Assessment of Nurse's Practical Skills Regarding avoidance of Postpartum Hemorrhage

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Abstract

Background: Postpartum hemorrhage is the most common cause of maternal mortality worldwide, **AIM**: of this study was to assess nurses's practical skills regarding avoidance of postpartum hemorrhage. **Design**: descriptive design. **Setting**: The study was conducted in obstetrics and gynecology department of Benha university hospital .**Sample**: A convenient sample of 50 nurses. **Tools**: The tools of data collection were: self administrated questionnaire sheet, modified likert scale and observation checklist for avoidance of postpartum hemorrhage. **Results**: The present study showed that, two thirds of nurses had average knowledge regarding postpartum hemorrhage. And ante natal prevention of postpartum hemorrhage, three quarters of nurses had poor knowledge regarding intra-partum care ,more than half of nurses had average knowledge regarding postpartum care , more than two thirds of nurses had uncertain attitude , more than three quarters of nurses had incorrect practices ,All nurses of this study don't perform some practices such as : wound care , enema and urinary catheter insertion . **Conclusion** : The present study showed that ,more than three quarters of nurses had average knowledge about avoidance of postpartum hemorrhage ,more than two thirds of nurses had uncertain attitude regarding avoidance of postpartum hemorrhage , less than three quarters of nurses had incorrect performance of practices regarding postpartum hemorrhage .**Recommendation**: Educational programs regarding avoidance of postpartum hemorrhage are recommended for nurses working at obstetrics and gynecology department of Benha university .

Key words: Postpartum hemorrhage, avoidance, skills, practice, nurses.

Introduction

Postpartum hemorrhage is one of the leading causes of maternal death worldwide; it occurs in about 10.5% of births and accounts for over 130 000 maternal deaths annually. Active management of the third stage of labor is highly effective at preventing postpartum hemorrhage among facility-based deliveries and Misoprostol is less effective for treatment of postpartum hemorrhage than oxytocin and has more side effects (**Belladetal**., **2012**; **Bulletin** &**WHO**, **2009**; **Sheldonetal**., **2012**).

Postpartum hemorrhage is unpredictable and can occur in women with no risk factors. Active management of the third stage of labor should be used routinely. Active management of the third stage of labor includes oxytocin after delivery of the fetal anterior shoulder and controlled cord traction with the Brandt

manoeuvre. Uterine massage after delivery of the placenta is a reasonable approach and is included in some Active management of the third stage of labor protocols. Delayed cord clamping (one to three minutes after delivery) may be considered to decrease risk of infant anemia without increasing maternal hemorrhage risk (**Ann** & **Anderson**, **2013**).

There are several causes of PPH, particularly uterine atony, trauma, and retained placental fragments. Several predisposing factors related to these causes. The number one cause of early PPH is uterine atony, a condition in which the uterus does not adequately contract, allowing increased blood loss from the placental site of implantation. After the placenta is delivered, the uterus needs to contract to seal off the iliac arteries. If the uterus is contracted, the placental site is smaller, causing less bleeding (**Wesis**, **2012**).

Many of the complications of severe PPH are related to massive blood loss and hypovolemic shock. Damage to all major organs is possible; respiratory (adult respiratory distress syndrome) and renal (acute tubular necrosis) damage are the most common but are rare. These conditions are best managed by specialists. Renal failure is usually self-limited, and renal function recovers fully. Pulmonary edema is uncommon in this previously healthy group; however, it may develop acutely or during the recovery phase because of fluid overload or myocardial dysfunction. Response to standard therapy is usually prompt (**Johnetal**, **2014**)

The nurse plays an important role in monitoring the woman's status, assisting with measures to control bleeding, providing support to woman and woman's family, and education the woman about condition. Maintaining the woman's safety is paramount. The nurse be aware of the woman's history, labor progress, and risk factors for postpartum hemorrhage. Note the use of any analgesia or anesthesia during labor and delivery or the use of oxytocin for labor

induction or augmentation. This information helps identify potential factors that would place the woman at risk for hemorrhage (**Hatfield, 2014**).

Prevention of postpartum hemorrhage caused by uterine atony after avaginal birth can be greatly reduced by prophylactic administration of uterotonic drugs (oxytocin) after the delivery of the placenta. An intravenous solution of oxytocin may be started to contract the uterus. Early clamping of the umbilical cord and assisted delivery of the placenta may also prevent uterine atony and postpartum hemorrhage. The placenta should be carefully examined to determine that it is intact. Massage of the uterine fundus can aid in uterine muscles contraction. Observation and prevention of bladder distention is an important postpartum nursing responsibility (**Leifer, 2012**).

Aim of the study

The Aim of This study is to Assess Nurse's practical skills regarding avoidance of Postpartum hemorrhage.

Research question:

1- What is the level of Nurse's Practical skills regarding avoidance of postpartum hemorrhage?

2- What is the level of Nurse's Knowledge regarding skills for avoidance of postpartum hemorrhage?

Significant of problem:

Primary postpartum hemorrhage (PPH) is the single largest contributor to maternal mortality worldwide. Hemorrhage accounts for 30% or more of all maternal deaths in Asia and Africa, most of which is PPH. The main cause of death in Egypt is postpartum hemorrhage (25%). PPH remained the main cause of death .Postpartum hemorrhage is the leading factor contributing to 27% of

maternal deaths, with poor obstetric management cited as the most frequent avoidable factor, contributing to 43% of maternal deaths (**Amin, 2014; Allam et al, 2014) (Calvert et al., 2012**).There was no study done in Benha nursing faculty as regards avoidance of postpartum hemorrhage. There for this study conducted to assess nurse's practical skills regarding avoidance of PPHg.

Subjects &Methods

Technical Design:

Technical design of the study includes: research design, setting of the study, sample and tools of data collection.

Research design:

A descriptive design.

Research setting:

Obstetrics and gynecology department of Benha university hospital **.**

Sampling:

*Sample type:

Convenient sample.

* Sample size :

- All nurses (50) working at obstetrics and gynecology department at Benha university hospital.

Tools of Data collection:

The following tools were designed and used after reviewing related literature and under supervision of the supervisors of the study.

1-Structured interviewing questionnaire, it includes two parts:

Parts (1)

Assessment of Socio-demographic characteristic data of the study sample such as (age, level of education, years of experience,…..etc)**.**

Part (2)

Assessment of knowledge regarding avoidance of postpartum hemorrhage through items written in simple Arabic language in the form of multiple choice questions for assessing the nurses' knowledge regarding the following:

(A) Knowledge related to postpartum hemorrhage , such as (definition , factors that affected, …………..etc) .

(B) Knowledge of nurses during ante-natal period to avoidance of postpartum hemorrhage, such as (component of ideal meals during pregnancy, CBC analysis, …….etc).

(C) Knowledge of nurses during intra-partum to avoid postpartum hemorrhage, such as (Increased fluid intake decreases PPH, ……….etc) .

(D) Knowledge of nurses during postpartum period to avoid PPH, such as (nursing role of hematoma, signs of hypovlomic shock, …………etc).

Knowledge scoring system:

- All knowledge variables were weighted according to items included in each question. The answers were classified into 3 categories:

- score(3):for good knowledge (more than 60% of given answer was selected).

- score(2):for average knowledge (less than 60% of given answer was selected).

- score(1): if answer was poor knowledge.

The score of to talk knowledge was classified as the following:

-Good: (≥75%correctanswers).

-Average: (50-<75%correctanswers)

-poor: (<50%correctanswers).

II. Modified Likert Scale

It was modified by the researcher and under the guidance of the supervisors to study nurses attitude **.**The three scale points were Implemented by the researcher to assess attitude of the studied nurses as regards avoidance of postpartum hemorrhage. The scale consisted of 13 statements constructed to measure attitude of studied nurses regarding avoidance of postpartum hemorrhage**.**

Scoring system:

To obtain the outcome of attitude scale, each statement is scored as following:

Score(3): if the response was "Agree"

- Score(2):if the response was "Uncertain"

- Score (1): if the response was " Disagree" The total score is expressed as a percentage

The total score of attitude was calculated as:

- Positive attitude: ≥75%

-Naturalattitude:50%<75%

-Negative attitude**:**<50**%**

III. Observational checklist:

An observational checklist to assess practice of studied nurses at obstetric and gynecology department at Benha university hospital. This checklist (peripheral pulse, blood pressure, blood sample, IV, enema, wound care, fundal and lochia assessment, urinary catheterization and episiotomy care) was designed by the researcher under guidance of the supervisors and after reviewing the related literature.

Observational checklist 's practice scoring system: Each statement scored as following

- Score(3):if correctly done.

- Score(2):if incorrectly done.

- Score(1):if not done.

The total score of practice was calculateas:

-Correctly done practice: ≥75%

-Incorrectly done practice: 50%<75%

-Not done practice: <50%

Ethical Considerations:

Ethical Aspects to considered before starting the study as the following:

- An official permission from the selected study settings was obtained for the fulfillment of the study.

- The aim of the study was explained to all nurses before applying the tools to gain their confidence and trust.

- Oral consent was obtained from nurses to participate in the study and confidentiality was assured.

- The data were collected and treated confidentially.

- Freedom to with drawal at any time of data collection and with no obligation.

II- Operational Design:

(1)Preparatory Phase:

- Are view of current and past national and international relevant literature related to prevention postpartum hemorrhage, by using local and international books, journals, periodicals and computer search was done to develop the study tools and contents

- Developing and translating tools into simple Arabic language.

Content Validity and reliability: There vision of tools was done by a panel of (3) expertise of professors from the obstetric departments faculty of nursing and faculty of medicine Benha university to measure the validity of tools.

(2)Pilot study:

- A pilot study is conducted to test the clarity and applicability of study tools and the time needed to fill in the questionnaire.

- 10% of the total sample (10) nurses were chosen.

The purposes of pilot study:

-Test the feasibility of the study and the applicability of the tool.

-Find out the possible obstacles and problems that might face the researcher and interfere with data collection.

-Detect any problems peculiar to the statement as sequence of questions and clarity.

-Estimate the time needed for Data collection.

Results of the pilot study:

After conducting the pilot study it was found that the sentences of the tools were clear and relevant. but few words are modified. Simple modifications were done such as (Ideal meals during pregnancy, importance CBC analysis, importance of HB analysis timing) rephrasing some questions.

Field work:

- The study was implemented for six months, from the beginning of January 2015 to the end of June 2015. Implementation of study was carried out in obstetric and gynecology department at Benha university hospital**.**

- The researcher began the study by visiting Obstetrics & gynecology department at Benha university hospital, two days weekly, from9 a.m. to1p.m. sometime the time was determined according to the participating nurses' performances.

- Theresearcherintroducedherselfandexplain edthepurposeofthestudytothenursesinthed epartment.

In the first day, the self administered questionnaire and

- Attitude sheet completionrangedfrom20-35minutes.

- In the same day, the researcher used tools that were an observational checklist to assess nurses' practice regarding avoidance of postpartum hemorrhage.

- All these steps were repeated until all nurses in the department were included in the study.

III – Limitations of the study:

1- Many nurses don't perform practice some procedures such as enema, urinary catheterization, wound care**. (**Done by house officer**)**

2- Some nurses showed complete rejection to participate in the study and number of this nurses was five nurses so that excluded from sample of this study.

3- Some nurses were busy most of time during data collection and number of this nurses was two nurses so that excluded from sample of this study.

4- Some nurses were frequently absent which made it difficult to conduct the study in the presented time and number of this nurses was four nurses so that excluded from sample of this study.

IV- A administrative Design:

An official letter was sent from the Dean of the faculty of Nursing at Benha University to the director of Benha university Hospital explaining the aim of the study and the time of data collection and official permission was obtained for data collection.

Results

Table (1) Reveals that, 46.0% of studied nurse's age ranged from 41 to less than 50years (mean age of 35.08±7.42), 60.0% had nursing Diploma of education, 74.0% job position is nurse, 64.0% had more than 10 years' experience (mean15.26±9.1). Most of nurses (76.0 % -86.0%) had no training workshops on prevention of postpartum hemorrhage.

Table (2) Shows that, 82.0% of nurses had good knowledge about causes of PPH, 62.0 % of nurses had average knowledge about complications of PPH, 68.0% of nurses had poor knowledge about fluids needed for hypovolemic shock, meanwhile statistical insignificant about complication of drugs.

Table (3): Shows that, 70.0% of nurses had correct done practice about CBC analysis, while 82.0% of nurses had incorrect done practice of pulse ,and all of them had 100.0% not done practice of enema, urinary catheterization, and wound care

Table (4): Shows no statistically significant relation (**p**>0.05) among studied nurses knowledge and education, job position and experience while there was statistically significant relation (**p**<2240.05) between age and training work shops related to prevention of postpartum hemorrhage.

Table (5): Shows no statistically significant relation between education and nurses practices.

Table (6): Shows no statistical significant relation between education and socio- demographic characteristics.
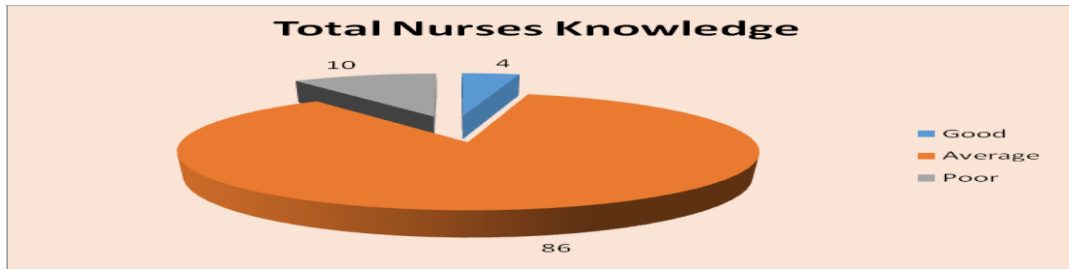
Table (7): Shows a significant positive correlation between nurses knowledge and practice score (i.e: knowledge increases with practice) in addition there was a significant positive correlation between nurse's knowledge and attitude score (i.e: knowledge increases with their attitude.)

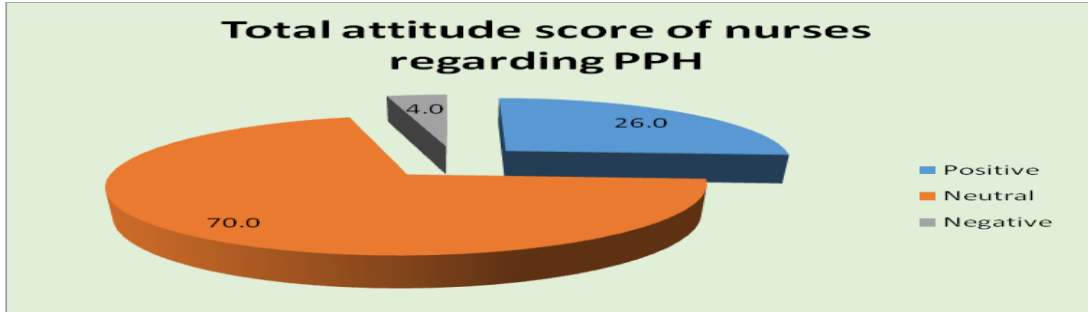**Table (1): Distribution of Socio-demographic characteristics ofstudy sample**

Variable	Total Subjects (n=50)	
	N0	%
Age (Yrs.)		
21-30	8	16.0
31-40	19	38.0
41-50	23	46.0
Mean± SD	35.08±7.42	
Education		
Nursing Diploma	30	60.0
Technical Institute	16	32.0
Bachelor of Nursing	4	8.0
Job Position		
Head nurse	5	10.0
Nurse	37	74.0
Assist of nurse	8	16.0
Experience(yrs.)		
< 5	12	24.0
From 5-10	6	12.0
> 10	32	64.0
Mean± SD	15.26±9.1	
Training workshops on pregnancy and labor		
No	38	76.0
Yes	12	24.0
Training workshops related to prevention of postpartum hemorrhage		
No	43	86.0
Yes	7	14.0

Table (2): Frequency distribution of Nurse's knowledge about postpartum hemorrhage

Variable	Good		Average		Poor		x2	p-value
	No	%	No	%	No	%		
Definition	22	44.0	20	40.0	8	16.0	6.88	.032
Factors	30	60.0	9	18.0	11	22.0	16.12	0.000
Causes	41	82.0	7	14.0	2	4.0	54.04	0.000
Types	32	64.0	6	12.0	12	24.0	22.24	0.000
Complications	12	24.0	31	62.0	7	14.0	9.24	0.000
Signs & symptoms	33	66.0	13	26.0	4	8.0	26.44	0.000
Fluids needed for hypovolemic shock	16	32.0	0	0.0	34	68.0	6.48	0.000
Drugs used	16	32.0	24	48.0	10	20.0	5.92	.05
Drugs effects	23	46.0	25	50.0	2	4.0	19.48	0.000
Complication of drugs	11	22.0	24	48.0	15	30.0	5.32	0.07
Hysterectomy treatment for PPH	40	80.0	1	2.0	9	18.0	50.92	0.000

Figure(1): frequency distribution of studied nurses regarding total knowledge about PPH
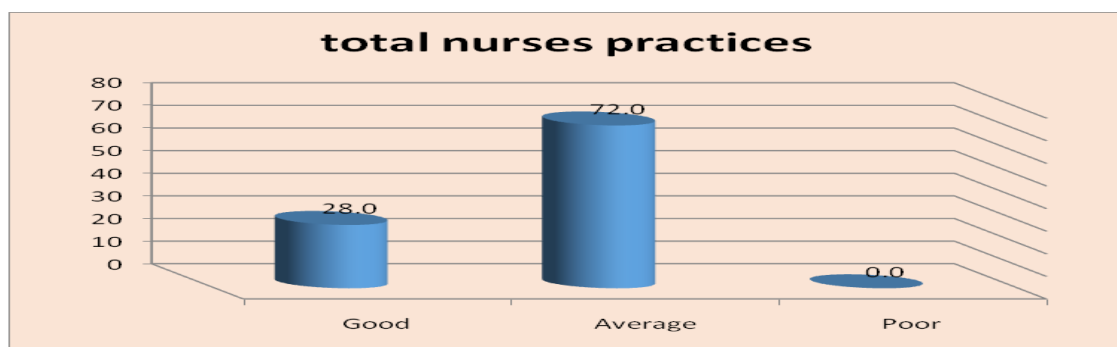

Figure(2): frequency distribution of studied nurses regarding total attitude about PPH

Table (3): Nursing practices to prevent P.P.H.

Nursing practices	Correct Done		Incorrect Done		Not Done		x2	p-value
	No	%	No	%	No	%		
Pulse	9	18.0	41	82.0	0	0.0	20.48	0.000
Blood Pressure	9	18.0	37	74.0	4	8.0	37.96	0.000
Complete blood count(CBC) analysis	35	70.0	15	30.0	0	0.0	8.00	.005*
IV fluids	11	22.0	39	78.0	0	0.0	15.68	0.000
Enema	0	0.0	0	0.0	50	100.0	-	-
Urinary catheter	0	0.0	0	0.0	50	100.0	-	-
Episiotomy care	4	8.0	25	50.0	21	42.0	14.92	0.001*
Fundus and Lochia	19	38.0	2	4.0	29	58.0	22.36	0.000
Wound care	0	0.0	0	0.0	50	100.0	-	-

*Significant difference

Figure(3): frequency distribution of study sample regarding total practices

Table (4): Relation between nurses' knowledge and socio-demographic characteristics (N=50)

Variable	Poor		Average		Good		x2	p-value
	No	%	No	%	No	%		
Age(year)								
20-31	0	0.0	18	36.0	1	2.0		
31-40	0	0.0	19	38.0	4	8.0		
41-50	2	4.0	6	12.0	0	0.0	13.29	.010*
Education								
NursingDiploma	2	4.0	25	50.0	3	6.0		
TechnicalInstituteBachelorofNursing	0	0.0	14	28.0	2	4.0		
	0	0.0	4	8.0	0	0.0	1.95	.744
JobPosition								
Headnurse	0	0.0	5	10.0	0	0.0		
Nurse	2	4.0	30	60.0	5	10.0		
Assistofnurse	0	0.0	8	16.0	0	0.0	2.86	.58
Experience(yrs.)								
<5	0	0.0	11	22.0	1	2.0		
From5-10	0	0.0	6	12.0	0	0.0		
>10	2	4.0	26	54.0	4	8.0	2.22	.69
Training work shops related to prevention of post partum hemorrhage								
No	1	2.0	39	78.0	3	6.0		
Yes	1	2.0	4	8.0	2	4.0	5.74	.05*

Table (5): Relation between nurses' practices and socio-demographic characteristics. (N=50)

Variable	Average		Good		x2	p-value
age/year	No	%	No	%		
20-30	16	32.0	3	6.0		
31-40	13	26.0	10	20.0	5.09	0.07
41-50	7	14.0	1	2.0		
Education						
NursingDiploma	21	42.0	9	18.0		
Technical						
Institute	13	26.0	3	6.0	1.69	0.42
Bachelorof	2	4.0	2	4.0		
Nursing						
JobPosition						
Headnurse	3	6.0	2	4.0		
Nurse	26	52.0	11	22.0	1.36	0.50
Assistofnurse	7	14.0	1	2.0		
Experience(yrs.)						
<5	10	20.0	2	4.0		
From5-10	4	8.0	2	4.0	1.01	0.601
>10	22	44.0	10	20.0		
Training work shops related to prevention of postpartum hemorrhage						
No	29	58.0	14	28.0		
Yes	7	14.0	0	0.0	3.16	0.07

Table (6): Relation between nurses' attitude and socio-demographic characteristics (N= 50)

Variable	Negative		Neutral		Positive		x2	p-value
age/year	NO	%	NO	%	NO	%		
20-30	0	0.0	15	30.0	4	8.0	11.53	0.021
31-40	0	0.0	16	32.0	7	14.0		
41-50	2	4.0	4	8.0	2	4.0		
Education								
NursingDiploma Technical	2	4.0	21	42.0	7	14.0	1.60	0.80
InstituteBachelorof	0	0.0	11	22.0	5	10.0		
Nursing	0	0.0	3	6.0	1	2.0		
JobPosition								
Headnurse	0	0.0	3	6.0	2	4.0	1.22	0.87
Nurse	2	4.0	26	52.0	9	18.0		
Assistofnurse	0	0.0	6	12.0	2	4.0		
Experience(yrs.)								
<5	0	0.0	9	18.0	3	6.0	1.66	0.79
From5-10	0	0.0	5	10.0	1	2.0		
>10	2	4.0	21	42.0	9	18.0		
Training work shops related to prevention of postpartum hemorrhage								
No	2	4.0	30	60.0	11	22.0	.34	0.84
Yes	0	0.0	5	10.0	2	4.0		

Table (6): Correlation between nurses' knowledge, practices and attitude

Variable	nurses knowledge	
	R	p-value
Practices	.35	0.012
Attitude	.28	0.04

Discussion

Regarding Socio- demographic characteristics the findings of the present study revealed that half of studied nurses' age ranged between 41-50 years while One third of studied nurses' age ranged between 31-40 years (mean age 35.08 ± 7.42),This may be due to long working years which may give them the knowledge and experience used in the prevention and management of PPH ,This finding agrees with RuchiPuri(2011) who reported that The average age of providers was 30 years (Range 20-54, SD 6.25 years). In addition This findings of the present study disagree with **Arezsaviola et al.,(2009)**, who showed that majority of studied nurses (76.67%) ranged between 20-25 years old .

Regarding working experience the finding of the present study revealed that two thirds of studied nurses had working experience more than ten years (mean period of experience15.26± 9.1), This may be due to their early engagement in long working experience . this allow the nurse

staff to gain the required knowledge to deal with cases of postpartum care , and avoidance of postpartum hemorrhage , This finding of the present study agree with **Faiza, (2015)** who revealed that , the majority of their study participants have long period of experience which varies between 11 to 30 years. Moreover this finding of the present study disagree with **Onasogaet al., (2012**) who reported that the majority of nurses have an experience of 1-7 years and **Howaida et al.,(2012**), who found that 4% of nurses had experience years between 10-15 years, the difference in working period experience may be explained by the age of graduation , age at enrollment and different level of certificates. Regarding level of education, the present study showed that less than two thirds of studied nurses had nursing diploma and one third of them had technical institute ,This finding of the present study agree with **Onasogaet al., (2012**) who reported that majority of the respondents (68.8%) had diploma of nursing and (20%) of them had technical institute of nursing .However this finding of the present study disagree with **Rahel et al., (2015)** who reported that the Majority of nurses (84.6%) were diploma holder. Regarding the attendance of training courses about pregnancy, labor and prevention of postpartum hemorrhage the present study showed that the majority of studied nurses' did not receive training courses due to shortage of nurses staff and working over load, This finding agree with **Vandana et al**., (**2016**), who reported that the Majority of the nurses (80%) did not attend any workshops. However ,this finding of the present study disagree with **Faiza , (2015),**who found that , only 30% of nurses received in service training about PPH.

As regards nurses knowledge about postpartum hemorrhage, the present study showed that more than half of studied nurses had good knowledge about (definition, types, causes, precipitating factors and complications of postpartum hemorrhage….etc.) This may be attributed to

long working experience, This finding agree with **Faiza, (2015),** who revealed that, nurse midwives generally had good knowledge about Postpartum hemorrhage (78%)about assessment and management, signs, Prevention and definition, types, common causes (84.2, 82.5, 82and 81.3 %respectively) and but had less knowledge about complication and risk factors of PPH (73.5 and 64.2% respectively).

However this finding of the present study disagree with, **Jayanna et al., (2014**), who founded that, only 40% correctly defined early postpartum hemorrhage, and 39% mentioned that uterine atony is the most common cause of early PPH.

Regarding nursing practices to prevent postpartum hemorrhage, the present study found that the majority of studied's nurses don't perform some procedure as enema ,urinary catheterization and wound care, and less than three quarters of nurses perform incorrect practices such as (fundus assessment, lochia assessment , episiotomy care, pulse, blood pressure, CBC and Iv fluid) These findings clarities the lack of regular training courses and sessions by the Egyptian Ministry of health and other health authorities, These findings highlight the need to improve the content of the Nursing curriculum together with continued training courses which yield well trained and educated nurses about avoidance of postpartum hemorrhage, The findings of the present study disagree with **Faiza (2015)** who reported that Practical aspects of nurse/midwives regarding prevention of PPH was (69.6 %), such as(assessment of fundal level 73.3%, importance of empty bladder 75% , assessment of lochia and blood loss 61.7%, vital signs 65.5%and IV fluid 93.9:%)Also **Malin upperBogren (2010)** reported that. Majority of the respondents (52.6 %) mentioned correctly how to measure the woman's blood pressure and pulse.

Regarding the relation of studied' nurses knowledge and socio-demographic characteristics, the present study found no significant association between level of education, job position and years of experience, This finding of the present study is in accordance with, **Onasogaetal., (2012)**, who reported that majority of the study population (85%) had high level knowledge of strategies used in the prevention and control of PPH. There was no significant association between the professional qualification (P-Value = 0.349), rank (P-Value = 0.088) of midwives and their level of knowledge of strategies used in the prevention and management of PPH (p>0.05). It Is recommended that refresher courses where nurse-midwives and other health care professionals are trained and retrained on the strategies used in the prevention and management of PPH. These findings agree with **Andersonetal., (2007),** who revealed no significant association between the professional qualifications, ranks of midwives and their knowledge of strategies used in the prevention and management of PPH.

Regarding relation of studied' nurses practices and socio-demographic characteristics the present study showed insignificant relation between studied nurses socio-demographic characteristics and their practices. These findings of the present study disagree with **Howaida etal., (2012)**, who reported that Nurses' specialty had a significant effect on their total score of practices in the field of post-natal care. The mean score of practice among midwives nurses was 49.4±10.

Regarding relation of studied' nurses attitude and socio-demographic characteristics, the present study showed no significant relation between studied nurses attitude and socio-demographic characteristics. These findings of the present study disagree with **Malin Upper Bogren (2010)** who reported that majority of the respondents have a significantly low score of knowledge related to antenatal care, normal labor, management of complications, and childbirth, as well as postpartum care.

Regarding correlation between knowledge, practices and attitude of studied 'nurses the present study found a significant relation among correlation between nurses knowledge, practices and attitude. The findings of the present study agree with **Krishnamurthy et al**., **(2014)**, who reported that statistically significant differences were observed in knowledge (p < 0.001),

performing speculum examination or practices in cases of PPH with contracted uterus (<0.001), knowledge related to hemoglobin investigations (<0.05), and monitoring vital signs (<0.01),Moreover the findings of the present study disagree with **Howaida et al., (2012)**, who found no significant difference between midwives and non-midwives nurses in respect to their knowledge about postnatal care while midwives nurses were more competent in their practices in many aspects of care .

Conclusion

In the light of the study finding, some important facts could be concluded: Majority of nurses had average knowledge regarding avoidance of postpartum hemorrhage, More of half nurses had incorrect performance of practices toward avoidance of postpartum hemorrhage , More than two thirds of nurses had uncertain attitude regarding avoidance of postpartum hemorrhage. There was statistically significant correlation between studied nurses' knowledge and practice (p ≤ 0.05). There was statistically significant correlation between studied nurses' knowledge and attitude (p≤0.05)

Recommendations

In the light of the current study findings, the following recommendations are suggested:

- Educational programs regarding avoidance of postpartum hemorrhage are recommended for the nurses working at obstetrics and Gynecology department.

On job training regarding avoidance of postpartum hemorrhage for all nurses to improve their practices.

Further study need to be performed:

- It is important to conduct an extensive study on the knowledge, practice and attitude of nurses working at obstetrics and Gynecology department in relation to prevention postpartum hemorrhage.

- Further studies are needed to investigate the barriers that prevent nurses attending training program.

- Consistent documentation and reporting of data that indicate maternal morbidities & mortalities caused by postpartum complications are a must. It helps in application of correct procedures to guard against and prevent Postpartum hemorrhage.

- Consider active management of third stage of labour as a routine management of third stage of labour.

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