Education Program on Maternity Nurses' Performance Regarding Obstetric Fistula: A Need-Based Action Plan

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Abstract

Background: Obstetric fistula must be eliminated to establish sustainable development by 2030 as it often results in horrific or challenge situations that frequently affect the women. **Aim** of the current research was to evaluate the effect of education program on maternity nurses' performance regarding obstetric fistula. **Subjects and Methods: Research design:** The research methodology was a quasi-experimental one. **Setting:** The study was done at the labor unit of the maternity hospital at Zagazig University Hospitals in Egypt's Sharkia Governorate**. Subjects:** A convenience sample of 50 nurses gave women in labor direct nursing care. **Tools of data collection:** A self-administered questionnaire, Knowledge Assessment Sheet for Maternity Nurses, Observational Skills Checklist and Likert Scale for Maternity Nurses' Attitude. **Results:** There was significant improvement in nurses' knowledge, practice, and attitudes towards obstetric fistula after application of education program compared to preprogram (p-value < 0.05). Likewise there was a positive correlation (p-value 0.05) between the nurses' knowledge assessments and their performance, attitude, and age scores. A favorable correlation between practice scores of nurses and their age and experience years was also found with statistically significant difference. **Conclusion:** The research hypothesis was supported and compared to before the educational intervention program was implemented, during the stages of labor, it was a very significant statistically improvement in the nurses' knowledge, practice and attitudes regarding obstetric fistula. **Recommendations:** Offer training courses or seminars on preventing obstetric fistulas to help nurses improve their best practices.

Key words: Education program, Maternity nurses' performance, obstetric fistula.

Introduction

Obstetric fistula (OF), which has been identified as one of the most obvious indications of maternal morbidity on a worldwide, is still a substantial obstetrical concern in low-resource nations. Obstetric trauma, usually from a protracted, obstructed labor, can result in obstetric fistulas, which are permanently disabling birth-related injuries that form an improper hole between the vaginal tract and the gastrointestinal system (rectovaginal fistula is the most common type) or the urinary tract (urogenital fistula) [(1)].

Obstetric fistula (OF), is a public health issue for women and their communities in underdeveloped nations, particularly in Africa and Southeast Asia. The WHO estimates that there are 130 000 new cases of obstetric fistula every year, assuming that 2% of the 6.5 million episodes of obstructed labour that occur in poor countries contain fistula [(2,3)] .

A variety of physical and psychological problems, including a life-threating birth injury called an obstetric fistula, can result from difficult delivery injury complex, which can also cause a number of other birth injuries. When the presenting fetal part continuously compresses the birth canal tissue, bladder base, urethra, or occasionally the rectum, producing ischemia and necrosis of the tissue, a

woman with obstructed labor will develop a fistula. For similar reasons, obstetric fistula is more common in nations with high rates of maternal death [1].

Evidence suggests that areas with inadequate emergency obstetric care, a lack of healthcare workers, and underinvestment in maternity services are more likely to experience vaginal fistulas [4]. Other sociocultural aspects that are involved in high level of obstetric fistula prevalence in sub-Saharan Africa include female genital mutilation, home births, ineffective implementation of polices for female education, early marriage, and misperceptions regarding delivery techniques [5].

Women who have obstetric fistulas commonly experience frequent infections, kidney disorders, and occasionally infertility. They also often experience mobility difficulties and abrasive rashes and sores around the vagina. In extreme situations, this illness can result in maternal and fetal mortality. Its effects include urine, blood, or feces incontinence [6] .

Obstetric fistula can be treated with a variety of techniques according to the extent of harm, mechanisms of injury, involvement of the sphincter, timing of diagnosis, healthiness of the tissue, including scarring, and earlier attempts at repair; in either instance, surgical reconstruction offers a long-lasting cure. Although though there are treatments for this ailment, many female, especially those who reside in rural areas, continue to suffer from it for a longer amount of time [6].

One from the essential steps to achieving the third Sustainable Development Goal (SDG) by 2030 is to eradicate obstetric fistula [7]. As a result, the government developed and put into practice a number of strategies, including those to decrease pregnancy in teenagers, increase accessibility to obstetrical care, educate the community about the hazards of OF and establish management methods to prevent obstetric fistula [7] .

Therefore, the greatest obstacle to limiting complications and improving prompt treatment-seeking behavior is a lack of understanding among communities regarding risk factors, prevention strategies, and provision of obstetric fistula care. Hence, educating women of childbearing age about OBF is essential to lowering morbidity, mortality, and societal stigma. Women may be able to take the necessary precautions to prevent OBF with the use of adequate knowledge and recognition of the predisposing risks, etiology, and available treatments for the obstetrics fistula [9].

Nurses are the first responders in healthcare, especially when it comes to caring for pregnant women and newborns, and they are essential to reducing baby and maternal diseases and mortality. In addition, a critical role in fistula prevention is conducted by nurses as well as in the management of the condition and the rehabilitation of afflicted women into society after that. Also, the elevated occurrence of attributable fistula linked to inadequate treatment, poor management, and unfavorable attitudes among healthcare professionals, as reported in multiple researches, highlights the need for health care professionals to possess the necessary skills, traits, and practices [10].

The skills, knowledge, and judgment needed for proper and moral nursing practice are called competencies. In order to practice correctly and successfully respond to modifications in the healthcare environment, a nurse who is registered must use an extensive range and width of knowledge, abilities, practices, and judgment. According to a standard determined to be acceptable for the level of the nurse to be examined, the nurse is considered competent if she possesses competence in all areas of competence that are relevant to her. Competency is the combination of knowledge, abilities, and attitudes that maternity nurses must possess in order to provide adequate nursing care during labor in order to prevent obstetric fistula [11].

In order to be considered competent in the field of maternity care, nurses must have the abilities and character traits required to carry out their duties in an efficient manner while integrating a variety of knowledge, techniques, attitudes, thinking skills, and values that are necessary in particular situations. The ability to offer care based on professional knowledge and skills can be broken down into three categories: professional attitudes and behaviors, personal characteristics necessary for nursing, and the capacity to do so [(11)].

Significance of the research:

Obstetric fistula is still a serious neglected problem in low-resource nations, and it's been noted as one of the maternal morbidity's most noticeable symptoms [(1)]. Approximately two million women worldwide suffer from untreated obstetric fistulas; however, this figure could be underestimated due to the scarcity of information regarding these disorders. Worldwide, there are 50,000 to 100,000 new instances of fistula per year. Of them, about 33,000 women reside in Sub-Saharan Africa, where the disease affects roughly 1.57 out of every 1,000 women and 1.62 out of every 1000 women in Ethiopia who are of reproductive age. To prevent this condition and achieve sustainable developmental goals by 2030, which sought to enhance maternal health, this can be done if the nurses have the skills and expertise to stop OF and treat it when it does occur. Although nurses must be present during births to provide safe maternity care, their skills and abilities are more important than their presence [(12)]. Having access to skilled birth attendants and urgent obstetric care helps prevent obstetric fistula [(13)].Additionally, no research study that examines the impact of educational programs on nurses about obstetric fistula at Zagazig University has been found, either published or unpublished. So, this study was done to evaluate the effect of education program's on maternity nurses' performance regarding obstetric fistula.

Aim of the study:

The aim of the study was to evaluate the effect of education program on maternity nurses' performance regarding obstetric fistula.

The specific goals were to increase knowledge about obstetric fistula, enhance nurses' practice in this area and assess attitudes towards obstetric fistula.

Research Hypothesis:

Following the application of the education program, maternity nurses' knowledge, attitudes, and practices surrounding obstetric fistula will improve.

Operational Definitions

Performance: refers to the knowledge, abilities, and attitude that maternity nurses must possess in order to provide adequate nursing care during labor with the goal of preventing obstetric fistula .

Obstetric fistula: is a gap among two body parts, such as the vagina and the bladder or the rectum that causes constant urine or feces leakage in the vagina.

Educational program: This pertains to the structured oral and written education that includes goals, strategy, and visual assistance.intended to give maternity nurses with the fundamental information, positive perspective, and health practices about obstetric fistula and how to prevent it.

Subjects and Methods:

The method utilized to accomplish the study's aim was explained using the following four steps: technical, administrative, operational, and statistical designs.

A. Technical step: It included description of the research design, study setting, sample and tools of data collection.

Research Design: To achieve the goal of this research, a quasi-experimental research design (one-group, pre-test / post-test design) was used. It calls for the application of a second observation (referred to as a post-test)

at various points after the intervention has been applied to nurses.

Setting: This research was conducted in the maternity hospital, labor unit at Zagazig University Hospitals. It is a significant hospital in Zagazig City. Most of the women who visit this place are from Zagazig city and the nearby areas, though they come from all throughout Sharkia Governorate in Egypt. It provides cheap healthcare for ladies with obstetrical problems in comparison to other private centers and clinics.

Sample: A convenient sampling was utilized.

Sample size: All maternity nurses (50) who were providing nursing care to women during delivery in the labor unit and who have varying levels of education, experience, and age were included in this research.

Tools of data collection: The data collection tools for this study were:

Tool I: A Self-administered Questionnaire :

It includes data about the socio-demographics of the nurses, such as their ages, level of education, number of years working in the labor ward, and participation in obstetric fistula prevention training.

Tool II: Knowledge Assessment Sheet for Maternity Nurses: The researchers created it using a nursing review [3] [8]. Additionally, based on prior interactions with nurses in a clinical sitting, 13 questions about obstetric fistula definition, common types, causes, predisposing factors, signs and symptoms, diagnosis, prevention, surgical repair, preoperative management, postoperative management and discharge advice were included. These questions to evaluate the nurses' knowledge about obstetric fistula. There are two choices for each item; yes and no.

Scoring system of knowledge: The following scoring system was used: 2 points for the right answer, zero point for a wrong or unanswered response. For every study nurse, the percentage of correct answers was determined as (number of correct answers ÷ total questions × 100). Summation of all questions including knowledge; the total score of each aspect ≥75% indicates satisfactory and <75% indicates unsatisfactory.

Tool III: Observational Skills Checklist :

A performance checklist that was updated by the researcher and adopted from (ECSA-HC and Fistula Care Org) [14] to evaluate nurses' skills when providing care for obstetrics fistula women, which entails seven procedures: physical assessment (10 items), using the partograph (6 items), catheterizing the urine (4 items), performing a dye test (4 items), providing preoperative care (14 items), postoperative care, discharge advice and follow-up (16 items).

The scoring system of an observational checklist: consisted of assigning a score of 2 to the step that was done and a score of 1 to the unfinished or not done step. The high level of scores showed adequate practice in performance.

Scores below 75% are characterized as uncompetent practice, while scores equal or above 75% suggest competent practice.

Tool IV: Likert Scale for Maternity Nurses' Attitude: It was created to assess the maternity nurses' attitudes towards obstetric fistula and translated into Arabic by the researchers, adapted from Dahal and Shakya [15]. It includes 10 items which consisted from an obstetric fistula can develop at any point during pregnancy; causes as prolonged labour, sexual violence, malnourished women are more likely to develop one, delivery at home is a risk factor for obstetric fistula recurrence, antenatal checkup reduces obstetric fistula, etc.) Receiving obstetric treatment early enough reduces the likelihood of getting fistula, as can delay marriage and spacing out deliveries. Obstetric fistula is a societal problem as well as a treatable and preventable disease .

It includes 10 items and it divided into 3 scores (agree = 2, neutral = 1 and disagree =zero). Total attitude score ≥ 75% considered positive attitudes and score less than 75% considered negative attitudes.

Content Validity and Reliability:

Three obstetrics and gynecological nursing specialists as well as two specialists in obstetrics and gynecologic medicine evaluated the procedures to determine their content validity. They made adjustments in

accordance with their judgment. Each of the instruments utilized was composed of primarily homogenous components, according to the Cronbach's Alpha reliability test, Knowledge reliability was 0.917, attitude reliability was 0.859, and performance reliability was 0.64.

Pilot study:

The research tools were tested for clarity and applicability on 10% of the sample (5 nurses), and an estimation of the needed time to complete the tools was made. The primary sample of the study includes nurses from the pilot trial.

Field work:

The research was conducted in the following stages after gaining formal consent from the director of Zagazig University Hospital; Data collection took a period of six months, from the first of April 2023 to the end of September 2023. The researcher started the data collection for 3 days per week from10 AM to 5 PM (Saturday, Tuesday, Wednesday). In order to achieve the aim of the research, the following phases were selected and achieved.

- **Preparatory phase:** The researchers read current and historical literature related to the study topic in order to develop a full theoretical understanding of the various aspects of the problem. For this, a variety of sources were used, including books, journals, textbooks, online pieces from scientific periodicals, newspapers, and magazines. This made it easier to select the tools and validate the data sets to be collected. The development of study tool and an intervention study sessions were completed. It covers the training and theoretical aspects and had been written in Arabic.

- **Assessment phase:** In this phase, the researchers introduce themselves to maternity nurses and explained the purpose and importance of the study. Hence, the approval for participation was secured from each nurse. Data collection for the pre-test continued for2months.The researchers administered four measurement tools as a pretest for maternity nurses: A Self-administered Questionnaire ,knowledge assessment sheet, observational checklist for nurses' practice and maternity nurses' attitude Likert scale and researchers observed each nurse individually (tool1,tool2 ,tool 3 and tool 4). It typically takes between 20 and 30 minutes to complete the questionnaire.

- **Phase of planning**: Based on the findings of the pre-intervention evaluation of nurses' knowledge, attitudes, and skills. The researchers prepared the informational brochure in an effort to improve knowledge, practice of obstetric fistulas. Afterwards supplied to maternity nurses for using it as a self-learning to improve their understanding and performance regarding obstetric fistulas. The number of sessions and their subject matter were decided. The researchers' teaching techniques included group discussions, demonstrations, and repeated demonstrations. The researchers also used a movie as a teaching medium, together with partograph sheets, vulval and vaginal simulator parts, and a Foley catheter. 60cc bladder syringe with large nozzle Urinary bags, a genital speculum, adye or gentian violet, a probe, lubricant, a kidney basin, gauze, and sponge-holding forceps are all required.

- **Phase of implementation:**

That included the use of the education program which had five sessions, one of which was held each week: in the first theoretical session include the term "obstetric fistula," its various types, reasons, risk factors, signs and symptoms, diagnosis, complications, medical management, surgical repair, preoperative and postoperative management of fistula, and nursing care.

- In order to prevent obstetric fistulas, nurses must practice during four sessions.
- There were two stages to the performance session for preventing obstetric fistulas, which lasted for about five weeks .

Stage I: Developing skills: It consisted of 2 sessions, each lasting 60–80 minutes, covering topics such urine catheterization, how to complete a partograph sheet, and procedures for a physical assessment and a dye test by the researcher .

Stage II: Competency skills: It was divided into two separate sessions lasting 45 to 60 minutes each, during that; nurses were permitted by the researchers to carry out preoperative, postoperative care, discharge, and following-up until they were competent to do so, while the researchers watched and gave feedback (overt observation) using learning guides. Each session began with comments from the previous one, a review of what had been covered, and an explanation of the goals for the upcoming one. Each session's goals were explained to the nurses by the researchers at its conclusion.

- **Evaluation phase:** The post-test was given to the nurses by the researchers as soon as the competency intervention sessions (Tool I, second part, Tool II, and Tool III) were over. The researcher also observed the nurses' actual skills (practice) while they were used during various stages of labor; each specific observation took place for about 30 minutes. The stage of evaluation lasted six weeks. To protect the privacy of the information collected, all questionnaires and checklists for observation were stored behind locked doors.

Flowchart for education program for nursing

Administrative and Ethical consideration:

Before beginning the study, the Scientific Research Ethical Committee of the faculty of Nursing, Zagazig University gave its agreement on March 19, 2023. For the purpose of carrying out the research, official consent from the chosen study settings was obtained. The study's ethical considerations were taken into account at all times: the research maintained an anonymity and security of subjects. The researchers introduced himself to each nurse and briefly explained to nurses the scope and purpose of the study before engaging in the study. Nurses were told that the research technique would not do them any real or possible harm. In addition, they were assured that professional help will be provided for them whenever needed. Nurses were also told that the data taken during the analysis would be confidential and only used for the purpose of the research

Statistical analysis:

The data were acquired, tabulated, and statistically analysed using SPSS 20.0 for Windows (SPSS Inc., Chicago, IL, USA 2011,). Quantitative data were described using the mean, standard deviation, and (range), whereas qualitative data were expressed using absolute frequencies (number) and relative frequencies (%).When appropriate, the percentage of categorical variables was compared using the Chi-square test or Fisher's exact test.The MC Nemar test was used to compare two dependent categorical variables. The Spearman rank correlation coefficient was computed in order to assess the correlations between the different research variables. Direct and inverse connections are indicated by the (+) and (-) marks, respectively. Strong correlations are shown by values close to 1, whilst weak correlations are indicated by values close to 0. Each test included two sides. P values less than 0.05 were classified as statistically insignificant (NS), p values greater than 0.001 as extremely significant, and P values greater than 0.05 as statistically significant (S).

Results:

Table 1: Demographic details of the examined nurses are presented in Table 1. The mean age of nurses was 27.86±5.16 years. 74% of them were staff nurses. In addition, the majority of them (86.0%) had never taken a course on preventing obstetric fistula.

Table 2 demonstrates a statistically significant difference (P<001) in the findings of the post-intervention compared to pre-intervention concerning knowledge of nurses to prevent obstetric fistula. Pre-intervention knowledge of obstetric fistula was unsatisfactory for the vast majority of nurses (96.0%). More over three quarters (78.0%) of the study's nurses had adequate knowledge about obstetric fistula once the educational intervention was put into place.

According to **Table 3**, the difference in the mean scores in attitudes of nurses concerning obstetric fistula between educational intervention's pre and post periods was statistically significant (p<0.001).
In relation to physical assessment, the use of a partograph, urinary catheterization, perform a dye test, preoperative and postoperative care, discharge, and follow-up,

Table 4 demonstrates that there were highly statistically significant differences (p<0.001) between the pre- and post-educational intervention nursing practice.

Figure 1 shows that after implementing the education program, knowledge of nurses and performance level in the stages of labor to prevent obstetric fistula was enhanced compared to before intervention (78.0%, 32.0% & 4.0%, 6.0%) respectively.

According to **Table 5**. There is a correlation related to the age of nurses and their knowledge, attitude, and practice scores. Nurses' attitude, practice, age, and years of experience all had positive correlations. A favorable correlation between practice scores of nurses and their age and experience years was also found with statistically significant difference.

Discussion:

Obstetric fistula still causes worry and anxiety in underdeveloped nations. In order to take effective action to reduce obstetric fistula, it is important to evaluate the degree of nurse's knowledge and practice about this illness condition. The most serious adverse health condition that affects women after childbirth is thought to be obstetric fistula Rundasa et al. [12]. The foundation of providing care for women with obstetrical emergency is ongoing education and training for nurses. In order to retain competency and guarantee women receive safe and effective care, nurses are given new performance criteria to improve protocols for caring for women with obstetric emergencies [15].

The present study's findings show that more than half of the nurses were over the age of 25 years and half of them had technical nursing education. In addition, the majority of them lacked training in obstetric fistula. This is matching with the study of Ali et al [10] in Egypt who stated that 42.5% of nurses were between the ages of 25 and 35, half of them had technical institute and seventy-five percent of them had no training about obstetric fistula prevention. In this respect, Abakar [16] study in Sudan showed that 66.0% of nurses had not completed any obstetric fistula training programs, and more than half of nurses had technical nursing diplomas. The majority of nurses were in the age 26–30 years old.

According to the current study's findings, there was a lack of knowledge about obstetric fistula. More than three quarters of the studied nurses had satisfactory knowledge of obstetric fistula after the educational intervention, whereas the majority of them had unsatisfactory knowledge before the intervention. This lack of knowledge about obstetric fistula may be due to that half of the studied nurses had technical education level and the majority of them lacked training about obstetric fistula. In order to update knowledge and help improve skills, maternity nurses should regularly attend refresher courses about obstetric fistula.

Similarly, Ali et al. [10] study reported that, less than two thirds of the study's nurses had inadequate knowledge scores prior to intervention. This was also confirmed by Asefa et al. [8] study revealed that more than half of the group that was examined lacked knowledge about obstetric fistula. Furthermore, Dahal and Shakya [17] study reported that, less than two thirds of the study sample had a poor understanding of obstetrics fistula, which indicates a lack of information prior to the program. This could be caused by the fact that nurses weren't given enough knowledge on obstetric fistula or because they needed to update their in-service training on high risk factors for obstetric fistula.

The study findings were contradicted by Azanu et al. [13] study, in which the nurses had good understanding of obstetric fistula. The disparity might be explained by the different sample sizes. As compared to before the educational intervention, the current study's findings revealed a highly substantial nurses' knowledge has improved of every subject pertaining to obstetric fistula. This may be attributable to education program and intervention sessions that improved nurses' knowledge and performance in regards to obstetric fistulas. This is in the same line with Nannyonga and Singull [18] who stated that, Obstetric fistula can be eliminated by expanding access to high-quality health education.

These results were corroborated by Imran [19] study stated that, In order to reduce the incidence of obstetric fistula, it was suggested that training and retraining of health professionals in primary health care facilities would be necessary to emphasize the crucial role of bladder catheterization after a protracted or difficult labor. The majority of health professionals lacked knowledge of catheterization in the prevention of obstetric fistula. Moreover, Heera et al. [20] study reported similar results.

The present study also showed that, the difference between the mean scores of nurses' attitudes towards obstetric fistula after the implementation of educational intervention and before intervention was highly statistically significant. This is in agreement with Ali et al. [10] who clarified that, with regard to all of the examined nurses' attitudes towards obstetric fistula, the post-intervention findings in comparison to before intervention showed a highly statistically significant difference. Moreover, Maeri [15] study stated that the attitudes of responders towards vesico-vaginal fistula were favorable in one-third of cases. The findings of this study are opposed with Bello and Lawal [21] who demonstrated that a higher percentage of nurses had good attitudes about prevention of obstetric fistula.

The present study also reflected that, compared to before intervention, nurses' performance during labor to avoid obstetric fistula was improved. It shown that nurses' performance ratings improved as a result of the intervention. This demonstrated that the education program had a positive effect on nurses' performance with regard to obstetric fistula. Additionally, nurses gained accurate knowledge throughout the post-intervention phase, which significantly impacted their practices. That's consistent with Ali et al. [10] study that showed that, at the beginning of the intervention, less than one-third of the nurses had sufficient practice with obstetric fistula; however, by the end of the intervention, more than four-fifths of the nurses had sufficient practice. This is in harmony with the study of Mustafa et al. [22] who showed that, in terms of partograph at post practice scores; over three quarters of the nurses in the study had good levels of practice.

Moreover, these results were consistent with AbdElfattah, et al [23] showed that, in both rounds of assessment, there was a statistically significant difference in practical skills including perineal care, abdominal inspection, vaginal examination, handling, fundus evaluation, and placental examination. These results were supported by AbdElmordy et al [24] who demonstrated that, after implementing the training package, most of nurses had competent practice using urethral catheterization to avoid obstructed labor.

The findings of this study showed a positive relation between the nurses' overall knowledge score, attitude score, and performance score. This confirms that nurses gained the appropriate knowledge during the

post-intervention phase, which positively impacts attitude and practices. This is comparable to that reported by Ali et al. [10] study who reported that the scores for overall pre- and post-intervention knowledge, practices, and attitudes were strongly statistically positively correlated. Nursing practices, prevention, and care of obstetric fistula are frequently limited by a lack of understanding, which explains the strong association between their knowledge and practice.

These results were matched with AbdElmordy et al. [24] showed that, total knowledge and total practice scores showed a positive statistical correlation before, immediately after, and during follow up phases of intervention. Additionally, Abd Elfattah et al. [23] discovered that there was a statistically significant positive association between total knowledge and total practice scores prior to, immediately following, and during follow up phases of the deployment of the instructional package.

Conclusions:

The results of the study demonstrated that, when an education program was applied, there was a highly statistically significant improvement in the knowledge and practice level of nurses during the different phases of labor to prevent obstetric fistula. Additionally, the aforementioned findings supported and validated the study's hypothesis.

Recommendations:

- Upgrading nurses' continued in-service training to improve their skills in obstetric fistula prevention and management.
- It is important to establish competency-based guidelines and standards for midwifery practice.
- Planned instructional interventions are necessary to improve nurses' performance.
- Future researches to enhance maternity care services and reproductive health in order to identify and prevent cases of obstetric fistula.

Table (1): Nurses' distribution according to their sociodemographic status (n=50):

Items	no	%
Age per years		
≤25	23	46.0
>25	27	54.0
mean± SD	27.86±5.16	
range	19-39	
Qualification of Nurses		
Nursing school diploma	12	24.0
Technical institute	25	50.0
Bachelor	13	26.0
Job position		
Staff nurse	37	74.0
Head nurse	13	26.0
Previous training courses about prevention of obstetric fistula		
Yes	7	14.0
No	43	86.0
Years of experience		
≤5	26	52.0
>5	24	48.0
mean± SD	5.7±4	
range	2-20	

Table (2): Pre and post intervention knowledge levels of nurses regarding obstetric fistula (n = 50).

Items	Knowledge				Mc p
	Pre-intervention		Post-intervention		
	no	%	no	%	
Knowledge Obstetric Fistula (8)					
Satisfactory	7	14.0	41	82.0	<0.001
Unsatisfactory	43	86.0	9	18.0	
Mean ± SD	4.04±1.19		6.58±1.5		
range	2-7		2-8		
Knowledge Prevention Obstetric Fistula (5)*					
Satisfactory	13	26.0	41	82.0	<0.001
Unsatisfactory	37	74.0	9	18.0	
Mean ± SD	2.76±1		3.98±0.65		
range	1-5		2-5		
Total Knowledge Obstetric Fistula (13)*					
Satisfactory	2	4.0	39	78.0	<0.001
Unsatisfactory	48	96.0	11	22.0	
Mean ± SD	6.8±1.58		10.56±1.6		
range	4-10		5-12		

McNemar Test ()* maximum score p<0.001 highly significant

Table (3): Comparison level of nurses' attitude regarding obstetric fistula pre and post intervention program (N = 50):

	attitude				Mc p
	Pre intervention		Post intervention		
	no	%	no	%	
Attitude toward Obstetric Fistula (10)*					
Positive	2	4.0	26	52.0	<0.001
Negative	48	96.0	24	48.0	
Mean ± SD	4.18±0.63		7.38±1.4		
range	4-7		4-10		

()*Maximum score ()* maximum score McNemar Test p<0.001 highly significant

Table (4): Level of nurses' practice regarding obstetric fistula pre and post intervention (N = 50).

Practice Items	Practice of nurses				Mc p
	Pre-intervention		Post-intervention		
	no	%	no	%	
Physical Assessment (10)					
Competent	3	6.0	12	24.0	<0.001
Un competent	47	94.0	38	76.0	
Mean ± SD	3.3±2.3		5.48±2.6		
range	1-10		0-10		
The Use of Partograph (6)					
Competent	1	2.0	41	82.0	<0.001
Un competent	49	98.0	9	18.0	
Mean ± SD	2.58±1.16		5.14±0.76		
range	0-6		3-6		
Urinary Catheterization (4)					
Competent	4	8.0	11	22.0	0.01
Un competent	46	92.0	39	78.0	
Mean ± SD	1.08±1		1.82±1.3		
range	0-4		0-4		
Perform a dye test (4)					
Competent	19	38.0	32	64.0	<0.001
Un competent	31	62.0	18	36.0	
Mean ± SD	2.44±1.3		3.12±1.02		
range	0-4		0-4		
Preoperative Care (14)					
Competent	2	4.0	7	14.0	0.125
Un competent	48	96.0	43	86.0	
Mean ± SD	4.94±2.3		8.32±2.1		
range	1-12		4-13		
Postoperative Care, Discharge and Follow-Up (16)					
Competent	5	10.0	50	100.0	<0.001
Un competent	45	90.0	0	0.0	
Mean ± SD	7.66±2.3		14.5±0.58		
range	6-16		14-16		
Practice of Nurses during stages of labor (54)					
Competent	3	6.0	16	32.0	<0.001
Un competent	47	94.0	34	68.0	
Mean ± SD	22.1±6.1		38.38±4.2		
range	13-44		31-47		

()* maximum score **McNemar Test p<0.001 highly significant**

Table (5): Correlation between nurses' knowledge, attitude, practice scores, age of nurses, and years of experience after education program (n=50):

parameters	Nurses 'knowledge score		Nurses' attitude score		Nurses' practice score	
	(r)	p	(r)	p	(r)	p
Nurses' attitude score	0.360*	0.01	1	-	0.295*	0.037
Nurses' practice score	0.382**	0.006	0.295*	0.037	1	-
Age (year)	0.313*	0.027	0.363**	0.01	0.480**	0.0001
Experience (year)	0.327	0.02	0.41**	0.005	0.384**	0.006

(r) correlation coefficient *significant p<0.05 **significant p<0.01

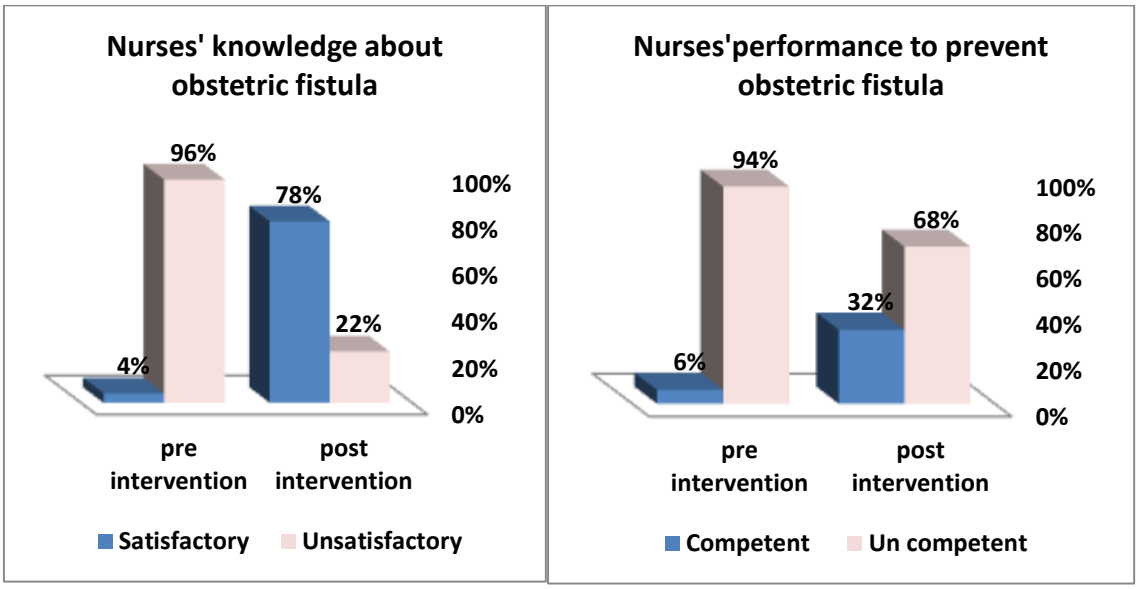

Figure 1. Pre- and post-intervention knowledge and performance of nurses regarding obstetric fistula.

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