

APPLICATION OF IOWA MODEL EVIDENCE-BASED PRACTICE ON MATERNITY NURSES REGARDING POSTPARTUM HEMORRHAGE

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Abstract

The Iowa Model of Evidence-Based Practice give us guide line for nursing decisions to manage day-to-day practical work which have effect on patient health based on solving problems through scientific procedures and recognized for its applicability's and using through multi-disciplinary healthcare teams. Aim of study was to apply Iowa model Evidence-Based practice on maternity Nurses regarding Postpartum Hemorrhage. Quasi study used in Obstetric and Gynecology Hospital at Ain Shams Hospital. Seventy nurses were work in labor and delivery units/Ain Shams Hospital. Throughout using 2 tools for data collection as 1- structured self-administered questionnaire: include two parts; A-Socio demographic characteristics of the study nurses B-Assessment of nurses' knowledge regarding EBP & PPH. 2- Observational checklist for evaluating nursing management regarding PPH. 45.7% of nurses have poor knowledge before intervention model and 80.0% have good knowledge post intervention. 84.3% have unsatisfactory practices toward PPH management before intervention of the model. Meanwhile, after intervention 87.1% had satisfactory practices respectively. IOWA model EBP has apposite effect on nurse's knowledge and practices regarding PPH. Highly significantly difference before / after knowledge and practice regarding PPH ($P \leq 0.001$). from our data we could concluded that, developing teaching programs and periodical training regarding IOWA Model evidence based practice. Specific procedure booklets should be available to standardize the nursing care provided in obstetrics department.

Keywords: Iowa model Evidence-Based practice, Nursing Management, post-partum hemorrhage

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INTRODUCTION

Evidence-based practice (EBP) increase patient care quality, reduce healthcare costs and provide an assessment for nurses for integrate best evidence. The Iowa Model of Evidence Based Practice is using as actual clinical example which could help nurses to findings into clinical practice. Nurses understand that EBP improves the quality of patient outcomes while controlling the cost of healthcare [1]. Evidence-Based Practice is using best scientific evidence and integrated with clinical experience, incorporating patient values and preferences in professional nursing care to give the best clinical decisions [2].

The Iowa Model is commonly using as pragmatic guide for EBP process. Originating science 1994 and started could be either being more knowledge focused trigger [3]. Postpartum hemorrhage is mainly defined as blood loss and average blood loss in birth exceeds 500 or 1000 mL [4]. Many deaths associated by PPH might be preventing with prompt recognition and more timely and adequate treatment. [5] Morbidity of PPH could severe with sequel [6]

World health organization defines PPH according to its occurrence and specifies, PPH could describe as third or fourth stage [7]. PPH is classified as primary/early or immediate PPH and secondary/late or delayed PPH. Therefore, primary PPH refers to blood loss from genital tract of 500 ml or more in the first 24 h. post birth while secondary PPH is defined as blood loss from the genital tract of 500 ml or more beyond 24 hours after deliver. Most recorded PPH deaths occur in the first 4 hours after delivery with more than 70% attributable to primary PPH [8].

The primary causes of a postpartum hemorrhage seen in the first 24 hours after delivery are uterine atony, which occurs in about 80 percent of cases. Atony could return to over distention of the uterus, Secondary causes, usually seen between 24 hours and 12

weeks post-delivery, are infection, placental abnormalities, or bladder distention, lacerations, retained placenta, abnormal adherent placenta, defects of coagulation, uterine rupture or inversion [9 and 10].

Moreover, PPH could be prevented or managed if the women had access to a skilled health care practitioner with the necessary back-up and support. Nurses play an important role in monitoring the woman's status, assisting with measures to control bleeding, educating the woman about her condition and providing support to the woman and her family [11].

Nursing care measures for the woman experiencing PPH focuses on stopping the bleeding, restoring fluid balance, preventing injury and promoting adequate tissue perfusion. As with any postpartum complication, be sure to provide emotional support for the woman and family, explaining all events and procedures to minimize anxiety and fear, keep the family informed of the situation, explaining laboratory tests, procedures and signs of improvement. So there is a clear need to enhance nurses' competencies related to emergency obstetric care, particularly PPH [12 and 13]. A postpartum hemorrhage can happen very fast, and it is important for all staff to be prepared [14].

Significance of the study:

Postpartum hemorrhage remains an important contributor to maternal morbidity and is the number one cause of worldwide maternal death. A postpartum hemorrhage can happen rapidly. It is unpredictable and can occur with or without identified risk factors, an estimated 303,000 maternal deaths occurred in 2017. The World Maternal Index of WHO (2018) stipulated that the average maternal mortality rate in Africa is 400 deaths per 100,000 live births and this is forty times higher than the average for industrialized countries (10/100,000 live births). The main cause behind this situation is the inadequate management of

maternal bleeding [15]. More than 25% of deaths related to hemorrhage, post-partum hemorrhage for 20% of direct deaths. Vast majority happen in low and middle-income settings [16].

Egypt consider as middle-income region where Maternal Mortality Rate account about 10%–30% led to deaths. It still needs a radical solution [17]. Despite concerted efforts to reduce these levels of mortality, the issue remains a global challenge, one of the gaps in PPH management are followed inconsistently, these inconsistencies can have serious adverse effects on maternal outcomes.

So, this study professional nurses could accomplished through well-developing their education and given creation education, it is important understand how nurses learn and strategies to support that learning. Therefore, it is important for the nurses to be trained and prepared to recognize and respond quickly to the situation. Moreover, it was observed from the clinical setting in obstetrics department at Ain Shams Obstetrics and Gynecology Hospital that the low model of evidence-based practice was neglected in post-natal unit and no previous study regarding this problem of PPH applied in obstetrics department at Ain Shams Obstetrics and Gynecology Hospital, so this study was conducted.

STUDY AIM:

Main specific aim: -

To apply Iowa model Evidence-Based practice on maternity Nurses regarding Postpartum Hemorrhage

This aim achieved through:

- 1- Enhance the knowledge and skills of maternity nurses on preventing, early recognition, assessment, and management of postpartum hemorrhage by applying The IOWA Model of EBP.
- 2- Evaluate the effect of The IOWA Model of evidence-based practice post training that would hopefully positively influence and improve patient care.

HYPOTHESIS:

Maternity nurses who will receive an implemented IOWA Model of EBP would have helping nurses gaining improved knowledge and practice regarding Postpartum Hemorrhage in post than pre-intervention.

METHOD.

Design:

Quasi-experimental design utilized for study effect of Evidence-Based Iowa model on maternity Nurses knowledge and practice regarding Postpartum Hemorrhage to fulfill the aim of this study.

Research setting:

This research was carried out in the Obstetric and Gynecology Hospital (labor and delivery units) at Ain Shams Obstetrics and Gynecology Hospital, which provides free health care services to obstetrics & gynecologic clients.

Ain Shams Obstetrics and Gynecology Hospital was a local Midwestern, community-based hospital. Containing 8 units for gynecology, obstetrics and oncology 373 beds 6 Full Care Beds 12 operating rooms and 9 operating rooms are being prepared after their development on the latest quality systems Incubator for nursery with 31 nurseries, 25 ventilators and cardiac ultrasound for children The average number of visitors to the hospital is 30,000 per year The average number of outpatients is 27,000 patients per year The average number of admissions is 23,000 patients per year The hospital includes distinct units containing high-tech facilities that have been updated to keep pace with modern technology as follows: Laboratory fertilization unit with a newly integrated injection unit Early Diagnosis of Integrated Prepared Tumors Oncology Unit sound waves and

follow the fetus Dynamic unit of the urinary system Family Planning Center to provide awareness and medical guidance necessary for women Diagnostic Radiology Unit coefficient Women's Endoscopy Unit.

Sample type:

A purposive sample total of 70 Maternity nurses and who were not on orientation had the opportunity to participate were enrolled in the study from the beginning of September 2019 until end of February 2020. All sample participants were assigned to one group because this was a **quasi-experimental** time-series one group, **pre-test, post-test** research design.

Tools and technique of data collection:

Two tools were designed and filled by researchers to collect the required data for this research. The tool for data collection was developed by the researcher after reviewing the related literatures then this tool was tested for content validity.

Tool 1: It included a structured self-administered questionnaire which consisted of three parts:

Part 1- general characteristics of maternity nurses working in Obstetrics department such as age, educational level, years of experience and past experience regarding training program.

Part 2- Knowledge of maternity nurse's evidence based practices regarding PPH in the Obstetrics department; such as the concept of The Iowa Model of Evidence-Based Practice, steps of The Iowa Model of Evidence-Based Practice, the concept of EBP, the benefits of EBP on maternity nurse, on patient, on hospital & society, the effective technique for educating EBP, the sources of EBP from strongest or weakness studies, the advantages of EBP, the barriers of EBP, Steps of EBP for management of PPH, and information about asking clinical question by PICO. Part 3: knowledge of maternity nurses about EBP for PPH in the Obstetrics such as definition of PPH, types of PPH, definitions of each type of PPH, risk factors of PPH, the most common cause of a PPH, symptoms of uterine atony, the complications of PPH, the nursing intervention for treating a PPH, signs & symptoms of hemorrhagic shock during PPH, and priorities of nursing care for hemorrhagic shock during PPH.

The scoring system:

Knowledge questions were given a score zero (0) if the nurse answered the question incorrectly and a score of 1 if the nurse answered the question correctly. The scores of the correct answers of the questions for a test can be summed up to obtain a nurse's knowledge score of the standard. A high score indicates high level of knowledge regarding Iowa Model of Evidence-Based Practice about PPH management, whereas a low score indicates low level of knowledge among those nurses.

Tool 2- Observational checklist for evaluating nursing management regarding Iowa Model of Evidence-Based Practice EBP about PPH management. The researcher used two observational checklists for assessing nurse's level of competence regarding management of bleeding: 1- Checklist of nursing management of bleedings such as assess signs and symptoms of blood loss and the nature of bleeding as (Assess general condition, vital signs, uterine condition, genitalia and vagina for bleeding and its source, and Laboratory Assessment), provide care (Individualize the woman's care by considering assessment results which included first aid measures (Place the woman in a supine position. Insert an IV line immediately according to procedure. Cross matching for at least 2 units of blood according to procedure. Provide a crystalloid solution (Ringer's or saline) by fast drip as ordered. Administer O₂ via mask and provide warmth to the woman. Insert a Foley catheter as ordered according to procedure.....etc.). Monitoring activities (check and record vital signs (every 15 minutes until stability of the condition. Assess

and record the amount of vaginal bleeding every 2 hours. Assess uterine condition (every 15 minutes for the first 2 hours or according to monitoring results) and do massage if needed to express clots and make it well contracted. Record the intake and output, and calculate the daily balance....etc.), Nursing Measures (Give medication as ordered and record it. Ensure that investigations are complete, documented and is reported. Administer ordered Ecbolic and observe its effect. Give ordered blood transfusion and observe its effect. Perform perineal care with an antiseptic solution every 6 hours. Provide basic comfort measures by maintaining the women surrounding clean and dry. Meticulous recording and reporting of all findings and care provided. Reassure the woman by answering her questions). 2- Checklist of nursing management of Hemorrhagic shock as (Immediately notify the doctor for emergency cases. Follow correct measures of infection control during each procedure. Rapidly assess the mother's health and needs. Check vital signs every 15 minutes. Observe blood loss (amount, color, presence of clots. Calculate, record and report input and output. Keep mother warm and clean. If bleeding is heavy, transfer the mother to the operating room etc.....).

The Scoring system

Each of the items on the Observational checklist is rated on a two-point frequency scale (i.e., 0 = No, 1 = Yes). A score of zero means that the step described by the statement was not observed by the researcher. A score of 1 means that, the step described by the statement was observed by the researcher. Scores of the standard can summed to obtain an overall total score that describes the maternity performance for the nurse. A high score indicates high level of performance of the maternity nurses, whereas a low score indicates low level of performance among nurses.

Ethical considerations:

The study was approved by pertinent research and ethics committees at the Faculty of Nursing in Ain Shams University. Permissions to conduct the study were obtained from pertinent authorities. The aim of the study was explained to the participants, along with the benefits and any potential risks or discomforts. Oral consent was obtained from the maternity nurses after the researcher explained the general aim of the study. The study was followed common ethical principles in clinical research. Data was kept confidential and was used solely for research purposes Confidentiality.

Pilot study:

After preparation of the tools of data collection, they were pre-tested on 10% of the total study sample (7 nurses). The purpose was to evaluate the applicability and clarity of the tools, assessment of feasibility of fieldwork, and detect any possible obstacles. The pilot study also served to determine the time needed to complete the tools. Necessary modifications based on observations of the pilot study in order to strengthen the content or for more simplicity and clarity.

Validity of tools for reviewed the validity by three juries specialized in obstetrics and gynecological nursing and observations.

Reliabilities of maternity nurses tools of maternity nurses estimated using Cronbach's Coefficient alpha test and was greater than 0.88

Fieldwork description (procedure):

Process of introducing Evidence-Based Practice Procedures:

Assessment, planning, implementation, and evaluation phases were done between 2019/9 to 2020/2. Official approvals and letters were obtained from Faculty of Nursing Dean and director of Ain Shams Obstetrics and Gynecology Hospital.

Assessment stage:

Started by interview for nurses for baseline data collecting, where researchers at first given greeting for nurses and explain such purpose study, duration, and such activities which will applied and maternity nurses' assessment knowledge (definition, etiology, symptoms, different risk factor, complications, management and prevention regarding PPH according to IOWA model evidence based practice). Period for completion nurse interview about was 25 to 30 min.

Development and review of educational evidence model:

Planning stage:

IOWA model evidence-based practice regarding PPH management develop by the researcher in form Arabic booklet by applying IOWA model evidence-based practice. Post completion of educational model, every nurse would be able to:

- Identify PPH
- List Clinical manifestation of PPH explanation.
- Enumerate types, causes and complications of PPH.
- Discuss pattern of prevention of PPH.
- Recognize short term & long-term complication of PPH.
- Identify nursing management of postpartum hemorrhage.

Evidence-based PPH program develop post extensive study for pervious literature, including the most current PPH literature, practice guidelines of IOWA model evidence based standardized, widely-distributed professional guidelines.

IOWA model of evidence-based practice regarding PPH management administration: (implementation).

This model was conducted in the Obstetric and Gynecology Hospital (labor and delivery units) at Ain Shams Obstetrics and Gynecology Hospital. Researchers were visited from 9.00 am to 12.00 pm, 3 d. / week. 6 sessions, every one lasting around 1 h./3 weeks for nurses. The researchers established the session's environment to be comfortable and quiet. They used a well prepared intervention materials and contents in the form of comprehensive illustrated power point and educational videos related to the postpartum management by using this model. **Iowa model** to organize and collaborate incorporating conduct and use of research, along with other types of evidence. 7 steps of Iowa Model as A- problem identification; B- Problem organization level; C- Form team work; D- Research evidence collection F- Practice change pilot; G- Implementation and continuation evaluation; and H- results disseminating.

A- Problem identification:

In selecting a topic for evidence-based practice, the nurse needs to be considered several factors. These include the priority and magnitude the problem of PPH.

B- Problem organization level:

Nurse is responsible for development, implementation, and evaluation. To develop evidence-based practice as management and colleagues supporting, education levels, research experiences, research shortage, training shortage, practices, availability time, research accessibility, organization support.

C- Form team work:

From the nurse formation and topic selection, the nurse must be use brainstorming session to identify available sources and key terms.

D- Research evidence collection:

The nurse must be collect anything about problem of PPH and how to manage it by applying IOWA model.

F- Practice change pilot:

The type and strength of evidence used in practice needs to be clear, and based in the consistency of replicated studies. The design of the studies and recommendations made should be based on identifiable risks of PPH. Evidence-based practice is ideally patient center approach and implement individually.

G- Implementation and continuation evaluation:

Audit and feedback through implementation process might be conducted for changing take place, barriers that could hinder its progress need to be identified. Information and skill deficit are common barriers to evidence-based practice. Evaluation carried out at different periods either during or following intervention times.

H- Results disseminating:

After implementation of the IOWA Model evidence based practice, the researchers were used the same previous tools as Post-test such as structured self-administered questionnaire and observational checklist to evaluate the effect of themodel program on the management postpartum women.

RESULTS

Table (1): Shows distribution of studied nurses regarding demographic characteristics as 75.7% of studied nurse their age less than 30 years with the mean ± SD was 31.2±4.21, 54.3% is a diploma nurse, 48.6% of them have 5 to 10 years of experience, and only 24.3% of them attended training program ,from them 14.3 % <one year and10.0% ≥ one year.

Table (1): frequency distribution of studied nurses regarding demographic characteristics (n=70).

	No	%
Age		
20-<30	53	75.7
30-<40	10	14.3
40+	7	10.0
Mean ±SD	31.2±4.21	
Educational level		
Diploma nurse	38	54.3
Technical nurse	25	35.7
Bachelor nurse	7	10.0
Years of experience		
<5years	22	31.4
5-≤10	34	48.6
>10years	14	20.0
Training program		
Yes	17	24.3
No	53	75.7
Time of training program (n=17)		
<one year	10	14.3
≥ one year	7	10.0

Table (2): Demonstrate the relation between nurses knowledge regarding EBP and PPH pre and post program. And shows that are good knowledge regarding evidence based practice was 4.3% pre-program compared by 81.4%post program, while regarding post-partum good knowledge equal 17.1% was increased to reach 71.4% post program, and regarding total knowledge was 11.4% pre-program compared by 80.0% post program . The table also showed highly statistically significance differences between nurses knowledge preprogram and post program

Figure (1): Illustrate distribution of studied nurses regarding their total knowledge pre and post intervention, and shows that are 80.0% of studied nurses had good knowledge post program compared by 11.4% pre-program and only 2.9% of them had poor knowledge post program as compared by 45.7 pre-program

Table (3): Describe the relation between nurses' practices regarding evidence based practices about post-partum hemorrhage pre and post program. And shows that are 81.4% of studied nurses had unsatisfactory practices regarding total assessing signs and symptoms of blood loss pre-program compared by 8.6% post-program, while 87.1% of nurses had unsatisfactory practices regarding total practices to assess hemorrhagic shock that results was decreased to reach 15.7% post program, as regard total practices 84.3% of nurses had unsatisfactory practices pre-program compared by 12.9% post program. The table also showed statistically significant differences regarding all items pre and post program.

Table (2): statistically relation between nurses knowledge regarding EBP and PPH pre and post program

	Pre-program		Post- program		X ²	p-value
	No	%	no	%		
Total knowledge about evidence based practice						
Good	3	4.3	57	81.4	92.26	0.000**
Average	25	35.7	12	17.1		
Poor	42	60.0	1	1.4		

Total knowledge about post-partum hemorrhage						
Good	12	17.1	50	71.4	48.19	0.000**
Average	35	50.0	19	27.2		
Poor	23	32.9	1	1.4		
Total knowledge						
Good	8	11.4	56	80.0	70.18	0.000**
Average	30	42.9	12	17.1		
Poor	32	45.7	2	2.9		

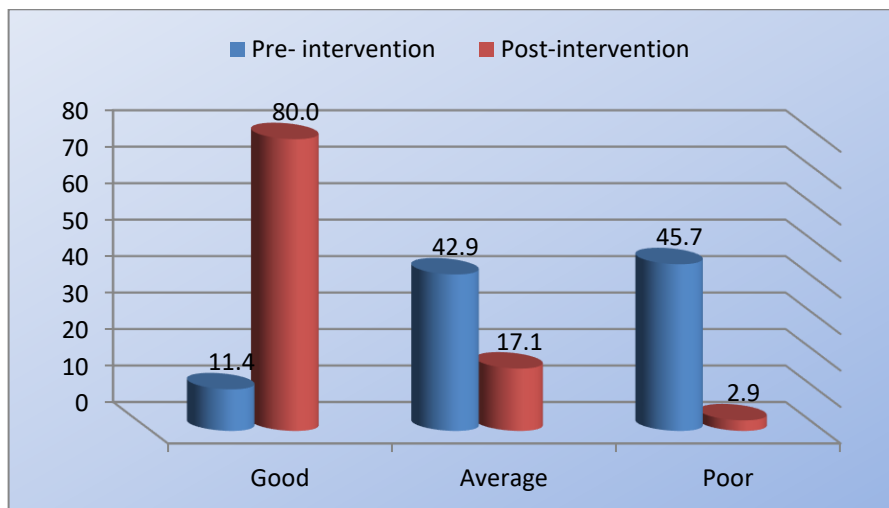


Figure (1): frequency distribution of studied nurses regarding their total knowledge pre and post intervention

Table (3): statistically relation between nurses' practices regarding evidence based practices about post-partum hemorrhage pre and post program

	Pre				Post				X ²	p-value
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory			
	no	%	no	%	no	%	no	%		
Total assessing signs and symptoms of blood loss	13	18.6	57	81.4	64	91.4	6	8.6	75.06	0.000**
Total first aid measures	14	20.0	56	80.0	63	90.0	7	10.0	69.29	0.000**
Total monitoring Activities	13	18.6	57	81.4	56	80.0	14	20.0	52.83	0.000**
Total nursing measures	9	12.9	61	87.1	59	84.3	11	15.7	71.48	0.000**
Total assessing Hemorrhagic shock	9	12.9	61	87.1	59	84.3	11	15.7	71.48	0.000**
Total practices	11	15.7	59	84.3	61	87.1	9	12.9	68.61	0.000**

Figure (2): Illustrate the distribution of studied nurses regarding their total practices pre and post intervention and shows that 15.7% of studied nurses had satisfactory practices pre-program that percent was increased to reach 87.1% post-program and 84.3% of them had unsatisfactory practices pre-program compared by 12.9% post-program

Table (4): Shows correlation between total knowledge and total practices pre and post program. And shows that statistically

significance positive correlation between total knowledge and total practices among studied nurses pre-program and no statistically significance correlation post-program

Table (5): Demonstrate the relation between total knowledge and socio-demographic characteristics and shows that no statistically significance relation between total knowledge and nurses demographic characteristics pre and post program

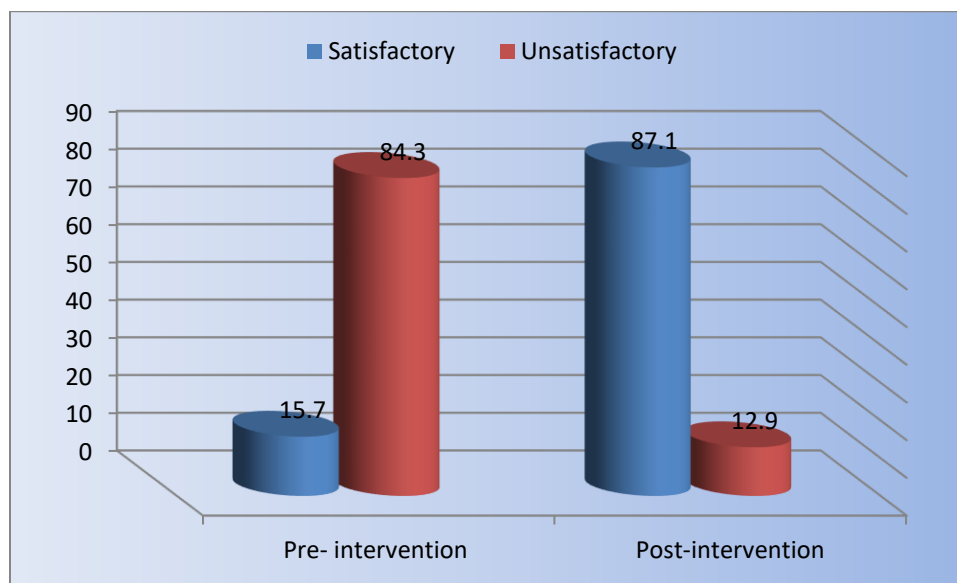


Figure (2): frequency distribution of studied nurses regarding their total practices pre and post intervention

Table (4): statistically correlation between total knowledge and total practices pre and post program

	Total knowledge			
	Pre		Post	
	r	p-value	r	p-value
Total practices	0.29	0.04*	0.62	0.07

Table (5): statistically relation between total knowledge and socio-demographic characteristics

	Pre						X ²	p-value	Post						X ²	p-value
	Poor		Average		Good				Poor		Average		Good			
	no	%	no	%	no	%			no	%	no	%	no	%		
Age																
<30	22	68.8	24	80.0	7	87.5	2.61	0.62	1	50.0	7	58.3	45	80.4	4.86	0.302
30-<40	6	18.8	4	13.3	0	0.0			1	50.0	3	25.0	6	10.7		
40+	4	12.5	2	6.7	1	12.5			0	0.0	2	16.7	5	8.9		
Educational level																
Diploma nurse	19	59.4	16	53.3	3	37.5	3.7	0.44	1	50.0	8	66.7	29	51.8	2.74	0.602
Technical nurse	9	28.1	11	36.7	5	62.5			1	50.0	2	16.7	22	39.3		
Bachelor nurse	4	12.5	3	10.0	0	0.0			0	0.0	2	16.7	5	8.9		
Years of experience																
<5years	13	40.6	9	30.0	0	0.0	5.81	0.21	1	50.0	2	16.7	19	33.9	2.006	0.735
5-≤10	12	37.5	16	53.3	6	75.0			1	50.0	7	58.3	26	46.4		
>10years	7	21.9	5	16.7	2	25.0			0	0.0	3	25.0	11	19.6		
Training program																
Yes	27	84.4	22	73.3	4	50.0	4.27	0.11	2	100.0	10	83.3	41	73.2	1.211	0.546
No	5	15.6	8	26.7	4	50.0			0	0.0	2	16.7	15	26.8		

Table (6): Demonstrate the relation between total practices and socio-demographic characteristics and shows that statistically significance relation between total practices and training program pre-program, and total practices with age post-

program. But no statistically significance relation between other demographic characteristics and total practices pre and post program

Table (6): statistically relation between total practices and socio-demographic characteristics

	Pre				X ²	p-value	Post				X ²	p-value
	Unsatisfactory		Satisfactory				Unsatisfactory		Satisfactory			
	No	%	no	%			no	%	no	%		
Age												
<30	44	74.6	9	81.8	1.5	0.47	4	44.4	49	80.3	13.66	0.001
30-<40	8	13.6	2	18.2			1	11.1	9	14.8		
40+	7	11.9	0	0.0			4	44.4	3	4.9		
Educational level												
Diploma nurse	32	54.2	6	54.5	1.65	0.438	5	55.6	33	54.1	0.032	0.984
Technical nurse	20	33.9	5	45.5			3	33.3	22	36.1		
Bachelor nurse	7	11.9	0	0.0			1	11.1	6	9.8		
Years of experience												
<5years	16	27.1	6	54.5	4.85	0.088	2	22.2	20	32.8	4.15	0.125
5-≤10	29	49.2	5	45.5			7	77.8	27	44.3		
>10years	14	23.7	0	0.0			0	0.0	14	23.0		
Training program												
Yes	42	71.2	11	100.0	4.18	0.041	7	77.8	46	75.4	0.024	0.877
No	17	28.8	0	0.0			2	22.2	15	24.6		

DISCUSSION

The Iowa Model-Revised could use for learning nurses or clinicians EBP process additionally to training for assure clinicians which have require skills and lead EBP. Using Iowa Model-Revised encourage to more read about previous Model. Where model was design as guide rather than a comprehensive manual. More evidence helped to provide the most up-to-date research for improving knowledge and practices for maternity nurses regarding PPH [19].

In this research the researchers attempted to apply Iowa model evidence-based practice on maternity nurses regarding postpartum hemorrhage to promote quality of care. The findings of this research study were approved and supported the research hypothesis which is maternity nurses who will receive an implemented IOWA Model protocol of EBP would have helping nurses gaining improved knowledge and practice regarding Postpartum Hemorrhage (in post than pre-intervention).

As regards the characteristics of the studied subjects, the results of the present study showed that Three quarter of studied nurse their age from twenty to less than thirty years with the mean ± SD was 31.2±4.21, more than half of them is a diploma nurse, and nearly half of them have 5 to 10 years of experience, as well as only 24.3% of them attended training program.

This result is supported by *AbdElhakm and Elbana(2018), [19]* who studied that "Effect of Simulation Based Training on Maternity Nurses' Performance and Self-confidence Regarding Primary Postpartum Hemorrhage Management" and found that about two thirds of the studied maternity nurses were aged less than 30 years with mean age of 29.6±7.62years, more than half of them had a secondary nursing education.

Regarding nurses' knowledge about EBP and PPH pre and post program in obstetrics department, results of the present study revealed that there was more than half of the nurses included in

the study had poor knowledge preprogram regarding EBP and PPH that negatively reflected upon the nursing care offered for the admitted cases with PPH.

The results of the present study revealed that there was highly statistically significance differences between nurses knowledge preprogram and post program. This finding was agreement with *Kumar, et al(2016)[20]*. Who studied simulation-based teaching role in managing postpartum hemorrhage amongst postgraduate Students whose found education program for prevention and management of PPH led to significantly increasing in knowledge nurses.

Also this finding is supported by *Agha et al (2015)[21]*, who studied "Satisfaction of medical students with simulation-based learning". Who's reported that training based on simulators and real simulation could promote cognitive knowledge.

Regarding nurses' practices of evidence based practices about post-partum hemorrhage pre and post program, results of the present study revealed that, most of the studied nurses had unsatisfactory practice regarding management of PPH before program implementation.

This result agreed with *El-Bahy et al.,(2013)[22]*, who found that, nurses majority pre-training was unsatisfactory. Furthermore *Bradley et al.,(2015)[23]*. where inadequate obstetric skills, undermining performance and professionalism were effect on care quality. *Bogne V., et al(2014) [24]* noted simulation-based teaching-learning increases simulation groups performance.

Our results approved improving in nurses' practice postnursing management programs which pass with *Traoré et al.,(2014)[25]* and *Islam et al.,(2015)[26]*.

Results of the present study revealed that there was positive statistically significant correlation between total knowledge and total practices pre and post program. This result is agreed with

Kim et al.,(2019) [27] who studied "Effects of an evidence-based practice education program using multifaceted interventions: a quasi-experimental study with undergraduate nursing students and concluded that "The EBP education program was effective in improving the knowledge, skills, attitudes, competencies, and future use of EBP among nursing students.

Also this result is the same line **Lavenbergetal,(2019) [28]**, who found EBP provide for nurses with continually education would promote standardized structures developing.

Results of the present study revealed that there was no statistically significance relation between total knowledge and nurse's demographic characteristics pre and post program. this result congruent with **Belty, etal(2014) [29]** who studied Nursing diagnosis hand book- an evidence based guide to planning care, who illustrated that, it is important for maternity nurses depend on evidence-based knowledge, special attention to upgrading their skills and competencies. Nurses should understand that practices and methods used in nursing are based on the best available evidence care practices are consistent across units and organizations. And also it is important for them to be aware of the best available evidence and know how to use it to influence care decisions.

Additionally, **Fen.,etal 2016 [30]** who studied Attitude, Knowledge, and Practice on Evidence-Based Nursing among Registered Nurses ,who said that nurses have a vital role in improving evidence knowledge, therefore, the nursing curriculum should include the current evidence based practice to upgrading the knowledge regarding recent advances of evidence practice in addition to structured teaching programme is one of the most effective methods to acquire and improve knowledge.

There was statistically significance relation between total practices and training program pre-program, and total practices with age post-program, but no statistically significance relation between other demographic characteristics and total practices pre and post program . This may be due to **work experience influence the nurses' performance**. This result was supported by **Mohamed and Said ,(2018)[31]**, who studied Evaluation the Effect of Evidence Based Guidelines for Maternity Nurses to Cope with Aborted Women who found that there was statistically significant difference between studied nurses total evidence performance score, and their age, level of education, training courses, and years of experience.

Also **Faiza.A.N(2015)[32]** found NM had good knowledge regarding PPH prevention and management with satisfactory practices regarding prevention of PPH.

CONCLUSION

In the light of the study findings, this study shows that, the implementation of IOWA Model evidence based practice has appositve effect on nurse's knowledge and practices regarding postpartum hemorrhage. There was a significant improvement in the nurses 'knowledge and practice regarding PPH IOWA Model evidence-based practice implementation compared with that before it. There was positive significant correlation between nurses' knowledge and their practice before and after program. Nurses' knowledge and practice about IOWA Model improved after application of this program.

RECOMMENDATIONS

In the light of the findings of current study the following recommendations were be suggested:

- Developing teaching programs and periodical training regarding IOWA Model evidence-based practice .
- Specific procedure booklets should be available to standardize the nursing care provided in obstetrics department.

FUTURE RESEARCHES

- Replication of the study on large sample size and in different hospitals to evaluate knowledge and practices of nurses in relation to EBP in nursing care for generalizing the findings.
- The nursing curriculum should include the IOWA model evidence-based practice to update the evidence knowledge regarding PPH.

REFERENCES:

- Brown CE, Wickline MA, Ecoff L, Glaser D (2017):** Nursing practice, knowledge, attitudes and perceived barriers to evidence-based practice at an academic medical center. *J AdvNurs* 65(2): 371–381 Epub.
- Davis s, Girven, D Pairman S, et al. Planned place of birth in New Zealand (2017):** Active versus expectant management of the third stage of labour: Birth; 38(2): 111– 119. Wiley Online Library Web of ScienceGoogle Scholar.
- Titler MG, Kleiber C, Steelman VJ et al (2001):** The Iowa Model of Evidence-Based Practice to Promote Quality Care. *Crit Care NursClin North Am* 13(4): 497–50.
- Kilpatrick SJ, Prentice P, Jones RL, et al.(2012) :**Reducing maternal deaths through state maternal mortality review. *J Women's Health (Larchmt) Sep;21(9):905-9.* PMID: 22621323.
- Della Torre M, Kilpatrick SJ, Hibbard JU, et al.(2011) :**Assessing preventability for obstetric hemorrhage. *Am J Perinatol Dec;28(10):753-60.* PMID: 21698554.
- Zelop CM.(2011):** Postpartum hemorrhage: becoming more evidence-based. *Obstet. Gynecol. Jan;117(1):3-5.* PMID: 21173639.
- World Health Organization. (2017):** Maternal mortality ratio (per 100 000 live births). Retrieved from <http://www.who.int/healthinfo/statistics/indmaternalmortality/en>
- Andretti, p., DansylateF (2017):** Nurses beliefs about the conditions that hinder or support evidence-based nursing. *Int J Nurs.Pract.* 7(5): 314–21.
- Hofmeyr GJ, Mshweshwe NT, Gülmezoglu AM.(2016):** Uterine massage for preventing postpartum hemorrhage. *Jan 29;1(1):doi: 10.1002/14651858.CD008020.pub2.* PMID: 25631379 Free PMC article.
- Schorn MN.(2015):** Measurement of blood loss: review of the literature. *J Midwifery Women'sHealth Jan-Feb;55(1):20-7.* PMID: 20129226.
- Buckwalter KC, Cullen L, et al. (2017):**Iowa Model Collaborative. Model of evidence - based practice: revisions and validation. *Worldviews Avid based nurse: 14 -175 -182.*
- Dupont C, Deneux-Tharaux C, Touzet S, et al.(2017):**Clinical audit: a useful tool for reducing severe postpartum hemorrhages'? *Int J Qual Health Care.* Oct;23:583–9 [PubMed].
- Dupont C, Occelli P, Deneux-Tharaux C, et al. (2016):** Severe postpartum haemorrhage after vaginal delivery: a statistical process control chart to report seven years of continuous quality improvement. *Eur J Obstet. Gynecol.Reprod. Biol. Jul;178:169–75.* [PubMed].
- Kongon,E, Rajan PV, Wing DA. (2017):** Postpartum hemorrhage: evidence-based medical interventions for prevention and treatment. *ClinObstetGynecol. ;53:165–81.* [PubMed] [Google Scholar]
- World Health Organization. (2018):** Maternal mortality ratio (per 100 000 live births). Retrieved from <http://www.who.int/healthinfo/statistics/indmaternalmortality/en>
- Say L, Chou D, Gemmill A, Tunc,alpO", Moller AB, Daniels J, et al. (2014):** Global causes of maternal death: a WHO systematic analysis. *Lancet Glob Health.; 2(6):e323–33.* [https://doi.org/10.1016/S2214-109X\(14](https://doi.org/10.1016/S2214-109X(14)
- El-Edessy, M.S., Mohammed, M. F., Mustafa, F.A.M., &Hefnawy, M.I.(2014):**Lower uterine segment postpartum hemorrhage.

- Management by cervical suture, B-Lynch Suture and Foley Balloon. *International Journal of Advanced Research in Biological Sciences*; 1(7): 180–183.
18. Cooper, M. & Nix, M. (2013): Translating research into evidence based nursing practice and evaluating effectiveness. *Journal of Nursing Care Quality*, 12 (3), 195 - 202.
 19. AbdElhakm, E.,M and Elbana,H.,M (2018) : Effect of Simulation Based Training on Maternity Nurses' Performance and Self-confidence Regarding Primary Postpartum Hemorrhage Management *American Journal of Nursing Research*, Vol. 6, No. 6, 388-397 DOI:10.12691.
 20. Kumar N, Kant N, and Samar S.(2016):Role of Simulation-based teaching in Management of Postpartum Hemorrhage amongst Postgraduate Students of Department of Obstetrics and Gynecology; *A Prospective Study future of medical education journal*; (1):31-35.
 21. Agha S, AlhamraniA, Khan M.(2015):Satisfaction of medical students with simulation-based learning. *Saudi Med J*. 36(6): 731-36.
 22. El-bahy M., Mohamed, H., and Salam, N., (2013):Effect of Educational Program for Nurses about Pregnancy Induced Hypertension on their Knowledge in Port Said Hospitals. *Med. J. Cairo Univ.*, Vol. 81, No. 2, March: 179-188.
 23. BradelyS., Francis K. , Effie C. , Wanangwa C. , Helen de P. and Eilish M., (2015) : Too few staff, too many patients: a qualitative study of the impact on obstetric care providers and on quality of care in Malawi Bradley et al. *BMC Pregnancy and Childbirth* 15:65 .
 24. Nag, T., Ghosh, A. Cardiovascular disease risk factors in Asian Indian population: A systematic review(2013) *Journal of Cardiovascular Disease Research*, 4 (4), pp. 222-228. DOI: 10.1016/j.jcdr.2014.01.004
 25. Traore M., Arsenault C., Schoemaker-M., Coulibaly A., Huchon C., Dumont A. ndFournier P., (2014): Obstetric competence among primary healthcare workers in Mali, *Int J Gynaecol Obstet*. 126(1): 50-55
 26. Islam F, Aminur R, Abdul H , Charli E , Fazlur R and Koustuv D(2015) :Perceptions of health care providers and patients on quality of care in maternal and neonatal health in fourteen Bangladesh government healthcare facilities: a mixed-method study Islam et al. *BMC Health Services Research* 15:237.
 27. Kim J, Mee O, and HeeKyung C., Kim et al. *BMC Medical Education* (2019): Effects of an evidence-based practice education program using multifaceted interventions: a quasi-experimental study with undergraduate nursing students19:71 .
 28. Lavenberg,J, Pamela Z Cacchione, Kishore L. Jayakumar, Brian F. Leas, Matthew D. Mitchell, Nikhil K. Mull, Craig A (2019): Impact of a Hospital Evidence-Based Practice Center (EPC) on Nursing Policy and Practice16:1, 4–11.© 2019 Sigma Theta Tau International
 29. Belty J. Ackley and Gail B. Ladwig (2014):Nursing diagnosis hand book- an evidence based guide to planning care. 10th ed.,P 18.
 30. Fen Z, Yufang H, Hong G, and Hongxia L (2016):-Attitude, Knowledge, and Practice on Evidence-Based Nursing among Registered Nurses in Traditional Chinese Medicine Hospitals: Research article.
 31. Nadia Abdulla Mohammed1 , AmiraRefaat Said (2018): Evaluation the Effect of Evidence Based Guidelines for Maternity Nurses to Cope with Aborted Women *International Journal of Nursing and Health Science* Vol. 5, No. 2, 14-22.
 32. Faiza.A.N ,RN (2015): Knowledge and Practice of Nurse Midwives Regarding Management and Prevention of Postpartum Hemorrhage in Three Selected Teaching Hospitals-Khartoum State- Sudan Volume : 5 Issue : 4 April ISSN - 2249-555X nursing science