Effect of Designing and Implementing Nursing Guidelines on Nurses' Performance in Caring Women with Ectopic Pregnancy

Hanan A. F. Mohamed[1], Mahmoud R. Fayed[2], Somaya O. Abd El Meneam[3], Ola M. El-Sayed[4]

[1]Professor of Maternity and Gynecological Nursing, Faculty of Nursing, Almagmaah University, KSA
e-mail: hananabdalfatah040@gmail.com
[2]Professor of Obstetrics and Gynecology, Faculty of Medicine, Benha University, Egypt
e-mail: Mahmoudrizkfayed@ gmail.com
[3]Lecturer of Obstetrics and Woman's Health Nursing, Faculty of Nursing, Benha University, Egypt
e-mail: dr.somayaouda@yahoo.com
[4]Head Nurse, Menouf General Hospital, Menoufia, Egypt
e-mail: olamohamed638@gmail.com

Received May 8, 2019, accepted June 8, 2019
doi: 10.47104/ebnrojs3.v1i3.62

ABSTRACT

***Context*:** Ectopic pregnancy is a condition presenting a significant health problem for women of the childbearing period. Ectopic pregnancy remains one of the primary causes of maternal mortality.

Aim: The study aimed to evaluate the effect of nursing guidelines for improving maternity nurses' performance regarding ectopic pregnancy.

Methods: A quasi-experimental design was used to achieve the aim of the study. The study was conducted at Obstetrics and Gynecology Department at Benha University Hospital. A convenient sample of all nurses (90 nurses) working in Obstetrics and Gynecology departments at Benha university hospital. Tools of data collection included a structured self-administered questionnaire to assess nurses' knowledge regarding ectopic pregnancy, an observational checklist to evaluate nursing practice regarding ectopic pregnancy before and after implementing the nursing guidelines.

Results: 78.9% of the studied nurses had a total incorrect knowledge preprogram, which improved to 88.9% of them and had correct knowledge post-program. The study also shows that 47.2% of the studied nurses had unsatisfactory total practice score preprogram, which improved to 54.4% of the studied nurses who had high satisfactory total practice post-program. There was a highly statistically significant difference before and after nursing guidelines of the studied nurses' knowledge and practice regarding ectopic pregnancy ($P \leq 0.001$).

Conclusion: The study concluded that nursing guidelines positively affect the nurses' performance in terms of their knowledge and practice regarding ectopic pregnancy. The study recommended that simple guidelines regarding ectopic pregnancy nursing care should be distributed to nurses in the emergency obstetrics department to standardized and optimized nursing care provided to women with ectopic pregnancy. Continuous refreshment courses and follows up programs for nurses regarding ectopic pregnancy.

Keywords: Ectopic pregnancy, nursing guidelines, and maternity nurses' performance

1. Introduction

Ectopic pregnancy is a condition presenting as a significant health problem for women of childbearing period, and it occurs when a fertilized ovum unable to take the right way through the fallopian tube into the uterus and grow in any location other than the inner lining of the uterus *(Krissi, 2019).* Although ectopic pregnancy can be ovarian, cervical, intra-abdominal, the majority are tubal. Ectopic pregnancy remains one of the primary causes of maternal mortality *(Magowan & Owen, 2014).*

The incidence of ectopic pregnancy reported in the United States was 4.5 cases per 1000 pregnancies, the ectopic pregnancies now accounting for approximately 1-2% of all pregnancies; consequently, the prevalence estimated at 1 in 40 pregnancies or approximately 25 cases per 1000 pregnancies. These statistics based on data from the US Centers for Disease Control and Prevention, which used hospitalizations for ectopic pregnancy to determine the total number of ectopic pregnancies *(El Adawy, 2016).*

The risk factors of ectopic pregnancy are previous pelvic inflammatory disease, tubal surgery or tubal ligation, previous ectopic pregnancy, infertility, assisted reproductive techniques, smoking, maternal age more than 40 years, pregnancy while on the intrauterine contraceptive device, and previous cesarean section. There is a need to exclude the possibility of ectopic pregnancy, even in the absence of risk factors, because about a third of women with an ectopic pregnancy will have no known risk factors *(Haestier, 2017)*.

An ectopic pregnancy is classified according to where precisely the fertilized egg implants. The tubal pregnancy is the most common location of ectopic pregnancy; it approximately 95% to 97% of ectopic pregnancy. Ovarian pregnancy is approximately 3% of ectopic pregnancy. Abdominal pregnancy is defined as the implantation of the fertilized ovum in the peritoneal cavity. It constitutes approximately 1% of ectopic pregnancy. Cervical pregnancy is another rare type of ectopic pregnancy defined

as implanting the pregnancy in the endocervical canal; it constitutes approximately 1% of ectopic pregnancy *(Ghaneie, Joseph, Derv, & Tood, 2015).*

The most common cause of ectopic pregnancy is damage to the fallopian tube, resulting in a blockage or narrowing, which may delay the passage of the fertilized egg allowing it to implant in the tube. Other causes might include hormonal factors, genetic abnormalities, and congenital disability, medical conditions that affect the shape and condition of the fallopian tube. Any woman at childbearing age who is sexually active could be at risk of an ectopic pregnancy *(Nordqvist & Wilson, 2017)*. The client with an ectopic pregnancy often present with vaginal bleeding, a missed period, lower abdominal and pelvic pain in fallopian tube pregnancy, if tube ruptured, abdominal tenderness on palpation might occur, the abdominal bleeding irritates the phrenic nerve causing radiating pain to the shoulder, rectal pressure, and dizziness or fainting. The most common complication is a rupture with internal bleeding that can lead to hypovolemic shock. The maternal mortality due to ectopic pregnancy is approximately 10% of maternal death *(Lynna & Engebreston, 2015).*

Ectopic pregnancy has a severe complication and may lead to shock and even death. It can be managed if the right interventions are made. Thus health care providers must be well educated about ectopic pregnancy with a good understanding of how EP develops and how it managed. Nurses play critical roles in caring for women who experience EP. These roles include providing direct services for EP, education, counseling, systems management, training staff, assisting the healthcare provider, and providing patient-centered care *(Otolorin, Gomez, Currie, Thapa, & Dao, 2015).*

Guidelines systematically developed statement which assists clinicians and nurses in making decision making about appropriate treatment options for ectopic pregnancy. Each guideline is systemically developed using a standardized methodology to be able not only to manage and treat but also evaluate patient needs, resources, and limitations of the situation hoped to help incorporate the guidelines into routine practice *(Elson, Salim, Potdar, Chetty, & Rosst, 2016)*. Nursing guidelines should include the meaning, types, causes, risk factors, signs, symptoms, management, and nursing role of ectopic pregnancy. The nursing guidelines is necessary to make maternity nurses have correct knowledge regarding ectopic pregnancy and able to carry out effective interventions for clients; in addition to these nurses need to continue their education and training to gain knowledge to inform client, and their families regarding EP *(Bhandari & Dangal, 2014*).

2. Significance of the study

The incidence of ectopic pregnancy in a hospital-based Egyptian study by *Abd El-Kader, Salim, Yousef, and Mohamad (2014)* reported that 0.75% (7.5/1000). This incidence is not far from that in different Arab countries. In King Saudi Arabia, the reported incidence was 7.4/1000 live births (1997-2000), in Qatar (1997-1999), 5.8/1000 live births, and in Sudan (1997-1994) was 5.0/1000 live births. In this study, the maternal age ranged from 18 to 40 years with a mean of 26.71±5.38 y. The study also reported that 90.0% of ectopic pregnancies were found in 20-39 years.

Ectopic pregnancy is a very traumatic and painful condition. The women need to cope with a lost baby and loss of fertility part. The feelings may be difficult in the weeks and months following this loss. Ectopic pregnancy is a recurrent condition; it is a significant cause of maternal mortality and morbidity, especially in low-income and middle-income countries where the patient presents late with tubal rupture and hemodynamic instability. The use of nursing guidelines successfully improves maternity nurses' awareness about nursing roles that benefit in promoting wellness, changing behavior, and providing continuous quality improvement. So the current study aimed to examine the effect of improving maternity knowledge and practice through applying nursing guidelines for nurses caring for women with ectopic pregnancy.

3. Aim of the study

The present study was aimed to evaluate the effect of nursing guidelines on maternity nurse's performance regarding ectopic pregnancy through the following objectives:

- Assessing the nurses' knowledge regarding ectopic pregnancy.
- Assessing the nurses' practice about ectopic pregnancy.
- Implementing nurses training on using the guidelines
- Evaluating the effect of guidelines on maternity nurses' knowledge and practice regarding ectopic pregnancy.

3.1. Research hypotheses

- Maternity nurses exposed to the nursing guidelines of caring for ectopic pregnant women will exhibit better knowledge after implementing the guidelines compared to pre-implementation.
- Maternity nurses exposed to the nursing guidelines of caring for ectopic pregnant women will exhibit better practice after implementing the guidelines compared to pre-implementation.

4. Subjects and Methods

4.1. Research design

A Quasi-experimental design (pre and post-test design) was utilized to achieve the aim of this study.

4.2. Study Setting

The study was conducted at the Obstetrics and Gynecology department at Benha University hospital; the Obstetrics and Gynecology department was on the sixth floor and consisted of eight rooms. Every room contains four beds. Also, an operation department of obstetrics and gynecology is present on the same floor. There is an Obstetrics and Gynecology emergency department on the underground floor that consists of three rooms that contain eleven beds and an operating room. There are Obstetrics

and gynecology outpatient clinic in the outpatient department.

4.3. Subjects

A convenient sample of (90) maternity nurses were working at the obstetrics and gynecology department. The total number distributed as four nurses at outpatient clinics, 40 nurses at Obstetrics and Gynecology department, and 46 nurses at Obstetrics and Gynecology emergency department.

4.4. Tools of Data Collection

4.4.1. A Structured Self-Administrated Questionnaire

Structured self-administrative questionnaire constructed by the researcher after reviewing related literature. This tool aimed to assess maternity nurse's knowledge regarding ectopic pregnancy before and after using guidelines. This tool included multiple-choice questions. This tool wrote in simple, clear Arabic language, and it has included six main parts. Part 1 assesses socio-demographic characteristics of maternity nurses such as (age, educational qualification, current job, years of experience, place of work, training courses, and sources of information) (From questions1 to 7).

Part 2 is concerned with maternity nurses' knowledge regarding ectopic pregnancy. It covers such information about the meaning, types, and causes of ectopic pregnancy (from questions No. 8 to 11). Part 3 encompasses knowledge of maternity nurses regarding risk factors and signs and symptoms of ectopic pregnancy (from questions 12 to 15). Part 4 embraces maternity nurses' knowledge regarding complications and methods of prevention of ectopic pregnancy (from questions 16 to 19). Part 5 includes maternity nurses' knowledge regarding diagnosis and management of ectopic pregnancy (from questions 20 to 27). Part 6 covers maternity nurses' knowledge regarding the nurse's role in caring for women with ectopic pregnancy (From question No. 28 to 36).

Scoring system

Each question was assigned a score (1) for the correct answer, and a score (0) had given when the answer was incorrect. The total knowledge score classified as the following: Correct knowledge ≥ 80%, and Incorrect knowledge < 80%

4.4.2. Nursing Practice Observational Checklist

The researcher developed it after reviewing related literature. An observational checklist in the English language was used to assess nursing practice regarding ectopic pregnancy before and after using nursing guidelines. It comprised three procedures as following: Preoperative care for ectopic pregnancy patient (13 procedure steps), postoperative care for ectopic pregnancy patient (16 procedural steps), and post laparoscopic nursing care (10 procedural steps).

Scoring system:

Each step of the procedure assigned a score (2) if adequately done, a score (1) if done incorrectly/inadequately, and assigned a score (0) if not done. The total score of the practice was classified into: Highly satisfactory > 75%, Satisfactory 50% - 75%, Unsatisfactory < 50%.

4.4.3. Arabic Guidelines Regarding Ectopic Pregnancy

Arabic guidelines developed by the researcher in Arabic form after reviewing the literature for improving maternity nurses' knowledge and practice regarding ectopic pregnancy that included introduction regarding ectopic pregnancy, the definition of ectopic pregnancy, types, causes, risk factors, signs and symptoms, diagnosis, complications, management of ectopic pregnancy and nursing role.

4.5. Procedures

Tools of the study have been given to experts in maternity nursing to test the content validity of the tools. Also, to clarify the sentences as well as the appropriateness of the content. The researchers have applied Test-retest reliability. It was done by administering the same tools to the same participants on two or more occasions. Scores from repeated testing compared. Reliability for the knowledge questionnaire was 0.91, and for the practice checklist was 0.90.

An official approval letter containing the title and clarifying the purpose of the study obtained from the dean of faculty of nursing Benha University to the director of Benha University Hospital and oral acceptances from all participants to conduct the study after explaining its purpose.

The ethical aspect considered before starting the study includes the following: The researcher obtained consent from the Benha University hospital director and head nurses for data collections. The researcher clarified the aim of the study to the nurses included in the study. Oral consent was obtained from the maternity nurses to gain their confidence in the study. Participant maternity nurses were reassured that the data collected would be confidential and used only in research. The researcher maintains the self-esteem and dignity of subjects. The researcher ensured that the study does not cause any harm to any persons during data collection. Each nurse participant informed that they are allowed to choose to participate or not in the study and that they have the right to withdraw from the study at any time.

The preparatory phase, pilot study, and fieldwork were then arranged. The preparatory phase included reviewing the current local and international related literature using textbooks, articles, and scientific journals to develop data collection tools. A pilot study has undertaken after the development of tools and before data collections. It was carried out on 10% (9 nurses) of the study subjects. The pilot study's purpose was to test the clarity, objectivity, and

applicability of tools and feasibility of the study process. Also, it was served to find out any problems that might interfere with data collections. The pilot study sample was included in the primary sample, as no modifications have been done.

The study was implemented within one 1year from the beginning of January to December 2018. The researcher visited the previously mentioned setting for 3days/week Saturday, Sunday, and Tuesday from 9 am to 12 pm until the total sample was obtained. The fieldwork of the current study was done through three phases:

Interviewing and assessment phase: The researcher started data collection by greeting maternity nurses and introduce herself to the participant. Verbal informed consent was obtained from each participant. Then a brief description of the purpose of the study and component of tools were explained, and types of questionnaire require filling. The questionnaire gave to each participant at the beginning of data collection. Data collected by the researchers through the distribution of a self-administrative questionnaire to collect the nurses' demographic characteristics and assess their pre-knowledge regarding ectopic pregnancy. The average time required for completion of the questionnaire was around (20-30) minutes. Then the researcher used the observational checklist to assess nurses' practice regarding ectopic pregnancy.

Planning phase: Based on the result obtained from the pretest assessment of nurses' knowledge and practice regarding ectopic pregnancy, the researcher reviewed relevant literature to design nursing guidelines about ectopic pregnancy supported by figures in the Arabic language.

Implementation phase: The implementation of the nursing guidelines was carried out in the pre-mentioned setting. Nurses were divided into ten groups according to work circumstances and nurses' physical and mental readiness. Each group includes nine nurses. The overall sessions were six sessions for each group: divided into three theoretical sessions and the duration of each session ranged from 30-45 minutes, followed by three practical sessions, and the duration of each session ranged from 45-60 minutes.

The theoretical sessions are arranged as follows*: The first session* started with an introduction and orientation to the nursing guidelines that included objectives using the Arabic language to cover all nurses' education levels. Then the researcher provided maternity nurses with a general overview regarding ectopic pregnancy and its types. The *second session* started with feedback about the previous session and the objectives of the new session. Then the researcher provided maternity nurses with knowledge about causes, risk factors, signs and symptoms, and complications of ectopic pregnancy. At the end of the session, the researcher allowed maternity nurses to ask questions and provided a discussion period.

The third session started with feedback about the previous session and then provided knowledge about diagnosis, management, and nursing role regarding ectopic pregnancy.

The practical sessions include the fourth, fifth, sixth session. The *fourth session* implied implementing the practical part of the nursing guidelines for all cases of ectopic pregnancy and included specific procedures such as preoperative care regarding ectopic pregnancy patients. The *fifth session* started with feedback and re-demonstration of the previous session and an introduction of the objectives of the new session. Then the researcher demonstrates the postoperative care regarding ectopic pregnancy patient. *The sixth session* started with the feedback of the previous session and demonstration post laparoscopic care for ectopic pregnancy patients.

Evaluation phase: During this phase, the effect of nursing guidelines was evaluated (post-test) using the same format of tools used before implementing the nursing guidelines (pretest). After implementing the nursing guidelines, an immediate evaluation was conducted to evaluate nurses' knowledge gain and performance of practical skills.

4.6. Data analysis

The collected data was organized, coded, computerized, and analyzed using Statistical Package for Social Science (SPSS). Data have been presented using descriptive statistics in the form of frequency and percentages. Quantitative variables are presented in the form of mean and standard deviation. Qualitative variables have been compared using the Chi-square test. Individual correlations have been used to determine the correlation between the different qualitative variables. A significant difference considered at $p < 0.05$, and a highly significant level value considered $P < 0.001$

4.7. Limitation of the study

- Sometimes, interviewing nurses and implementation of sessions were postponed as many nurses were most of the time busy with women during data collection.
- There was a limited number of researches that discuss this topic in Egypt.

5. Results

Table 1 shows that 60% of the nurses' age was between 25-35 years, and 55.6% had a secondary school diploma in nursing. Of the majority of studied nurses, 91.1% were staff nurses. More than half of the studied nurses (51.1%) worked in the inpatient ward. Also, the majority of studied nurses (97.8%) had not attended training sessions regarding ectopic pregnancy.

Table 2 reveals that 77.6% of nurses had incorrect knowledge regarding the important symptoms of EP that improved to 100% correct at the post-program phase. More than half of the studied nurses (56.7%) had correct knowledge about the management of ectopic pregnancy preprogram, which improved to 100.0% post-program. Also, the majority of studied nurses (96.7%) had incorrect knowledge related to the common types of surgical

intervention preprogram, which improved to 100.0% post-program. There were highly statistically significant differences in all aspects of knowledge related to the studied nurses' knowledge between pre, and post-program ($P < 0.001$).

Table 3 reveals that 84.8% had incorrect knowledge related to nursing diagnosis of ectopic pregnant women, which improved to 98.9% post-program. There were highly statistically significant differences in all aspects related to the nurses' role in caring for patients with ectopic pregnancy between pre and post-program ($p < 0.001$).

Figure 1 clarifies that less than half of the studied nurses (43.3%) had their information from mass media.

Figure 2 shows that 78.9% of the studied nurses had incorrect knowledge preprogram, which improved to 88.9% had correct knowledge post-program.

Table 4 shows that about half of the studied nurses (47.2%) of the nurses could not do preoperative nursing care adequately preprogram, which improved to 52.7% done adequate post-program. Also, that only 12.2% of the nurses done adequately postoperative care for ectopic pregnancy patient preprogram, which improved to 54.4% done post-program adequately. In addition, less than half of the studied nurses, 45.5% done inadequately related to post laparoscopic nursing care practices preprogram which improved to 56.4% done post-program adequately, with a total score shows that only 11.1% of nurses were adequately done the caring procedures for ectopic pregnant women that improved to 55.6% after the program implementation. There were highly statistically significant differences in all procedures related to nursing care practices for patients with ectopic pregnancy between pre, and post-program ($p <0.001$).

Figure 3 shows that more than half (52.7%) of the studied nurses had a highly satisfactory level of preoperative nursing practice post-program. Moreover, more than half of the studied nurses (54.4%) had a highly satisfactory level of postoperative nursing practice post-program. Also, show that 56.4% of the studied nurses had a highly satisfactory level with post laparoscopic nursing practice post-program.

Figure 4 shows that 11.1% of the studied nurses had a highly satisfactory total practice score preprogram, which improved to 55.6% post-program. Half of the studied nurses (50.0%) were unsatisfied with the total practice score preprogram, which decreased to 1.1% post-program.

Table 5 shows that a highly statistically significant correlation between total knowledge and total practices pre-and post-program ($p <0.001$)

Table 6 shows a statistically significant relationship between total knowledge and the study sample's age, qualifications, experience, and training ($p <0.05$).

Table 7 shows no statistically significant relationship between the total practices score of studied nurses and socio-demographic characteristics pre-and post-program.

Table (1): Frequency and percentage distribution of studied nurses regarding socio-demographic characteristics (n= 90).

Socio-demographic characteristics	No.	%
Age		
<25 years	9	10.0
25 - < 35years	54	60.0
35- < 45 years	21	23.3
45 years	6	6.7
Educational qualification		
Secondary school diploma in nursing	50	55.6
Technical Institute diploma in nursing	32	35.6
Bachelor degree in nursing	8	8.9
Current Job		
Supervisor	8	8.9
Staff nurse	82	91.1
Years of experience		
<5 years	18	20.0
5 – 10 years	31	34.4
>10 years	41	45.6
Place of work:		
Clinics	4	4.4
Inpatient ward	46	51.1
Emergency	40	44.4
Training courses regarding ectopic pregnancy		
Yes	2	2.2
No	88	97.8
If yes, more than one year N=2		
More than one year	2	100.0

Table (2): Frequency and percentage distribution of the studied nurses' regarding their knowledge of ectopic pregnancy pre and post guidelines implementation (n=90).

Topics	Pre				Post				X^2	P-value
	Correct		incorrect		Correct		incorrect			
	No	%	No	%	No	%	No	%		
Defines ectopic pregnancy (EP)	32	35.6	58	64.4	72	80.0	18	20.0	36.4	0.000
Types of ectopic pregnancy	21	23.3	69	76.7	84	93.3	6	6.7	90.7	0.000
Causes of ectopic pregnancy:	20	22.2	70	77.8	86	95.6	4	4.4	99.9	0.000
The risk factors EP	7	7.8	83	92.2	86	95.6	4	4.4	138.8	0.000
Symptoms of EP	45	50.0	45	50.0	87	96.7	3	3.3	50.1	0.000
The important symptoms of EP	22	24.4	68	75.6	90	100.0	0	0.0	109.2	0.000
Ectopic pregnancy may lead	20	22.2	70	77.8	84	93.3	6	6.7	93.2	0.000
The serious complication of EP	16	17.8	74	82.2	89	98.9	1	1.1	121.8	0.000
The type that ruptures early	9	10.0	81	90.0	87	96.7	3	3.3	135.8	0.000
Prevention from EP	17	18.9	73	81.1	90	100.0	0	0.0	122.8	0.000
Diagnosis of EP	33	36.7	57	63.3	89	98.9	1	1.1	79.7	0.000
Management of EP	51	56.7	39	43.3	90	100.0	0	0.0	49.7	0.000
Medical management	28	31.1	62	68.9	86	95.6	4	4.4	80.4	0.000
Surgical management	11	12.2	79	87.8	87	96.7	3	3.3	129.3	0.000
Common types of surgical intervention:	3	3.3	87	96.7	90	100.0	0	0.0	168.3	0.000

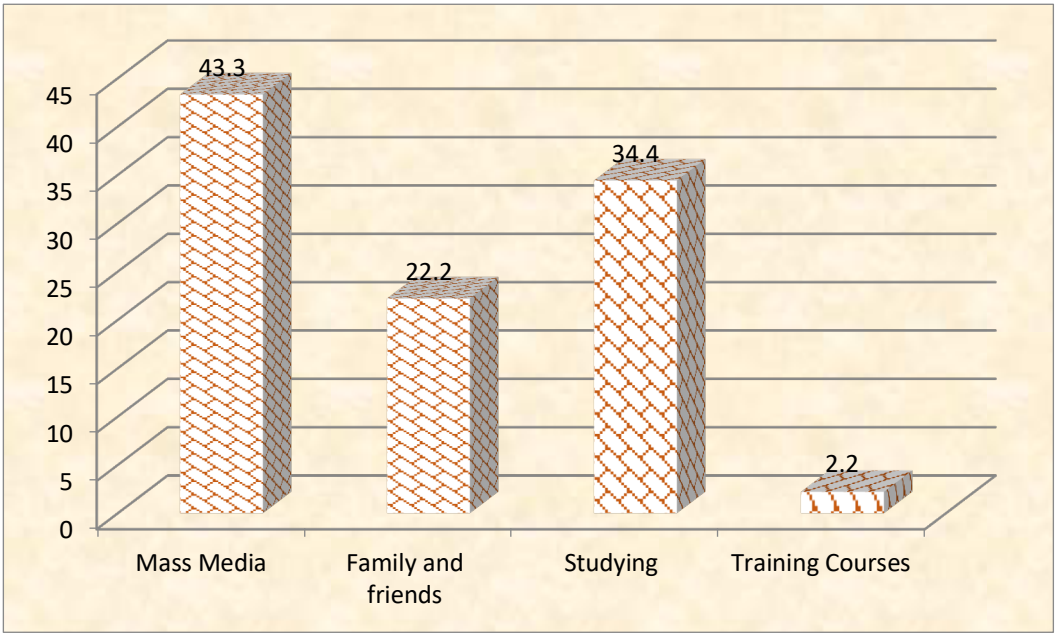

Figure (1): Percentage distribution of the studied nurses regarding the source of information for ectopic pregnancy.

Table (3): Frequency and percentage distribution of the studied nurses' knowledge regarding nurses' role pre and post guidelines implementation (n=90).

Knowledge about nurses' role	Pre				Post				X^2	p-value
	Correct		Incorrect		correct		Incorrect			
	No.	%	No.	%	No.	%	No.	%		
Admission care	38	42.2	52	57.8	86	95.6	4	4.4	59.7	0.00
Nursing assessment	35	38.9	55	61.1	88	97.8	2	2.2	72.1	0.00
The client position	48	53.3	42	46.7	88	97.8	2	2.2	48.1	0.00
Nursing diagnosis	14	15.6	76	84.4	89	98.9	1	1.1	127.6	0.00
Rapid intervention knowledge	31	34.4	59	65.6	89	98.9	1	1.1	84.1	0.00
Nursing care for low body fluids	40	44.4	50	55.6	88	97.8	2	2.2	62.3	0.00
Nursing care for pain	25	27.8	65	72.2	87	96.7	3	3.3	90.8	0.00
Nursing care for a psychological state.	25	27.8	65	72.2	90	100.	0	0.0	101.7	0.00

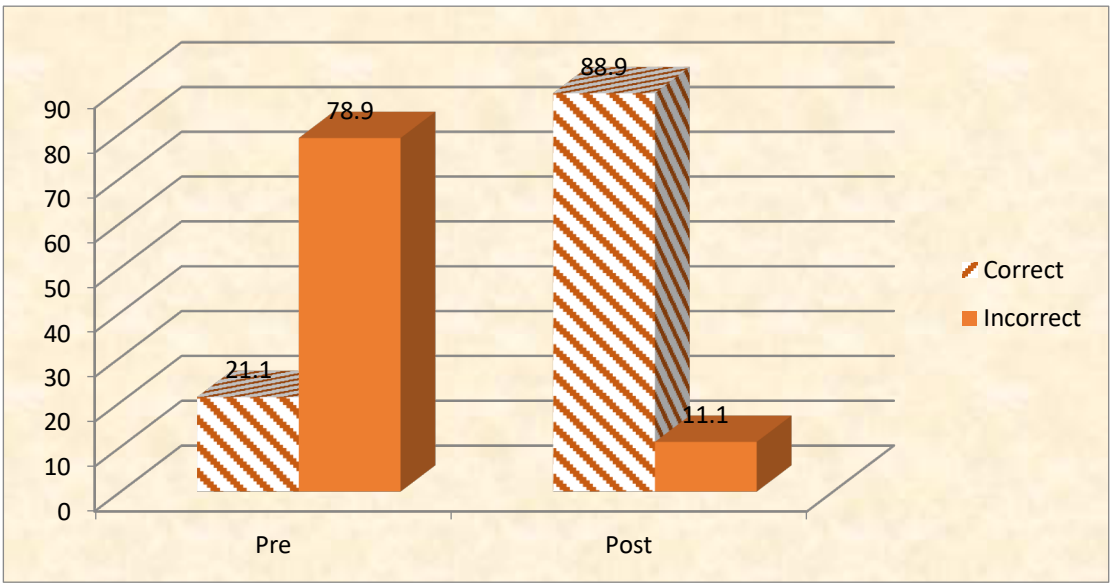

Figure (2): Percentage distribution of nurses' total knowledge regarding ectopic pregnancy pre and post-program.

Table (4): Frequency and percentage distribution of studied nurses regarding their practices score pre-and post-program (n=90).

Practice	Pre						Post						X^2	p-value
	Done adequate		Done inadequate		Not done		Done adequate		Done inadequate		Not done			
	No	%	No	%	No	%	No	%	No	%	No	%		
preoperative care	10	11.1	37	41.7	42	47.2	48	52.7	42	46.2	1	1.1	64.2	0.000
postoperative care	11	12.2	38	42.3	41	45.5	49	54.4	39	43.2	2	2.2	59.4	0.000
Post laparoscopic care	10	11.1	41	45.5	39	43.5	51	56.4	38	42.4	1	1.1	63.7	0.000
Total practices	10	11.1	35	38.9	45	50.0	50	55.6	39	43.3	1	1.1	68.9	0.000

**A highly statistically significant difference (P ≤ 0.001)*

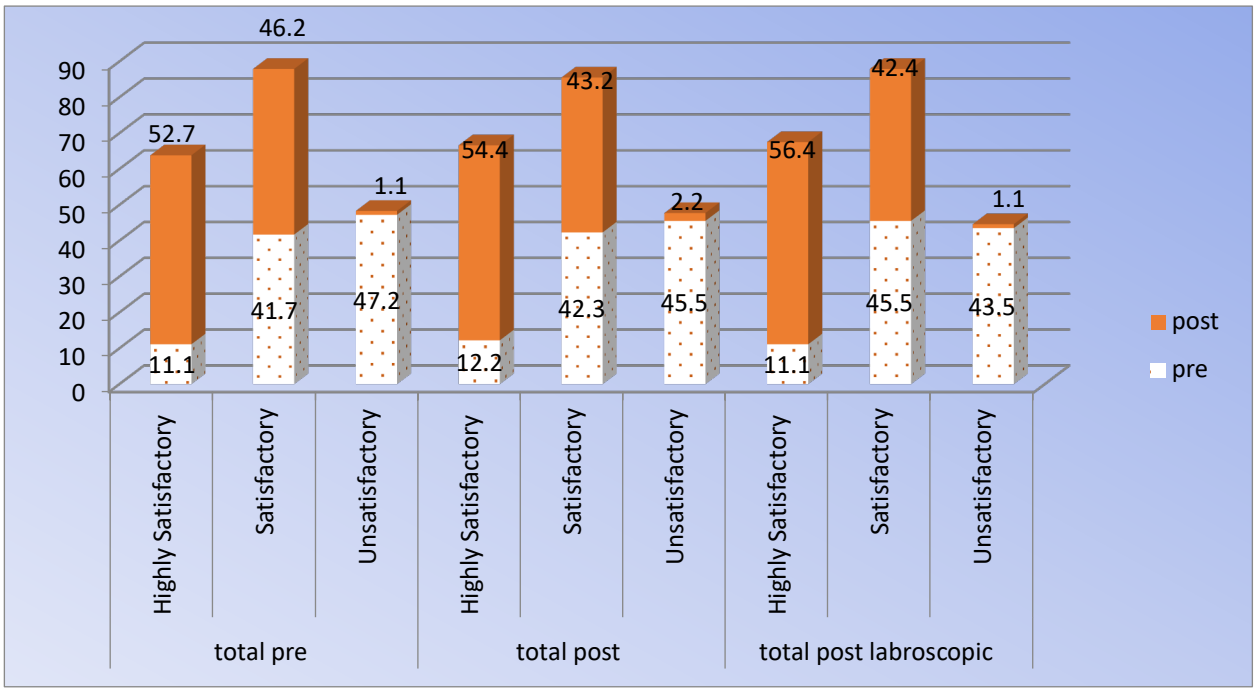

Figure (3): Frequency distribution of studied nurses regarding total practices pre-and post-program.

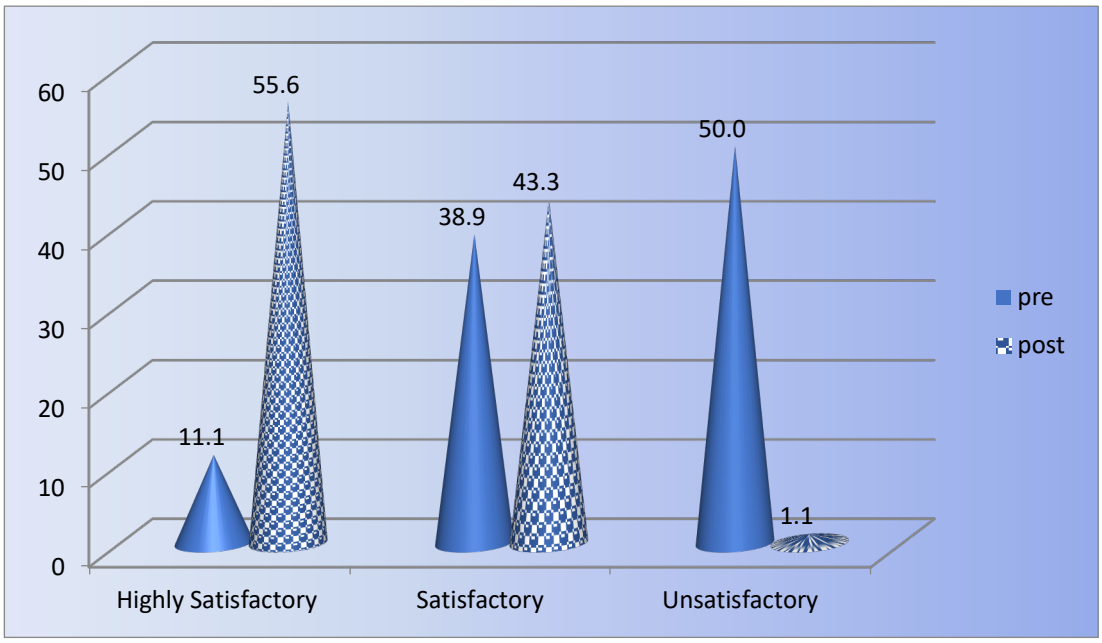

Figure (4): Frequency distribution of studied nurses regarding total practices scores pre-and post-program.

Table (5): The relation between total knowledge and total practices pre-and post-program.

Total practices	Total Knowledge			
	Pre		Post	
	r	p-value	r	p-value
	0.19	0.000**	0.86	0.06

Table (6): The relation between total knowledge score and socio-demographic characteristics pre and post-program

Socio-demographic	Pre				Post				$X^2 1$*	p-value	$X^2 2$	p-value
	Correct (n=71)		Incorrect (n=19)		Correct (n=10)		Incorrect (n=80)					
	No	%	No	%	No	%	No	%				
Age												
<25 years	9	12.7	0	0.0	0	0.0	9	11.3				
25 - < 35years	38	53.5	16	84.2	3	30.0	51	63.8				
35- < 45 years	18	25.4	3	15.8	5	50.0	16	20.0	6.65	0.07	9.24	0.02
45 years	6	8.5	0	0.0	2	20.0	4	5.0				
Qualifications												
Secondary school diploma in nursing	45	63.4	5	26.3	7	70.0	43	53.8				
Technical Institute diploma in nursing	20	28.2	12	63.2	3	30.0	29	36.3	8.94	0.01*	1.52	0.01
Bachelor degree in nursing	6	8.5	2	10.5	0	0.0	8	10.0				
Job												
Supervisor	6	8.5	2	10.5	1	10.0	7	8.8	0.08	0.77	0.01	0.89
Nurse	65	91.5	17	89.5	9	90.0	73	91.2				
Experience												
>5 years	15	21.1	3	15.8	1	10.0	17	21.3				
5 - 10 years	20	28.2	11	57.9	3	30.0	28	35.0	6.01	0.04*	1.14	0.56
< 10 years	36	50.7	5	26.3	6	60.0	35	43.8				
Training												
Yes	0	0.0	2	10.5	0	0.0	2	2.5	7.64	0.006*	0.25	0.01
No	71	100.0	17	89.5	10	100.0	78	97.5				

**$X^2 1$ between pre and socio-demographic $X^2 2$ between post and socio-demographic*

Table (7): The relation between total practices scores and socio-demographic characteristics pre and post-program.

Socio-demographic characteristics	Pre						Post					
	Done adequate (n=45)		Done inadequate (n=35)		Not done (n=10)		Done adequate (n=1)		Done inadequate (n=39)		Not done (n=50)	
	No	%	No	%	No	%	No	%	No	%	No	%
Age												
<25 years	6	13.3	2	5.7	1	10.0	0	0.0	6	15.4	3	6.0
25 - < 35years	25	55.6	22	62.9	7	70.0	1	100.0	20	51.3	33	66.0
35- < 45 years	12	26.7	7	20.0	2	20.0	0	0.0	11	28.2	10	20.0
45 years	2	4.4	4	11.4	0	0.0	0	0.0	2	5.1	4	8.0
	X^2=4.12		p-value =0.66				X^2=4.29		p-value =0.63			
Qualification												
Secondary school diploma in nursing	28	62.2	18	51.4	4	40.0	1	100.0	25	64.1	24	48.0
Technical Institute diploma in nursing	13	28.9	15	42.9	4	40.0	0	0.0	10	25.6	22	44.0
Bachelor degree in nursing	4	8.9	2	5.7	2	20.0	0	0.0	4	10.3	4	8.0
	X^2=3.83		p-value =0.42				X^2=4.03		p-value =0.40			
Job												
Supervisor	5	11.1	2	5.7	1	10.0	0	0.0	4	10.3	4	8.0
Nurse	40	88.9	33	94.3	9	90.0	1	100.0	35	89.7	46	92.0
	X^2=0.72		p-value =0.69				X^2=0.23		p-value =0.88			
Experience												
<5 years	8	17.8	8	22.9	2	20.0	0	0.0	7	17.9	11	22.0
5 – 10 years	15	33.3	12	34.3	4	40.0	0	0.0	12	30.8	19	38.0
>10 years	22	48.9	15	42.9	4	40.0	1	100.0	20	51.3	20	40.0
	X^2=0.59		p-value =0.96				X^2=2.33		p-value =0.67			
Training												
Yes	2	4.4	0	0.0	0	0.0	0	0.0	2	5.1	0	0.0
No	43	95.6	35	100.0	10	100.0	1	100.0	37	94.9	50	100.0
	X^2=2.04		p-value =0.36				X^2=2.67		p-value =0.26			

6. Discussion

Ectopic pregnancy is a pregnancy that is not in the uterus. The fertilized egg settles and grows in any location other than the inner lining of the uterus. It is the most common cause of pregnancy-related death in the first trimester of pregnancy. Most of the cases were initially undiagnosed and then complicated with massive hemorrhage and became life-threatening conditions. Nurses play a significant role in the identification and management of ectopic pregnancy. Therefore, they need to be prepared to respond promptly and effectively to save the lives of women who have ectopic pregnancies *(Shiel & William, 2018)*.

Nurses are essential members of the health team in identifying and managing ectopic pregnancies; however, they also have a role in prevention and education. Knowledge of risk factors helps the nurse counsel individuals who may be at increased risk for ectopic pregnancy. Prompt treatment of pelvic inflammatory disease is vital because tubal patency usually is preserved if the pelvic inflammatory disease is treated within two days of symptom onset. Encouragement of early prenatal care also can help decrease mortality. The rising incidence of ectopic pregnancy is a problem that nurses will see in many clinical areas; however, its morbidity and mortality can be reduced through effective nursing care *(Abbott, 2016).* Maternity nurses may have some knowledge regarding the assessment and management of ectopic pregnancy.

Nursing guidelines are an accepted strategy to improve knowledge. Failure in early diagnosis and management of ectopic pregnancy may result in rupture of surrounding structures and heavy bleeding, which may be fatal (*Punches, Johnson, Gillespie, Acquavita, & Felblinger, 2018)*. The present study aimed to assess the effect of nursing guidelines on maternity nurse's performance regarding ectopic pregnancy. The aim is significantly supported through assessing maternity nurse's knowledge and practice regarding ectopic pregnancy. Designing and implementing the nursing guidelines and evaluating maternity nurses' knowledge and practical skills after implementing nursing guidelines become of utmost importance.

Regarding the characteristics of the studied nurses, the present study shows that more than half of the studied nurses were age from 25 to 35 years. This result is near similar to *Devi (2015)* in a study entitled "assess the knowledge of staff nurses regarding obstetric emergencies in a selected hospital, Salem, Tamilnadu." The finding revealed that the highest percentage (71%) of the staff nurses were in the age group of more than 25 years. Concerning years of experience of the studied nurses, the current study reveals that about half of the studied nurses had more than ten years of experience. This result was

similar to *Jasim and Al Mokhtar (2015)*, who studied "nurses' knowledge and practice regarding gynecological laparoscopy in a maternity teaching hospital in Mosul City," and found that (74.5%) of the nurses had (1-10 years) years of experience.

Regarding the educational qualifications of the studied nurses, the result of the current study shows that more than half of the studied nurses had a diploma of secondary nursing school, and the majority of studied nurses were staff nurses. This result was similar to *Abd Elmordy, Fahmy, and Omran (2018),* who studied the effect of an instructional package on nurses' performance regarding obstetrical emergency, faculty of nursing, Benha University. The study found that more than two-thirds of studied nurses were diploma degrees. Additionally, the present study results illustrate that most studied nurses had not attended training sessions towards ectopic pregnancy.

This result agreed with *Abd El-Hakam and Refaat (2017)*, who study "Developing nursing management protocol for maternity nurses regarding emergency obstetric care, Faculty of Nursing, Benha University." The majority of the studied nurses, 87.5%, did not receive any training program regarding obstetric emergencies, including ectopic pregnancy. This result disagrees with *Kavitha, Tesfay, Prasath, Serek, and Girmay (2014),* who studied "The assessment of the level of knowledge of staff nurses on emergency obstetrics management at Orotta National Referral Maternity Hospital, Asmara," which reported that all nurses included in the study (100%) attended a workshop regarding the management of obstetric emergencies.

The current study shows that most of the studied nurses had correct knowledge of complications and methods of prevention of ectopic pregnancy preprogram, which improved post-program. Also, nearly half of the studied nurses had incorrect knowledge about how to treat ectopic pregnancy preprogram. This percentage improved post-program. Besides, most of them had incorrect knowledge of the common types of surgical intervention preprogram, which improved post-program. There were highly statistically significant differences in all items related to the studied nurses' knowledge between pre-and post-program ($P < 0.001$). This result may be due to a lack of training programs regarding ectopic pregnancy and the few maternity nurses attending training programs. This result might be due to the positive effect of the nursing guidelines' theoretical sessions; also, the topic of the study is vital and interested for maternity nurses.

This result agrees with *Jose (2012),* who study " the effectiveness of self-instructional modules on knowledge regarding assessment and management of ectopic pregnancy among staff nurses in selected hospitals at Mangalore." This result agrees with *Kim and Shin (2016),* who study "effects of nursing process-based simulation for maternal child emergency nursing care on knowledge, attitude, and skills in clinical nurses." The participants who had never had previous experience of dealing with emergency pregnant patients showed an increase in knowledge, which demonstrated simulation-based training as a useful learning tool to improve knowledge which becomes the fundamental element of clinical competency and attitudes that positively act as improving confidence for work.

Regarding maternity nurses' knowledge about the role of nurses regarding ectopic pregnancy, the current study finds that more than half of the studied nurses had correct knowledge related to the position during laparoscopy before implementing improved after the implementation of nursing guidelines. The result also shows that most studied nurses had incorrect knowledge related to nursing diagnosis, which improved to post-program. Also, more than one-third of studied nurses' had correct knowledge related to their role in the rapid intervention. This result improves post-program, with a highly statistically significant difference between their knowledge level pre-and post-program regarding all roles at ($p < 0.001$). This result agrees with *Jasim and Al Mokhtar, (2015) s*tudy, who reported that 92% of the nurses put the patient at the correct position during the laparoscopic procedure. This finding is supporting the first research hypothesis.

As regard nurses' practice score regarding ectopic pregnancy. In this study, less than half of the studied nurses not done the procedure steps of preoperative nursing care preprogram, which improved post-program. Also, that minority of the studied nurses has done adequately the postoperative care for ectopic pregnancy patient preprogram, which improved to post-program. Besides, less than half of the studied nurses did inadequately post laparoscopic nursing care practices preprogram, which improved post-program. There were highly statistically significant differences in all items related to the studied nurses' practices between pre, and post-program ($p < 0.001$). The perioperative assessment is one of the critical points of care for patients transitioning into the perioperative environment. Much of the perioperative safety literature generally speak to communication failures in the operating room and the postoperative handover *(Fuji, Abbott, & Norris, 2013).*

The current study finds that more than half of the studied nurses had a highly satisfactory level regarding preoperative practice post-program compared to preprogram. Moreover, more than half of the studied nurses had a highly satisfactory level of practice related to postoperative care compared to post-program. Also, more than half of the studied nurses had a satisfactorily high level for post laparoscopic care post-program compared to preprogram. Like *Zone and Guide (2017),* who study "ectopic pregnancy: the midwife's role in the community." They found significant differences between nurses' practice regarding laparoscopic surgery pre and post educational program at p-value =0.001.

This result agrees with *Abd El-Hakam and Refaat (2017),* who revealed a significant improvement in nurses' practice after protocol application compared to before it. This finding is supporting the second research hypothesis.

A significant challenge for the nursing profession is to find ways of merging theory and practice in the delivery of nursing education and patient care. One option for

achieving this goal is for nurse educators to spend time in clinical practice, updating their clinical skills and re-experiencing the realities of practice. This result reveals a highly statistically significant correlation between total knowledge and total practices pre-and post-program ($p < 0.001$). It agrees with, *Şahin, Ayhan, Cay, and Ocal (2015)*, who study "an assessment of the preoperative information given to patients in the province of Karman." There was a highly statistically significant correlation between total knowledge and total practices pre-and post-program ($p < 0.001$) in this study.

This result could be explained by a lack of maternity nurses' knowledge, which reflected on their practice, also the absence of training programs regarding ectopic pregnancy. This result also emphasized the importance of the nursing guidelines and continuous education for nurses on improving their practice regarding ectopic pregnancy. These results agree with, *Refaat & Mohammed (2018)*. The study "Evaluation of the effect of evidence-based guidelines for maternity nurses to cope with aborted women, Faculty of Nursing, Benha University," revealed that maternity nurses knowledge and practice is highly positively statistically correlated after applications of evidence-based guidelines, that (73.2%) of maternity nurses had reduced performance level before evidence-based guidelines and improved to (86.5%) after implementation of guidelines. This result was also supported by *Abd El-Hakam and Refaat (2017),* who reported that 77.5% of the nurses had unsatisfactory practices regarding emergency obstetrics care before implementing the protocol and had satisfactory improvement to 82.3% after implementation of the protocol.

These results indicate that nursing knowledge was not strong enough. The researcher's point of view suggests giving staff members opportunities to assume roles beyond primary responsibility, gain new skills and knowledge to work, access the session for learning new things and encourage achievement. It also increases the motivation to expand their skills further. The educational session was effective in raising staff nurses' awareness. The session shows a significant impact increase in the participants' level of knowledge and practice, reinforcing the continuing need for more education about ectopic pregnancy. It also increases the motivation to expand their skills further. Finally, the session has a great effect because continuing education plays a significant role in equipping nurses to deal with the significant changes currently impacting health care. Nurses today need knowledge and skills to perform and practice their job *(Yeola & Jaipuriya, 2016)*.

As regards the correlation between socio-demographic characteristics, knowledge, and practice scores, the result showed that there was a statistically significant correlation between total knowledge and the study sample' qualifications, experiences, and training, and there was a statistically significant correlation between total knowledge and the study sample' age ($p < 0.05$). This result agrees with *Şahin et al. (2015)* that represented a significant association between the level of knowledge and skill with selected demographic variables among nurses. Also, *Mitchell (2016),* who studied "day surgery nurses' selection of patient preoperative information," explored the perceptions of new nursing graduates regarding clinical judgments and education. The investigator evidenced that experienced nurses considered helpful in learning and in making clinical judgments. Also, they believe in their role in making decisions.

A contradiction to these associations, the current study reveals no statistically significant correlation between the total practices score of studied nurses and socio-demographic characteristics pre and post-program. This finding contradicts *Gerlitz (2017),* who study "barriers and facilitators of preoperative education within an enhanced recovery after surgery," and reported that the youngest ages were associated with the best performance for the reason that they are recently skilled and knowledgeable of risk factor. They are relatively new to apply practices. Additionally, *Berry, Davey, Hon, and Behrens (2016),* studied "5-year experience of the changing management of ectopic pregnancy." The study evidenced a significant relationship between the nurses employed in the hospital for a long period and their experience in the hospital and improvement in the practice and knowledge.

7. Conclusion

Based on the present study results, the following can be concluded: The results support the research hypotheses in which implementing nursing guidelines was highly significantly improved maternity nurses' knowledge and practice regarding ectopic pregnancy when comparing between pre and post-program implementation levels. Also, there was a highly statistically significant association between socio-demographic characteristics: age, qualification, experience, attendance of training course, and nurses' knowledge. Thus this study showed that educational intervention regarding ectopic pregnancy was evidenced to be very useful in improving the level of knowledge and skill among nurses working in the maternity units.

8. Recommendation

Based on the findings of the current study, the following recommendations are suggested:

- Adopt the nursing guidelines in maternity units in order to standardize the nursing practice for caring the women with ectopic pregnancy
- Orientation programs and continuous training should be provided for all newly maternity nurses about ectopic pregnancy.
- Maternity nurses should add to their routine obligations the regular reading of up-to-date references and be encouraged to attend scientific meetings and conferences to improve the quality of care regarding ectopic pregnancy.
- Periodic evaluation of knowledge and practices for maternity nurses working in Obstetrics and Gynecological department to assess nurses' educational needs.

9. References

Abbott, L. (2016). Ectopic Pregnancy: The role of midwives in the community. Nursing in Practice. https://www.nursinginpractice.com/clinical/womens-health/ectopic-pregnancy-the-midwifes-role-in-the-community/

Abd Elmordy, Z., Fahmy, N. M., & Omran, A. A. H. (2018). Effect of an instructional package on nurses' performance regarding obstetrical emergencies, Faculty of Nursing, Benha University. Doctorate Thesis.

Abd El Hakam, E. & Refaat, E., (2017). Developing Nursing Management Protocol for Maternity Nurses Regarding Emergency Obstetric Care. Faculty of Nursing, Benha University.

Abd El-Kader, L. M., Salim, H. T., Yousef, A. A. & Mohamad, H. S., (2014). Study on the Management of Ectopic Pregnancy in Women's Health Center-Assiut University Hospitals. *Med. J. Cairo Univ*, *82*(1), www.medicaljournalofcairouniversity.net

Berry, J., Davey, M., Hon, M. S., & Behrens, R. (2016). A 5-year experience of the changing management of ectopic pregnancy. Journal of Obstetrics and Gynecology, *36*(5), 631-634. https://doi.org/10.3109/01443615.2015.1133578.

Bhandari, T. & Dangal G., (2014). Emergency obstetric care: Strategy for reducing maternal mortality in developing countries, *l9*(1).

Devi, S. K., (2015). Assess the knowledge of staff nurses regarding obstetric emergencies in a selected hospital, Salem, Tamilnadu. *International journal of nursing and education and research*, *3(1).*

El Adawy, B. M. (2016). Evaluation of prognostic value of Fernandez Scoring System on the management of ectopic pregnancy. Suez Canal University. Faculty of Medicine. Department of Emergency Medicine.

Elson, C.J., Salim, R., Potdar, N., Chetty M. & Rosst, A., (2016). Diagnosis and treatment of Ectopic Pregnancy. Green – Top Guidelines. NO, 21, Royal College of Obstetrics and Gynecology.

Fuji, K. T., Abbott, A. A., & Norris, J. F. (2013). Exploring care transitions from a patient, caregiver, and healthcare provider perspectives. *Clin Nurs Res*, *22*(3), 258–274. https://doi.org/10.1177/1054773812465084.

Gerlitz, R. (2017). Barriers and facilitators of preoperative education within enhanced recovery after surgery (Eras) programs: University of Lethbridge master project work.

Ghaneie, A., Joseph, R., Grajo, M., Derv, CH., & Tood, R. (2015). Unusual ectopic pregnancy. *Journal of Ultrasound in Medicin*. Willey online Library, 34(*6*). https://doi.org/10.7863/ultra.34.6.951

Haestier, A. (2017). Guidelines on the diagnosis and management of ectopic pregnancy and pregnancy of unknown location. Norfolk and Norwich university hospitals.

Jasim, R. M. & Al Mokhtar, S. H. (2015). Nurses' knowledge and practice regarding gynecological laparoscopy in maternity teaching hospital in Mosul City. *Mousl nursing journal*, *3*(2), 73-80. https://doi.org/10.33899/mjn.2019.160024

Jose, A. (2012). A study to assess the effectiveness of self-instructional modules on knowledge regarding assessment and management of ectopic pregnancy among staff nurses in selected hospitals at Mangalore. Indira Nursing College. Rajiv Gandhi University of Health Sciences Karnataka, Bangalore.

Kavitha, P., Tesfay, A., Prasath, A., Serek, Y., & Girmay, S. (2014). The assessment of level of knowledge of staff nurses on emergency obstetrics management, Orotta national referral maternity hospital, Asmara. *International journal of medical sciences of clinical research*, 2(*4*).

Kim, S., & Shin, G. (2016). Effects of nursing process-based simulation for maternal child emergency nursing care on knowledge, attitude, and skills in clinical nurses. *Nurse Education Today*, *37*, 59-65. https://doi.org/10.1016/j.nedt.2015.11.016

Krissi, D. (2019). Ectopic pregnancy statistics. Pregnancy loss, causes, and risk factors. Very well family.

Lynna, Y., & Engebreston, C. (2015). Management and nursing care of high-risk client. Ectopic pregnancy. Maternity nursing care. Chapter 11. International edition.

Magowan, B. & Owen, P. H. (2014). Ectopic pregnancy. Clinical obstetrics and gynecology. 3rd edition. Elsevier. Pp. 88-90.

Mitchell, M. (2016). Day surgery nurses' selection of patient preoperative information, *Journal of Clinical Nursing*, *26*, 225–237. https://doi.org/10.1111/jocn.13375

Nordqvist, D. R. & Wilson, C. H. (2017). Ectopic pregnancy symptoms, causes, risks, and treatment. Medical news today. *Nursing*, *44*(2), 146-155.

Otolorin, E., Gomez, P., Currie S., Thapa, K., & Dao B. (2015). Essential basic and emergency obstetric and newborn care: From education and training to service delivery and quality of care*. Int J Gynaecol Obstet*. 2, S46-53. https://doi.org/10.1016/j.ijgo.2015.03.007.

Punches, B. E., Johnson, K. D., Gillespie, G. L., Acquavita, S. A., & Felblinger, D. M. (2018). A review of the management of loss of pregnancy in the emergency department. *Journal of Emergency***.** 44(2):146155. https://doi.org/10.1016/j.jen.2017.11.00

Refaat, A., & Mohammed, N. (2018). Evaluation of the effect of evidence-based guidelines for maternity nurses to cope with aborted women. Faculty of Nursing, Benha university. *International journal of nursing and health*. 5(*1*), 14-22.

Şahin, A., Ayhan, F., Öcal, H. S., & Çayır, A. (2015). An assessment of the preoperative information given to patients in the province of Karaman. *International Journal of Human Sciences*, *12*(2), 1111-1119. https://doi.org/10.14687/ijhs.v12i2.3348

Shiel, J.R., & Williams, C. (2018). Definition of Ectopic Pregnancy. RXLIST. Available at (https://www.rxlist.com /script /main /art.asp? articlekey=3188)

Yeola, M. & Jaipuriya P. (2016). Effect of preoperative counseling on postoperative outcome in surgery patients: *International Journal of Science and Research*, *5*(7), 762-767.

Zone, C. P. D., & Guide, S. (2017). Ectopic pregnancy–the midwife's role in the community. Sign, 3531(952).