there was a highly statistically significant relation between total knowledge, practice about GE of studied nurses and their educational level at ($p = <0.01$).

Finally, regarding correlation between studied nurses' total score of knowledge and their total score of practice before, immediately and three months after implementation of educational program. The present study illustrated that a significance positive correlation was observed between total knowledge score and total practice score of the studied nurses before, immediately and three months after implementation of the educational program.

This finding was matching with **Abu shabana K et al., (2021)** [16] and **Elbana H, (2018)** [15]**.,** who found that there was a highly positive correlation between studied nurses' total knowledge score and their total practice score post interventions. **Also,** these finding was agreed with **Ramadan E et al., (2019)** [36], who revealed that there was a positive correlation between knowledge and practice score of nurse interns after implementation of the program.

Therefore, based on the findings of the present study, the research hypothesis has been achieved after implementation of the educational program regarding clinical gynecological examinations which resulted in statistically significant improvement of gynecological nurses' performance immediately and three months later compared to pre-educational program implementation.

Conclusion: -

Based on the findings of the present study, it can be concluded that: -

Poor level of knowledge as well as unsatisfactory level of practice regarding clinical gynecological examinations was reported among the studied nurses before implementation of the educational program, compared to **fair and good level of knowledge as well as satisfactory level of practice** post implementation of the educational program.

Significant improvement of nurses' performance regarding clinical gynecological examinations post-program compared to pre-educational program implementation.

Furthermore, significant positive correlation were observed between studied nurses' total score of knowledge and their total score of practice immediately and

three months after implementation of the educational program regarding clinical gynecological examinations.

Recommendations: Based on the results of the present study, the following recommendations are suggested:

- In-service training programs for all nurses should be conducted in order to improve, update and refresh their knowledge and practices regarding different types of gynecological examinations.
- Reapplication of the study should be done under different circumstances including (large sampling and other settings) in Egypt to ensure the generalization of the findings.

References

1. **Gonathan S.** Berek and Novak's Gynecology.16th ed., China, Wolters Kluwer Com., 2020; 7.
2. **Aziz N, Fahmy N, Ramadan S, Ebrahiem A**. Assessment of care given to woman undergoing gynecological examination. Egyptian Journal of Health Care. 2018; 9 (1): 50.
3. **Niedzwiecki B, Pepper J.** The Clinical Medical Assistant "An Applied Learning Approach ". 15th ed., Canada, Elsevier Com., 2023; 706, 712, 729.
4. **Jocab A.** A Comprehensive Textbook of Midwifery and Gynecological Nursing. 5th ed., India, Jaypee brother's medical publisher Com., 2019; 639-41.
5. **Tashan S, Ucar T, Aksoy Y, Kucukkelepce D**. Influence of gynecologic examination anxiety on application period to gynecology clinics. Asian Pacific Journal of Health Sciences. 2016; 3(2): 84-91.
6. **Eid S, Hassan H, Abou-Shabana K**. Study women verbal and nonverbal response, during their first gynecological examination. American Journal of Nursing Research. 2019; 7(1): 1-2.
7. **Mahrous M, Ranadan S, Mohamed A, Elbanna H**. Knowledge, practice and attitude regarding gynecological examination among maternity nurses in Benha university hospital. Menoufia Nursing Journal. 2017; 2 (2): 131-39.
8. **Macdonald S, Jonson G.** Mayes' Midwifery. 16th ed., UK, Elsevier Com., 2024; 497-98.
9. **Schwiling F, Likis F.** Gynecological Health Care with an Introduction to Prenatal Andpostnatal care., 4th ed., United States of Amircan, Jones and Bartlett Learning Com., 2021; 108-12.
10. **SOGC Committee Opinion.** 385-Indications for Pelvic Examination. Journal of Obstetric and Gynecology. 2019; 41(8): 1221:1234.
11. **Lobo R, Gershenson D, Lentz G**. Comprehensive Gynecology. 7th ed., USA, El sevier sciences Com., 2016;34-7.
12. **Royal College of Obstetricians and Gynecologists.** Gynecological Examinations: Guidelines for Specialist Practice. 2018; 4-9.
13. **Abdelaziz A, Shawki M, Shaaban A, Albarouki S, Rachid A, Alsalhani O, Jomaa M**. Breast cancer awareness among Egyptian women and the impact of caring for patients with breast cancer on family caregivers' knowledge and behaviour, research in oncology. 2021; 17 (1):1-2.
14. **Egypt Human Papillomavirus** and Related Cancers, Fact Sheet 2021, Information Centre on HPV and Cancer, 2021; 1-2.
15. **Elbana H**. Maternity nurses' performance regarding gynecological examination: educational intervention.

Journal of Nursing and Health Science. 2019; 7(6):66-77.

16. **Abu-Shabana K, Rady M, Shalaby S, Elbnedari** H. Gynecological examination educational guideline for maternity nurses and its reflection on women satisfactions. Port Said Scientific Journal of Nursing. 2021; 8 (1): 53.
17. **Berman A, Shirlee J, Frandsen G, Prakash SH, Nesamary G**. Kozier and Erb′s Fundemental Nursing of Concepts, Process and Practice, 10th ed., India, Pearson India Education Services Pvt.Ltd Com., 2018; 903-10.
18. **Astle B, Duggleby w.** Potter and Perry's Canadian Fundamental of Nursing. 7th ed., Canada, Elsevier Com., 2024; 665-66.
19. **Clinical professional resource**. Genital Examination in Women "A resource for skills development and assessment". London, Royal College of nursing. 2020; 11-15.
20. **Abd El-ati I, Mostafa A, Baraia Z**. Effectiveness of postpartum enhanced recovery pathway intervention on the occurrence of postoperative complications for primiparous women undergoing elective cesarean section. Journal of Nursing and Health Science. 2019; 8(1): 50-60.
21. **Shamian J, Hunhes F**. Nurses' role in achieving the sustainable development goals. International counsel for nurses. 2017; 17-22.
22. **WHO standards** for improving quality of maternal and newborn care in health facilities. 2016; 14-7.
23. **Smith R.** Netter's Obstetrics and Gynecology E-Book. 4th ed., India, Elsevier Com., 2024; 248.
24. **Kaur C, Vati J**. Knowledge regarding breast cancer and breast self-examination. International Research Journal of Pharmacy and Medical Sciences. 2019; 2 (4):14-7.
25. **Royal College of Obstetricians and Gynecologists.** Gynecological Examinations: Guidelines for Specialist Practice. 2018; 4-9.
26. **Qaseem A, Humphrey L, Harris R, Starkey M, Denberg T**. Screening pelvic examination in adult women: a clinical practice guideline from the American college of physicians. Annals of Internal Medicine Journal. 2014; 161(1): 67-72.
27. **Lowdermilk D,** Cashion M, Perry S, Alden K, Olshansky E. Maternity and Women's Health Care.12th ed., U.S.A., Elsevier com.,2020;25-6.
28. **Magowan B, Owen P, Thomson A.** Clinical Obstetrics and Gynecology E-Book. 2nd ed., London, Elsevier Health Sciences Com., 2018; 230-35.
29. **Bekar M, Guler H, Evcili F, Demirel G, Duran O**. Determining the knowledge of women and their attitudes regarding gynecological cancer prevention. Asian Pacific Journal of Cancer Prevention. 2013; 14 (4): 55-59.
30. **Belal Gh, Gaheen M, Mohamed F.** The educational needs among obstetrical and gynecological nurses in El-Gharbia Governorate. Journal of Nursing Education and Practice.2016; 6(4): 84-91.
31. **Urasa M1, Darj E.** Knowledge of cervical cancer and screening practices of nurses at a regional hospital in Tanzania. African Health Sciences. 2011; 11(1): 48-53.
32. **Hjörleifsson S, Bjorvatn B, Meland M, Rørtveit G, Hannestad Y, Bondevik G**. The when and how of the gynecological examination: a survey among Norwegian general practitioners. Scandinavian

Journal of Primary Health Care. 2019; 37 (2): 264-270.

33. **Mahmoud A, El-Adham A, Hashem SH.** Effect of an educational program on gynecological nurses′ performance pre and post hysterectomy surgery. Tanta Scientific Nursing Journal. 2021; 20 (1): 152.
34. **Shehab M, El-Adham A, Hashem SH**. Effect of educational program on nurses' performance regarding infection control in labor and delivery care units. Tanta Scientific Nursing Journal. 2022; 26(3): 85-95.
35. **Kol E, Ilaslan E, Turkay M.** Training needs of clinical nurses at an university hospital in Turkey. Nurse Education in Practice Journal. 2017; 22 (2017): 15-20.
36. **Ramadan E, Abd-Elhady R, Elsharkawy A.** Effect of training program on nurse intern's knowledge and practice regarding obstetric and gynecological skills at Benha university hospital. American Journal of Nursing Research. 2019; 7 (5): 7-22.