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Impact of a Tailored Intensive Educational Program upon Preeclampsia on Nurses' Knowledge at Beni-Suef City, Egypt

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Abstract **Background:** Preeclampsia is a disease of high morbidity and mortality. Nurses' knowledge of the nature, symptomatology and management of the disease might play role in proper control. **Aim:** The objective of this study was to assess the effect of an intensive educational program on knowledge of nurses regarding preeclampsia. **Methods:** A quasi-experimental (pre-post) design was used and conducted in Obstetrics and Gynecology Department, Beni-Suef University Hospital, from March to December 2016. A total of 60 nurses working at the out-patient antenatal clinic and inpatient Obstetrics and Gynecology Department took part in the study. **Results:** Our results showed that the program made a success in raising the frequency of nurses with optimal knowledge regarding the nature of preeclampsia; from only 20 to 44, the epidemiology from 12 to 40, the symptomatology from 16 to 48, the healthcare from 18 to 46, and consequences from 18 to 46 ($p<0.05$). **Conclusion:** Our educational program improved nurses' knowledge over preeclampsia. Further research is needed on whether the newly acquired knowledge of nurses could affect their practice.

Keywords Preeclampsia, Knowledge, Nurses, Program

1. Introduction

Preeclampsia (PE) is considering a serious condition of increase blood pressure and excess protein in the urine during pregnancy usually after fifth month and one of the complications known as the hypertensive disorders of pregnancy. Thus may represents a major cause of maternal and fetes morbidity and mortality worldwide [1], However, world health organization was reported the maternal mortality rate is approximately 60.000 per year worldwide. Unfortunately; in Egypt the prevalence of preeclampsia in a community based study reported 10.7%, while 12.5% based on hospital studies [2, 3].

Many studies have reported that many complications of preeclampsia as cardiovascular disease, renal disease, cerebrovascular disease, short life expectancy [4-6].

Moreover, preeclampsia may be started as mild stage but slowly or rapidly develop into sever stage of preeclampsia, characterized by rising hypertension (diastolic blood pressure > 90, increasing proteinuria > 0.3g/24 h) or substantial maternal organ dysfunction, frontal headache, epigastric pain and visual disturbances [7, 8].

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Women during pregnancy needs a special care and follow up from health care facility such as scanning regularly for preeclampsia and apply rigorous care plan for pregnant women who are at risk, as well as awareness of signs and symptoms of preeclampsia is important at health care facilities to protecting women from fetal complication and ensuring women receive appropriate care on proper time [9].

El-Moselhy et al (2011), recommended that the antenatal care for pregnant women should be improving in Egypt and large number of mothers in different areas in Egypt must be understand the epidemiology of preeclampsia as a primary prevention which needs carful antenatal care on appropriate periods, especially in women at risk to PE [1].

Early detection during antenatal care and close observation are assertive plan for controlling preeclampsia and implementing strategies to reduce the incidence and mortality, however as high-income countries succeed to achieve it by almost 90% [10]. However Early detection and prompt treatment can help to avoid serious complication for preeclampsia [11].

Defiantly, it is very important to provide health education for community members in all countries to be aware about health conditions such preeclampsia that may significantly affect them, especially in countries where health services are not readily available [12].

Aim of study:

The study aims at assessing the effect of an intensive educational program on knowledge of nurses regarding preeclampsia.

Study Questions:

- Are nurses having adequate knowledge regarding preeclampsia?
- Is nurses' knowledge will be improved after application of preeclampsia learning program?

Hypotheses:

- Nurses' knowledge regarding preeclampsia will be improved after attendance of learning program.
- There is a positive relationship between pre-post learning program on nurses' knowledge.

Significant of the study:

Preeclampsia during pregnancy is a major cause of maternity mortality and the incidence from 1.8% to 16.7% in low and middle-income countries [13], However preeclampsia is considering as challenging to manage and fortunately the method of early detection based on clinical assessment during follow up at antenatal visit [14, 15].

Follow up during pregnancy may improve maternal outcomes in this regard, the primary prevention is very important to detect early stage of preeclampsia followed by proper treatment in suitable time; however qualified, educated nurses can play an important role as decision maker to save women's life.

2. Methods and Subjects

1. **Study Design:** A quasi-experimental (pre-post) design was used.
2. **Study Setting:** this study was conducted in the antenatal clinic and inpatient obstetric & gynecological, Beni-Suef University Hospital. March 2016 to December 2016.
3. **Study Sample:** The sample of this study included 60 nurses working in the out-patient antenatal clinic and inpatient obstetric & gynecological, Beni-Suef University Hospital.
4. **Tools for Data Collection:**

Interviewing structured questionnaire was used to collect data. It designed by researcher based on the related literature, it tested for validity on ten percent nurses who were excluded from study sample.

- First part included: Structured interview questionnaire form: This tool was used to collect demographic characteristics of nurses (level of education, shift work, years of experience and working department).
- Part two concerned with 20 items pertinent to the definition, causes signs and symptoms, treatment and complication of preeclampsia.

Grading

The subject's response was recorded using a Likert type format with 5 point scale. The numerical value allotted to each response is as following: "Incorrect, Sometimes Incorrect, Unknown, Sometimes Correct and Correct". Then the total score was calculated from 100 degree and classified into optimal score (≥60%) and suboptimal score (<60%%).

Validity:

It was established for face and content validity by a panel of five expertises's who revised the tools for clarity, relevance, applicability, comprehensiveness, understanding, and ease for implementation and according to their opinion minor modifications was applied.

Pilot Study

Before the actual study, a pilot study was done on 10% of the calculated nurses to check the accuracy of the information included in each questionnaire and to identify the validity and reliability of the items. It helped in making necessary changes in the tools to detect data collection problems or difficulties.

Field work

The study was conducted during the period March 2016 to December 2016. After taking permission from the director of hospital, pre-test, structured questionnaire was administered to the nurses for assessing existing knowledge regarding preeclampsia, after implementing the interventional program and researchers used audiovisual aids to explain the program throughout sessions, followed by post-test to reassess nurses' knowledge after implementing the program.

Procedures:

The study was designed in three phases: assessment, implementation and evaluation

1. Assessment phase: This stage served to identify the baseline knowledge to the nurses who agreed to participate in the study, and who were informed about the nature and purpose of the study before implementation of the program, They were intended to be used also after the intervention in order to measure the knowledge level of the nurses about preeclampsia and evaluate the improvement after the program. Filling the questionnaire took from 15-20 minutes for each participant. The program was implementing to obstetrics and gynecological nurses in terms of sessions and teaching on the spots during their working hours to enhance knowledge about preeclampsia and pretest was conducted.
2. Implementation phase: after preparation of the program, the researcher started its implementation. The program was administered to the nurses in short session of about 60 minutes and filling out the questionnaire to measure the nurses knowledge (pre & post) test consumed on average about 15-20 minutes.

   During implementation phase the guidelines were given Conduction of the program took 8 weeks. Permission to implement the program was obtained

from the directors of Beni-Suef University hospital. The objectives of the intervention program were explained to ensure maximum co-operation, as well as to make arrangements for the attendance of nurses by the directors. The program was carried out through 12 sessions and time spanned 4 month from January 2016 to April 2016. The attendances at the beginning of the first session the researcher introduced herself to the nurses and explained the objectives of the program and the content, also nurses were informed about the time of the next session.

3. Evaluation phase: post implementation of the guidelines was done using the same pre-test tool. comparison between the collected data before and after guidelines intervention was done to determine the effectiveness of guidelines.

Ethical considerations: The study was approved by the ethical scientific research committee at the Faculty of Nursing, Beni-Suef University. An informed consent was obtained from each participant before collecting any data explaining the study aim in a simple and clear manner to be understood by common people. Data were considered confidential and not be used outside this study.

Statistical design: Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Qualitative categorical variables were compared using chi-square test. For statistical group comparisons between pre-post intervention program by independent-sample *t*-tests were computed.

3. Results

Out of the 60 nurses included in our study, 18 (30%) were carrying diploma, 12 (20%) were institutional graduates and half of them had a bachelor degree. More than half of the nurses had experience less than 5 years. Almost two thirds of the nurses admitted having night shifts and most of nurses were working in departments only and were not attending the delivery chamber **(Table 1)**.

Table 1. Socio-demographic characteristics of the nurses

Characteristics		Frequency	Precent
Degree	Diploma	18	30.0
	Institution	12	20.0
	Bachelor	30	50.0
Years of experience	<5 years	34	56.7
	5-10 years	18	30.0
	>10 years	8	13.3
Night shift	Yes	38	63.3
	No	22	36.7
Site	Delivery chamber	8	13.3
	Department	38	63.4
	Both	14	23.3

Table 2. Effect of the interventional program on the knowledge of nurses about preeclampsia

Knowledge of preeclampsia		Before (n=60,%)	After (n=60,%)	P value
Nature	Optimal	20 (33.3)	44 (26.7)	<0.001*
	Suboptimal	40 (66.7)	16 (73.3)	
Epidemiology	Optimal	12 (20.0)	40 (66.7)	<0.001*
	Suboptimal	48 (80.0)	20 (33.3)	
Symptomatology	Optimal	16 (73.3)	48 (80.0)	<0.001*
	Suboptimal	44 (26.7)	12 (20.0)	
Healthcare	Optimal	18 (30.0)	46 (76.7)	<0.001*
	Suboptimal	42 (70.0)	14 (23.3)	
Consequences	Optimal	18 (30.0)	46 (76.7)	<0.001*
	Suboptimal	42 (70.0)	14 (23.3)	
Total	Optimal	18 (30.0)	46 (76.7)	<0.001*
	Suboptimal	42 (70.0)	14 (23.3)	

p value is considered significant

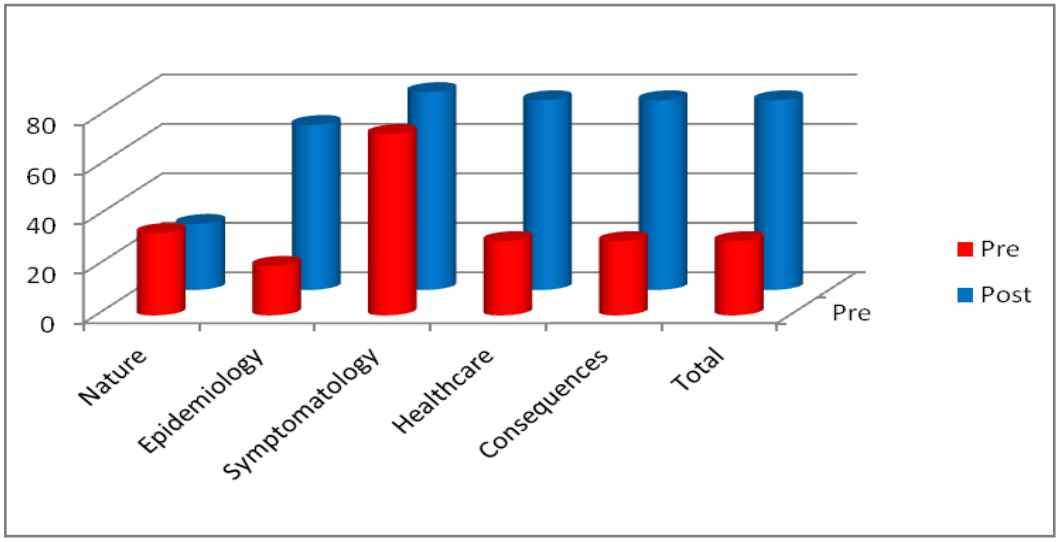

Figure 1. Comparison between the knowledge of nurses about preeclampsia before and after the interventional program

Further, our results showed that the program made a success in improving the knowledge of nurses regarding the nature of preeclampsia; from only 20 to 44 optimal knowledge, the epidemiology from 12 to 40 optimal knowledge, the symptomatology from 16 to 48 optimal knowledge, the healthcare from 18 to 46 optimal knowledge, and consequences from 18 to 46 optimal knowledge ($p<0.05$) **(Table 2, Figure 1)**.

4. Discussion

Preeclampsia (PE) is defined as a multi-organ system disorder characterized by hypertension and proteinuria that occurs after 20th week of gestational period [16], furthermore, PE may results from an interaction of many factors such economic, psycho-social, nutrition, environment and genetic factor [17], with high prevalence at developing countries [18].

The present study was carried out on a convenience sample of 60 nurses, although not randomly selected; thus nurses' who were carrying diploma about one third of the study sample and about twenty percent had institutional graduates and half of them had a bachelor degree. More than half of the nurses had experience less than five years. Almost two thirds of the nurses admitted having night shifts and most of nurses were working in departments only and were not attending the delivery chamber. This is quite close to study reported by Stellenberg and Ngwekazi, 2016 who are reported that approximately half of the study sample the nurses' experience more than ten years, moreover one third of study sample had diploma degree [19].

Many study have been identified the risk factors for preeclampsia are obesity, chronic hypertension, diabetes, adolescent pregnancy, and first pregnancy, however the management aimed at primary prevention as calcium supplementation and low-dose aspirin, so far early detection of preeclampsia is considering very important to promote maternal health and avoid complication on maternal and fetal outcomes [20, 7].

In the present study finding reported that only ten out of sixty had optimal knowledge This result a quite close to a quantitative correlation research design was done by Stellenberg and Ngwekazi, 2016 who were found the gab in the knowledge of nurses regarding hypertensive disorders during pregnancy was identified, only fifty six percent of participant answered the questions on the clinical manifestations of preeclampsia, Whereas, twenty eight percent had no information about preeclampsia [19].

The majority of nurses and midwives based on primary health care level, however in critical situation that midwives have the required knowledge and skills to work independently without doctors' guidance, so far an early diagnosis could improve the pregnancy outcomes and help to prevent the complications [21].

Recent study done by Remadurg et al, 2016 who have reported that nurses and community health worker in need to update training and regular assessment for their knowledge and competence regarding to the early diagnosis and prompt treatment of preeclampsia [22], Thus our study funding supported the importance of providing training program to health care provider in particular nurses for protecting pregnant women and fetus from complication of preeclampsia. Despite recent studies recommended that nurses and midwives should not only be improving their knowledge but also their practice should be updated to ensure competence [19].

The forgoing present study finding concerning the improvement in nurses' knowledge after implementation of the learning package program regarding preeclampsia is agreement with Ariff et al, 2013 who are proved that the importance for conducting training program for health care provider and highlighted the need for periodic assessment of health worker training to address gap and develop targeted continuing education modules [23], moreover recent study concluded that aggressive measures should thus be implemented and convert into action to improve the knowledge of midwives[19], furthermore study done by Sntunsa et al 2016; who are emphasized on the community-based health care provider need for regular training program to improve staff knowledge and practice [24].

5. Conclusions

Concerning the quality of care for pregnant women during pregnancy, including a sound of knowledge base, the present study concluded that the importance to improve nurses' knowledge regarding the complication that may be occur during pregnancy for helping in early detection and appropriate counseling and referral at proper time for risk reduction and consequences of preeclampsia throughout follow up during pregnancy.

6. Recommendations

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

- There is an importance to design continuous educational program to improve nurses' knowledge regarding to preeclampsia and other complication may be occur during pregnancy.
- Provide preeclampsia clinical guidelines to avoid complication during pregnancy and improve maternal and fetes outcomes.
- Further studies required to be conducted to evaluate needs for contenous educational training program in different health care setting in Beni-Suef city at urban and rural areas.

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