

Efficacy of Self Instructional Guide on Knowledge and Practices Regarding Care of Pre-Eclampsia Women among Staff Nurses

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Abstract Background: Pre-eclampsia is one of the most common complications of pregnancy affecting both the mother and fetus and the management of pre-eclampsia is currently a rescue perspective, as opposed to a preventable approach. Aim of the study to evaluate the effect of self-instructional guide on knowledge and practices regarding pre-eclampsia among staff nurses. Design: A Quasi-experimental design was utilized. Setting: the current study was conducted in the obstetric and gynecologic department, Helwan General Hospital. Sample: A sample of 40 nurses was recruited according to inclusion criteria. Two tools were used for data collection (1) A structured interview questionnaire, included socio-demographic characteristics of the studied nurses, and nurse's knowledge about care of pre-eclampsia (2) observation checklist included standards of nursing care of pre-eclampsia Both tools of evaluation were used to assess nurses' level of knowledge and practice before / after three months of implementing the study. The main findings the self-instructional guide significantly improved the knowledge and practice of nurses regarding care of preeclampsia women. The self-instructional guide was useful in improving the knowledge of nurses in pretest 12.5% samples has good knowledge and 85% samples had good knowledge in posttest. The study recommended putting clear guidelines (policies, protocols and standards) of the different services such guides shall be prepared on various important subjects and made available for nurses working in clinical areas. It will be effective method of updating nurse's knowledge and practice regarding management of pre-eclampsia and eclampsia.

Keywords: nurses knowledge, practice, self instructional guides, preeclampsia women

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1. Introduction

Pre-eclampsia is a pregnancy specific multisystem disorder of unknown etiology and accounts for a considerable proportion of maternal and fetal morbidity and mortality all over the world. Nearly 5% - 10% are complicated with pre-eclampsia in developing countries. The incidence in primigravidae is about 10% and in multigravida 5% [1].

Pre-eclampsia is characterized by blood pressure of $\geq 140/90$ mm Hg or rise in systolic blood pressure of ≥ 30 mmHg or diastolic blood pressure of ≥ 15 mm Hg with proteinuria after 20 weeks of gestation in previously normotensive and non-proteinuric women. Proteinuria is defined as 300 mg or more of urinary protein per 24 hours or persistent 30 mg/dl (1+ dipstick) in random urine sample [2].

Pre-eclampsia is a disorder of placental development thought to arise from a mismatch between uteroplacental supply and fetal demands.

The resulting placental release of biologic factors causes systemic maternal endothelial cell dysfunction and

end organ complications that include severe hypertension, eclampsia, pulmonary edema, and HELLP syndrome (hemolysis, elevated liver enzymes and low platelet count) [3].

The risk of developing pre-eclampsia appears to be greater in women who have a family history of essential hypertension, and there may be a relationship between risk of pre-eclampsia and the metabolic syndrome. The underlying basic pathology is endothelial dysfunction and vasospastic phenomenon affecting almost all the vessels, particularly those in kidney, uterus, placenta and brain [4].

Preeclampsia can prevent the placenta from receiving enough blood, which can cause your baby to be born very small, also one of the leading causes of premature births, and the complications that can follow, including learning disabilities, epilepsy, cerebral palsy, hearing and vision problems. In moms-to-be, preeclampsia can cause rare but serious complications that include: stroke, seizure, water in the lungs heart failure, reversible blindness, bleeding from the liver, and after birth. Preeclampsia can cause the placenta to suddenly separate from the uterus, (placental abruption). This can cause stillbirth [5].

Preeclampsia management of care is hospitalization, frequent BP measurements, laboratory studies, 24 hour urine collection, daily weights, and fetal monitoring. Laboratory studies reviewed for the severity of preeclampsia are platelet counts, liver function, and the evidence of hemolysis. Woman is confined to bed rest and has frequent assessments for blurred vision, epigastric pain, persistent headaches, and fetal surveillance for wellbeing. [6] The cure for preeclampsia is delivery and decision for the type and timing of delivery is dependent on the gestational age, the conditions of the mother and child, and the severity of preeclampsia [7].

The medical intervention for preeclampsia is to manage the symptoms with intravenous magnesium sulfate and antihypertensive medication for the women. Magnesium sulfate is given to prevent seizures. The medication interferes with the release of acetylcholine at the synapses, thus decreasing the neuromuscular irritability, decreased cardiac conduction and decreases central nervous system irritability [8].

The dose of magnesium sulfate differs in the literature. Magnesium sulfate is given intravenously with a loading dose between four to six grams followed by one to three grams an hour. Magnesium sulfate has also been shown to assist with neuroprotection of the preterm fetus if the mother is on at least two grams for 24 hours. Calcium gluconate is the antidote for magnesium toxicity and must be available to be given, should a magnesium sulfate overdose occur. [9] Antihypertensive medications are used when the BP is greater than 160/110 mm Hg. The goals of antihypertensive medications, such as labetalol or hydralazine, are to reduce the chance of maternal stroke and maintain uteroplacental perfusion. If the gestation is less than 34 weeks, antenatal corticoid steroids need to be given to help with fetal lung maturity. The medical interventions are designed to keep the mother and fetus safe and continue the pregnancy to allow the fetus to grow and allow time for the fetal lungs to mature [10].

Nurses having a vital role within the health care system as well as play an important role in the management of preeclampsia are to protect the maternal/fetal wellbeing and optimize a healthy outcome for both. The nurse is responsible for keeping a quiet environment, maintaining seizure precautions, having emergency medications available, and an emergency birth pack ready. [11]

Nurses as observed in the clinical setting, routine assessments of blood pressure, urine output, proteinuria, edema, fetal wellbeing, visual disturbance, and epigastric pain are used to evaluate the severity of preeclampsia for women not receiving magnesium sulfate. Once the woman is on magnesium sulfate, the hourly assessments include medication infusing on a pump, lung sounds, deep tendon reflexes, assessment of level of consciousness. The severity of woman's preeclampsia can change rapidly. Additionally, an operative delivery must be readily available with a resuscitation team available to support a preterm baby. Pre-eclampsia women are more dependent on nurses to meet their basic needs than other antenatal women who can independently perform their activities [12].

1.1. Significance of the Study

Pre-eclampsia usually occurs, after the 20th week of pregnancy. Also known as "toxemia" or inaccurately called

"pregnancy related hypertension in the pre-eclamptic woman there is a risk of repeated miscarriages and hormone and infertility in first time pregnant women. It is specific multi system disorder of unknown etiology. The disorder affects 5-7 of pregnancies with an incidence of 236 cases per 1000 deliveries. Pre-eclampsia is the single identifiable risk factor in still birth and strongly associated with fetal growth retardation, low birth weight, preterm delivery, respiratory distress, it has been shown that 65% of fetal deaths occur due to non-managed pre-eclamptic women [13].

According to [14] WHO 2015, Maternal mortality is unacceptably high. 99% of all maternal deaths occur in developing countries. Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth. As the health-care solutions to prevent or manage complications are well known. All women need access to antenatal care in pregnancy, skilled care during childbirth, and care and support in the weeks after childbirth.

As regard to [15] Brown, et al., 2016 and [16] Filippi et al., 2016, an estimated 300,000 women died globally in 2015 as a result of pregnancy-related conditions. The findings of a WHO meta-analysis show that the most important direct causes are hemorrhage (27%), hypertension (11%), abortion, and sepsis (14%). Pre-eclampsia mothers are more dependent on nurses to meet their basic needs than other Antenatal mothers. It is a major cause of maternal and perinatal morbidity and mortality. To minimize mortality and morbidity, it is important to identify cases of pre-eclampsia, to provide efficient and effective nursing care to them

1.2. Aim of the Study

The aim of this study was to evaluate the effect of self-instructional guide on knowledge and practices regarding preeclampsia among staff nurses. This aim was achieved through:

1. Assessing the actual nurses' knowledge related to caring for pre-eclampsia.
2. Assessing the practices regarding care of pre-eclampsia among the Nurses.
3. Determining the effectiveness of self-instructional guide on care of pre-eclampsia women.

1.3. Hypotheses

The self-instructional guide improved the knowledge and practices of nurses regarding care of preeclampsia women.

2. Subjects & Methods

2.1. Research Design

Quasi-experimental design was used to complete the study aim.

2.2. Setting

The study carried out in the obstetric and gynecologic department, Helwan General Hospital.

2.3. Sampling

Sample type: A purposive sample.

Sample size: 40 working in the obstetric and gynecologic department, Helwan General Hospital and fulfilled the following inclusion criteria; nurses who are responsible to provide nursing care for women, and willing to participate in the study. Exclusion criteria nurses who have administrative role only as head nurse

Sample technique: The researchers attended the department three days per week for seven months and the purpose of the study was explained by the researchers to all nurses included in the study.

2.4. Data Collection Tools

Two tools for collection of data were used.

2.4.1. First Tool: a Structured Interviewing Questionnaire

This tool was designed by the researchers in Arabic language after reviewing of related literature to pre-eclampsia. This questionnaire consisted of three parts:

Part I: social and demographic characteristics of the studied nurses such as age, level of education, past experiences in years and previous training programs.

Part II: It was used to assess nurse's knowledge regarding pre-eclampsia nursing care before and after three months of teaching, which included (1) knowledge about pre-eclampsia. (5 questions), (2) medical and surgical management (5 questions), (3) dietary management (3 questions), (4) possible complications (3 questions), (5) nursing care of pre-eclampsia (15 questions).

Evaluating knowledge of the studied nurses was designed as follows: -

* All knowledge contents were divided into (5) questions, each question was further divided into sub-items, open and close ended questions, each sub-item was assigned a score of (2) given when the answer was completely correct, a score (1) was given when the answer was incompletely correct and a score (0) was given when the answer was incorrect. And a participant who checked an item (Yes) was given (1), while the one who checked an item (No) was given (0). The total score of each question was calculated by summation of the scores of its sub-items.

The total score was graded as the following: -

- Poor <50%
- Average 50 < 70 %
- Good 70-100%.

2.4.2. Second Tool:

Observational checklist: Included standards of Pre-Eclampsia nursing care. The standards were adopted from WHO's guidelines [17] it was administrated by the researcher before / After 3 months from training implementation during their actual nursing care. The observational checklist related to process was applied three times before the training and three times after three months, then the average of each three times / procedure obtained its score. An observation checklist included:-

Part (I) related to availability of structural items (physical structure of room, availability of furniture,

logistics, selected drugs and equipment and supplies weighing machines and BP machines, Urine analysis strips.) (Standard I).

Scoring: This can be evaluated if each sub-item is considered "available and enough" was assigned a score of (2), "available and not enough" was assigned a score of (1) and "not available" was assigned a score of (0), grand total score is (100).

Part (II) related to process included, the procedures provided by nurses to care and evaluate the severity of preeclampsia including (routine assessments of general appearance, blood pressure, weight, urine output, proteinuria, lower extremities for edema, fetal wellbeing, visual disturbance, epigastric pain and comfort measures,etc) (Standard II).

Scoring: This can be evaluated if each sub-item is considered "done completely correct", the participant is assigned (2), "done incompletely correct" participant is assigned (1) while assigned (0) if considered "not done".

2.4.3. Tools Validity and Reliability

The tools of data collection were reviewed for comprehensiveness, appropriateness by a panel of three experts of maternal health nursing and obstetrics medicine. The panel ascertained the validity content of the tools. The reliability was done by Cronbach's Alpha coefficient test which revealed the three tools consisted of relatively homogenous items as indicated by the moderate to high reliability of each tool. The internal consistency of nurse's knowledge regarding care of pre-eclampsia sheet was α 0.73, and standards of Pre-Eclampsia nursing care was α 0.75.

3. Ethical Considerations

An oral consent was obtained from each nurse included in the study after explaining the research aim by the researchers, strict confidentiality was ensured for any obtained information. Each nurse was informed that study do not entail any harmful effect, participation is voluntary, and they have the right withdraw at any time through the research period.

3.1. Pilot Study

The pilot study was carried out on ten percent of the total sample (4 nurses) to ascertain the relevance, clarity, applicability of the tools, and to detect any problems related to the statements. Also, the pilot study helped to estimate the time needed to complete the questionnaires. According to the results of the pilot study no modifications were done. Nurses involved the pilot study were excluded from study sample.

3.2. Field of Study

The study was carried out from the beginning of January, 2017 and completed at the end of July, 2017. Official approvals were taken from Dean of Faculty of Nursing to Helwan General Hospital matron. The aim of the study was explained by the researchers to all nurses included in the study. The average time needed for the

completion of each individual interview with nurses was around (15- 30 minutes).

The researchers visited the setting in the three shifts. The average number of nurses was 12 nurses / day. The nurses were divided into groups each group consisted of 4-5 nurses according to their working condition and their physical readiness to continue. The process of implementing the teaching and training sessions accomplished through 10 weeks.

The teaching and training involved (9) sessions where (3) and (6) of them were devoted to theoretical and practical content respectively. The duration of each session was ranged from one and half hour to two hours including periods of discussion according to their achievement, progress and feedback. The researchers were available three days per week. At the beginning of the first session an orientation to the training and its aims took place, Arabic language was used to suit the nurses' level of understanding. Feedback was given in the beginning of each session about the previous one.

Different methods of teaching were used such as lecture, group discussion, demonstration and redemonstrations. A handout prepared by the researchers distributed to all nurses in the first day of the training. Nurses were motivated and encouraged to cooperate and participate actively in the study throughout its different stages.

After three months of implementation of the teaching and training, the follow up test for nurses' knowledge and practice were done by the same format of the pre-training assessment to evaluate the effect of the implemented teaching and training.

3.3. Limitations of the Study

- The time for giving the session for nurses who were working in the obstetric and gynecologic department was difficult to organize. This was the main obstacle facing the researchers.
- Lack of detected nursing protocol of care and disposable supplies and equipment in the department was the main obstacle to accurate evaluation of training.

3.4. Statistical Analysis

Data were verified prior to computerized entry. The Statistical Package for Social Sciences (SPSS over 20.0) was used for that purpose, followed by data analysis and tabulation. Descriptive statistics were applied (e.g., mean, standard deviation, frequency and percentages). Test of significance (paired t-test and ANOVA test) was applied to test the study hypothesis. Correlation coefficient was calculated between knowledge and practice scores. A significant level value was considered when $p \leq 0.05$. And A highly significant level value was considered when $p \leq 0.001$.

4. Results

Table 1 this table shows that, the total study sample was 40 nurses, (47.5%) of them were over 30 years and the mean \pm SD of age was 29.5 ± 6.7 Regarding qualification,

majority of nurses 87.5% had nursing diploma, while the minority (5.0%) had bachelor degree. regarding years of experience, more than half of the nurses (57.5%) had more than ten years of experience, while (17.5%) had less than 3 years of experience and the mean \pm SD was 11.4 ± 6.5 .

Table 1. Distribution of the studied nurses according to their general characteristics (n= 40)

Characteristics of nurses	n= 40	
	Number	Percent
Age (years)		
< 20	5	12.5
20 -	7	17.5
25 -	9	22.5
≥ 30	19	47.5
Mean \pm SD	29.5 \pm 6.7	
Qualification		
Nursing diploma	35	87.5
Technical Institute	3	7.5
Faculty of nursing	2	5.0
Experience (years)		
< 3	7	17.5
3 – 10	10	25
>10	23	57.5
Items	Before teaching	After teaching
	Mean \pm SD	Mean \pm SD
Mean \pm SD	11.4 \pm 6.5	

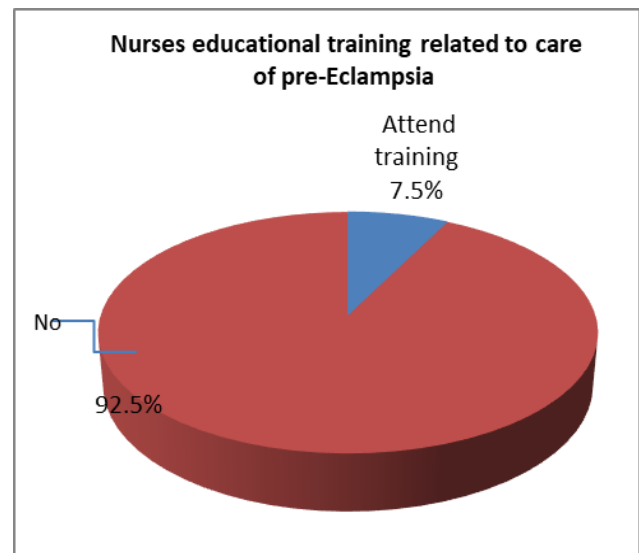


Figure 1. Distribution of nurses by their educational training related to care of pre-Eclampsia

Table 2 indicates that, there was statistically significant difference before / after teaching and giving the self-instructional guide in relation to nurses' knowledge regarding care of pre-eclampsia. As regard knowledge about pre-eclampsia $t = 2.270$, $p < 0.05$, medical and surgical management of pre-eclampsia $t = 5.414$, $p < 0.001$, dietary management $t = 4.356$, $p < 0.001$. Moreover, complications of pre-eclampsia $t = 3.934$, $p < 0.001$, regarding nursing care of pre-eclampsia $t = 1.984$, $p < 0.05$.

Table 2. Mean scores of nurses' knowledge regarding care of Pre-Eclampsia before / after teaching (n= 40)

			Paired t-test	p-Value
Knowledge about pre-eclampsia.	0.93 ± 0.66	1.28 ± 0.68	2.270	< 0.05*
Knowledge regarding medical and surgical management of pre-eclampsia.	0.50 ± 0.59	1.23 ± 0.69	5.414	< 0.001**
Knowledge regarding dietary management of pre-eclampsia.	0.78 ± 0.62	1.38 ± 0.70	4.356	< 0.001**
Knowledge regarding possible complications of pre-eclampsia.	0.73 ± 0.59	1.35 ± 0.62	3.934	< 0.001**
Knowledge regarding nursing care of pre-eclampsia.	0.93 ± 0.62	1.20 ± 0.69	1.984	< 0.05*

*A statistical significant difference ($P \leq 0.05$)

**A highly statistical significant difference ($P \leq 0.001$).

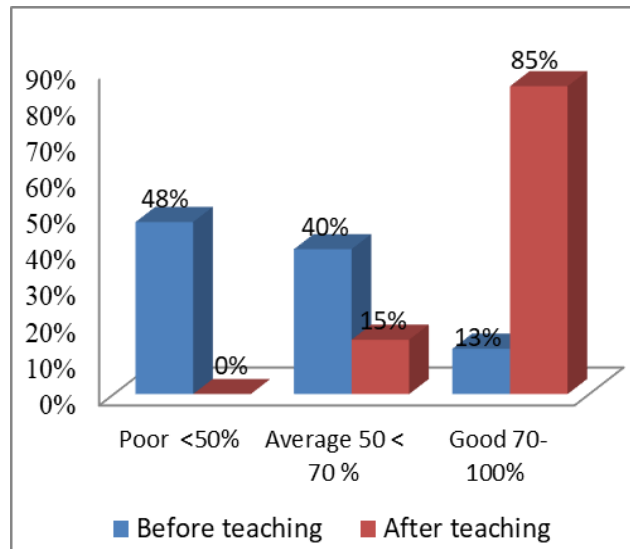


Figure 2. Distribution of Nurses according to their total level of knowledge regarding care of pre-eclampsia before / after teaching (n= 40)

Figure 2 this figure table deals with the assessment of knowledge regarding care of preeclampsia among nurses. The level of knowledge is divided under following headings poor, average, and good. Regarding to nurses knowledge before teaching, the figure showed that 47.5% of nurses had poor knowledge, 40% of nurses had average knowledge, 12.5% of nurses had good knowledge regarding care of pre-eclampsia. Whereas after teaching, nurses attained 85% of good knowledge, after teaching and giving the self-instructional guide.

Table 3 illustrates that, there was no statistically significant difference related to availability of structural items ($p = >0.05$).

Table 4 illustrates that, there was highly statistically significant difference before / after training in relation to actual practice of nurses regarding pre-eclampsia assessment items except, assessment blood pressure and assessing weight, there was no statistically significant difference before / after training and giving the self-instructional guide ($p = >0.05$).

Table3. Mean scores of availabilities of structural items in

Items	Shifts			F ANOVA	p-Value
	Morning	Afternoon	Night		
	Mean ± SD	Mean ± SD	Mean ± SD		
-Physical structure	1.80 ± 0.45	1.60 ± 0.55	1.60 ± 0.55	0.250	>0.05
- Furniture	0.89 ± 0.78	0.89 ± 0.78	0.89 ± 0.78	0.00	>0.05
-Equipment and supplies	0.81 ± 0.79	0.70 ± 0.67	0.63 ± 0.69	0.457	>0.05
- Drugs	2.00 ± 0.00	1.57 ± 0.53	1.57 ± 0.53	2.250	>0.05
- Logistics	1.00 ± 1.41	1.00 ± 1.41	1.00 ± 1.41	0.00	>0.05

*A statistical significant difference ($P \leq 0.05$)

**A highly statistical significant difference ($P \leq 0.001$).

Table 4. Mean scores of actual practices of nurses regarding care of Pre-Eclampsia pre / post teaching (n= 40)

assessment	pre-teaching Mean ± SD	post teaching Mean ± SD	Paired t-test	p-Value
-Observe general appearance	0.25 ± 0.44	0.65 ± 0.48	5.099	< 0.001
-Assessing blood pressure	0.05 ± 0.22	0.10 ± 0.30	1.433	>0.05
-Assessing the Weight	0.98 ± 0.62	1.08 ± 0.53	0.941	>0.05
- Urine check for proteinuria.	0.55 ± 0.59	0.80 ± 0.56	2.687	< 0.05
-Assessing urine out put	0.18 ± 0.38	0.58 ± 0.51	5.099	< 0.001
-Lower extremities assessment for edema	0.00 ± 0.00	0.25 ± 0.44	3.606	< 0.001
-Comfort level assessment	0.95 ± 0.71	1.28 ± 0.55	2.962	< 0.005
-Evaluate fetal well being	2.65 ± 1.56	2.93 ± 1.67	2.562	< 0.05

A statistical significant difference ($P \leq 0.05$)

A highly statistical significant difference ($P \leq 0.001$).

Table 5. Correlation coefficient between total nurses' knowledge scores regarding nursing care of pre-eclampsia pre /post teaching, age and years of experience

Variable	Knowledge pre-teaching		Knowledge post teaching	
	r	p	r	P
Age	-0.530	< 0.01	-0.629	< 0.01
Experience by years	-0.519	< 0.01	-0.624	< 0.01

*A statistical significant difference ($P \leq 0.05$)

**A highly statistical significant difference ($P \leq 0.001$).

Table 5 shows that, there was negative statistically significant correlation between knowledge pre-and post-teaching and age ($r = -0.530$, $r = -0.629$) respectively. Also, there was negative statistically significant correlation between knowledge pre-and post-teaching and giving the self-instructional guide and years of experience ($r = -0.519$, $r = -0.624$) respectively.

Table 6. Correlation coefficient between total nurses' practice scores regarding pre-eclampsia nursing care pre / post training, age and years of experience

Variable	Practice pre-training		Practice post training	
	r	p	r	P
Age	-0.436	< 0.01	-0.692	< 0.01
Experience per year	-0.421	< 0.01	-0.635	< 0.01

*A statistical significant difference ($P \leq 0.05$)

**A highly statistical significant difference ($P \leq 0.001$).

Table 6 shows that, there was negative statistically significant correlation between practice pre and post training and age ($r = -0.436$, $r = -0.692$) respectively. Moreover, there was negative statistically significant correlation between practice pre and post training and giving the self-instructional guide and years of experience ($r = -0.421$, $r = -0.635$) respectively.

Table 7. Correlation coefficient between total scores of nurses' Knowledge and practice pre / post teaching and training

Variable	Knowledge before teaching		Knowledge after teaching	
	r	p	r	P
Pre-training nurse's practice	0.281	>0.05		
Post training practice nurse's			0.422	< 0.01

*A statistical significant difference ($P \leq 0.05$)

**A highly statistical significant difference ($P \leq 0.001$).

Table 7 showed that, there was a correlation between knowledge before teaching and practice before training ($r = 0.281$, $p = >0.05$). Also the table showed that, there was a correlation between knowledge after teaching and practice after training and giving the self-instructional guide ($r = 0.422$, $p = < 0.01$). statistically there was a significant difference.

5. Discussion

The present study aimed to improve knowledge and practices of nurses regarding care of preeclampsia and

covered three main parts; Firstly, characteristic of the studied nurses. Secondly, nurses' knowledge regarding care of pre-eclampsia. Thirdly, standards of nursing care during care of pre-eclampsia.

First part, regarding social and demographic characteristic of the studied nurses, the study showed that, the mean score of nurses' age was 29.5 ± 6.7 years. And most them (95.0 %) had secondary school diploma. While the mean scores of years of their experience was 11.5 ± 6.4 years. 7.5% of nurses receive any educational training about nursing care of pre-eclampsia.

Second part, concerning nurses' knowledge about care of pre-eclampsia, the finding of the present study revealed a considerable improvement in nurses' knowledge regarding care of pre-eclampsia. This is supported by DiptiShukla, (2016 [13]), reported a significant improvement in nurses' knowledge regarding care of pre-eclampsia and its components after giving the self-instructional guide.

The present study revealed that, there was respectable improvement of nurses' knowledge after teaching and giving the self-instructional guide compared to before teaching in relation to knowledge about pre-eclampsia, dietary management, possible complications, and nursing care of pre-eclampsia. In this respect *Lowdermilk et al.*, [3], mentioned that, it is important to provide care, the nurse should have a comprehensive knowledge of pre-eclampsia, to detect deviations from normal and provide early treatment and supportive nursing care. The findings are supported by Melzer et al., 2012, [18] reports that, pre-eclampsia management according to scientific evidence, nurses view-Hypertensive disorders in pregnancy deserve special attention in the setting of global public health.

Furthermore, the current study indicated negative correlation between total nurses' knowledge scores and their age and years of experience before and after teaching and giving the self-instructional guide. Where nurses in age group < 20 and 25- years old are the most capable group of understanding and applying what they have been taught. As compared with nurses in age group ≥ 30 years old. This is in accord with Magee (2009), pointed out that, there was significant association between nurses' age and their knowledge, where nurses in age group between 20-35 years old were the most responding group. In contrast, DiptiShukla, (2016 [13]), found no significant association between nurses' age and their knowledge care of pre-eclampsia.

Third part concern standards of nursing care pre-eclampsia. Regarding availability of structural items in department, the current study revealed that, there were lack of enough illumination and ventilation, cleanliness not available along the day, and insufficient furniture such as adult beds, bedside tables, waste receptacle and IV stands and not available of privacy screens and chairs. In addition, there was deficiency of availability of equipment and supplies which necessary in providing women care as different sizes of cannula, catheter, syringes, sterile and disposable gloves, enough linens and disinfectant betadine. Unfortunately, there were no written guidelines (policies, protocols and standard) for pre-eclampsia to nurses in the department. This result is in the same line with [21]. Thus, all these factors reflected poor structure of the clinical areas that contributes to poor of care. This is supported by Cunningham [22], mentioned that, the structure standards regulate the environment to ensure care, and the good

structure that is a sufficiency of resources and proper system design is probably the most important means of protecting and promoting of care.

Regarding process which includes actual practice of nurse's care for pre-eclampsia, the present study revealed improvement in nurses' practice in relation to assessment of pre-eclampsia, the current study revealed no significant improvement in relation to assessing blood pressure and assessing weight before and after training. While there was significant improvement regarding observing the general appearance, assessing urine check for proteinuria, assessing urine output, Lower extremities assessment for edema, comfort level assessment and evaluate fetal wellbeing before and after training and giving the self-instructional guide. This result is congruent with (Roth et al., 2014) confirmed that the practice is lacking routines and important procedures are omitted. The Probability to find critical symptoms is therefore reduced. WHO, (2015) reported that, nurses perform preeclampsia assessment according to facility protocol, focused assessment for frequent BP measurements, laboratory studies, 24-hour urine collection, daily weights, and fetal monitoring. Woman is confined to bed rest and has frequent assessments for blurred vision, epigastric pain, persistent headaches, and fetal surveillance for wellbeing.

In addition, the present study revealed negative correlation between total nurses' practice scores and their age and their years of experience before and after training and giving the self-instructional guide. This might be due to the senior nurses delegated nursing activities to the junior nurses and have small number of assigned women bedside some administrative roles. This result is agreed with Ronsmans and Campbell [23] concluded that, the less experienced nurses recorded higher level of performance than nurses with more years of experience.

On investigating the correlation between total scores of nurses' knowledge and practice before and after teaching, training and giving the self-instructional guide. There was no statistically difference between knowledge and practice before teaching and training ($r = 0.283$, $p = >0.05$). This finding is agreed with Abed- El sayed [24], reported that, low pretest scores related to some reasons; knowledge deficit, lack of understanding about how, when to apply knowledge to practice, inadequate supervision and finally absence of evaluation feedback. While, after teaching and training, there was positively significant correlation between knowledge and practice after teaching and training ($r = 0.427$, $p = <0.01$).

Generally, the study hypothesis was supported by the results as it revealed an improvement in the most aspects of knowledge and practice, and revealed the areas of weakness of nursing practice teaching, training, and giving the self-instructional guide. Also, the results reflected the importance of establishing an in-services training programs, and standards of care and follow up for continuing improving care of pre-eclampsia.

6. Conclusion

The self-instructional guide significantly improved the knowledge and practice of nurses regarding care of

preeclampsia women. There was negative correlation between nurses' knowledge and their practice before and after teaching, training and giving the self-instructional guide regarding age and years of experience and positive significant correlation between nurses' knowledge and practice after teaching and training. The junior experienced nurses were more appreciating the training than the senior nurses. There was lack of equipment and supplies in department that leads to poor practice in some aspects of care. Also, there were no clear guidelines (policies, protocols and standards) for pre-eclampsia. Finally, it was cleared from the findings that hypotheses were supported

7. Recommendations

- Refreshment of nurses' knowledge and practice through periodic educational program for nurses about management of pre-eclampsia to upgrade their knowledge and improve their practice.
- Provide adequate and sufficient supplies and facilities to encourage nurses to follow the standardized techniques.
- Replication of the study on a larger sample for generalizing the findings.

Further Studies

Putting clear guidelines (policies, protocols and standards) of the different services such guides shall be prepared on various important subjects and made available for nurses working in clinical areas. It will be effective method of updating nurse's knowledge and practice regarding management of pre-eclampsia and eclampsia.

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