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Impact of an Educational Program about Preeclampsia for Maternity Nurses on their Performance and Pregnancy Outcomes

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Abstract- *Background:* Preeclampsia and eclampsia are the most common causes of morbidity affecting mothers and their fetus.

Aim: The aim of this study was to evaluate the impact of an educational program about preeclampsia for maternity nurses on their performance and pregnancy outcomes.

Subject and methods: A quasi-experimental design was used. The subjects of the study include two groups as the following: a convenience sample of all nurses (30) who work in the obstetric and gynecological departments in Port Said Hospitals and all inpatient women diagnosed with preeclampsia who attended during the period of the program conduction (20 women).

Results: The results showed that there was an improvement in the nurses' skills in providing nursing care for patients with preeclampsia. Also, a statistically significant improvement for both the mothers and newborn outcomes receiving educational program implementation.

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Conclusion & recommendations: Educational program for nurses working in the maternity units showed a great impact on their performance with mothers suffering from PIH. With the perspective of the impact of the educational program on maternal and fetal and newborn health conditions. Encourage nurses to attend continuing education in the form of workshops, conferences, training programs, and review update nursing care related to preeclampsia.

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I. Introduction

Women's health is essential for the development of a healthy family, and consequently, a healthy community. During pregnancy, many complications may affect women's health. (Preeclampsia and eclampsia are the most common causes of morbidity affecting mothers in developing countries. They are contributing to the occurrence of high-risk pregnancies, which carries hazards to the health of women and their fetuses). Hypertensive disorders are the most common medical complication of pregnancy. *(WHO, 1995; Martin et al., 2003).* The American College of Obstetricians and Gynecologists *(ACOG, 1999)* define preeclampsia as either a systolic blood pressure of >140 mmHg or a diastolic blood pressure >90mmhg observed in two occasions at least 6 hours apart. Ideally, the blood pressure should be compared with a baseline established in the first trimester. In the absence of baseline values, a blood pressure of 140/90 has been accepted as hypertension. *(Karnath, 2002).*

The incidence of hypertensive disease associated with pregnancy varies widely in epidemiological studies due to variations in definitions, and the differences in data collection. Pregnancy-induced hypertension continues to be important in the United States. in recent studies, these conditions were to be the second leading causes of maternal death. It is estimated that hypertensive complications approximately 10% of all pregnancies. The prevalence is increasing as many as 20 to 40% of pregnancies in women with chronic hypertension. *(Berry, 2006; Martin et al., 2003)*. In Egypt pregnancy - induced hypertension is considered a major cause of maternal death, associated with 27% of direct obstetric death and 22% of all maternal deaths *(National Maternal Mortality Study 2000, NMMS, 2001).*

When Pre-eclampsia is diagnosed in its early stages, bed rest is usually advised for the mother and, her BP should be monitored closely. However, if the disease progresses, the doctor would be left without a choice but to induce labor or deliver by Caesarean, regardless of whether the baby has matured to full term or not. The blood pressure would then return to normal within 2-3 days *(Williams, 2007; Sibia et al., 2007).* Pre-eclampsia can affect the arteries carrying blood to the placenta. When this happens, the fetus receives less oxygen and nutrition, resulting in slow growth, low birth weight, pre-maturity or, stillbirth. Pre-eclampsia also increases the risk of the placenta separating from the inner wall of the uterus before delivery (abruption). This can cause uncontrollable bleeding and be life-threatening for both mother and baby. Another complication is Eclampsia (Pre-eclampsia plus seizures) that happens when Pre-eclampsia is uncontrolled. This is associated with maternal mortality *(Reeder et al., 1997).*

a) Significance of the study

Wacker et al (1998) have emphasized on the fact that early prenatal care, identification of pregnant

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women at risk for preeclampsia, as well as recognition and reporting of physical warning signs, are essential components in the optimization of maternal and prenatal outcome .in this regard, nurse's role is essential. Moreover, nurses can do much in the advocacy role. Measurements should be done to improve public education and to access antenatal care. Counseling, referral to community resources, mobilization of support system, and providing a component of care. The nurse's role as an educator is important in informing the women about her condition and responsibilities preeclampsia management, whether at home or hospital *(Lowdermilk et al., 2000).* Prevention of diseases is a key concept to nursing where barriers sometimes present in prenatal care, the role of the nurse is very important to assess the condition of the mother, identify deviation from normal and intervene accordingly, and provide care.

II. Aim of Study

The aim of this study is to evaluate the impact of preeclampsia an educational program on maternity nurses' performance and maternal and neonatal outcome.

III. Material and Methods

a) Research Design

This study was carried out using a quasi-experimental (pre & posttest) research design was used to evaluate the impact of an educational program about preeclampsia for maternity nurses on their performance and maternal and neonatal outcomes.

b) Study Setting

The study was carried out at Port-Fouad General hospital and Specialized Women and Obstetrics Hospital in Port-Said city. These are hospitals providing outpatient and inpatient obstetrical and gynecological services.

c) Study subjects

The subjects of the study include two groups as the following: group1 all nurses (30 nurses) in the inpatient (obstetric and gynecological department) at three hospitals located in Port Said city mentioned setting before. Group 2 all inpatient women diagnosed with preeclampsia (20 women) who attended the mentioned setting before during the period of the program conduction.

IV. Tools for Data Collection

The researcher designed an interview questionnaire form, an initial examination sheet, and an observation checklist for maternal and fetal outcomes. *Two tools of data collection developed and used by the researcher based on.*

V. Tool I: Structured Interviewing Questionnaire for the Nurses:

a) It is including two parts

Part 1: Socio-demographic data such as: Nurse's name, age, education, years of experience, attended in the training program

part 2: Observational Chick list

This tool designed mainly to collect data related to the nurse's performance regarding the nursing care for women with mild and severs preeclampsia and eclampsia during labor and post partum.

VI. Tool ii Structured Interviewing Questionnaire for Women:

a) It is including two parts

Part 1:- Socio-demographic data such as: Mother's name, address, age, education, occupation and, husband "occupation".

Part 2:- Obstetrical history such as: Gravid, parity, birth interval, history of present pregnancy, and the present and previous obstetrical risk factors - Physical examination such as: Level of blood pressure, level of edema and protein urea, patient's weight, present complications which may happen such as bleeding or epigastric pain, types of delivery, and Apgar score in 1minutes and 5 minutes.

b) Validity and reliability

Tools were reviewed by a panel of seven experts in the field of Obstetrics and Gynecological Nursing to test its content validity; modifications were done accordingly based on their judgment. Reliability was done by Cronbach's Alpha Coefficient Test, which revealed that each item of the utilized tools consisted of relatively homogeneous items.

c) Ethical considerations

An official letter from the Faculty of Nursing, Port Said University, was directed to the responsible authorities to obtain their permission to conduct the study after explaining its purpose. The aim of the study was explained to every study subjects, and an oral agreement for participation in the study was gained. Those who agreed to participate were assured about confidentiality, privacy and their right to leave the study at any time.

d) A pilot study

A pilot study was carried out on 10% of the sample, to clarify the validity and reliability of the questionnaire. Then modification was done, and to test the research feasibility, clarity, and objectivity of the tools as well to estimate the time needed for data collection.

e) *Field of the work*

Following this pilot study, the process of data collection and give of the educational program consumed four months from May 2019 to August 2019. The data were collected according to the following phases:

Assessment phase: During this phase, the process of sampling was done. The data were collected from the maternity nurses and pregnant women with preeclampsia who gave their consent to participate using the data collection form and observational checklist. The collected data served as a pre-test for baseline comparison with posttest data. It also helped the researcher to identify the educational needs of the participants in order to design the program.

Design of the educational program: The educational program aimed at improving nurse's performance related to nursing care for women with preeclampsia and pregnancy outcome was designed by the researcher based on the scientific background, and in the light of the needs identified in the pre-test assessment. The guideline included information regarding the important nursing care given to the patient with preeclampsia during pregnancy, labor, and postpartum. It involved both theoretical and practical training.

Implementation phase: The program was given to all maternity nurses.

Evaluation phase: Evaluation of nurses' performance care was done during pregnancy, labor, and postpartum using the same tools. Additionally, pregnancy outcomes (women & fetus) were compared between the study and control groups.

Statistical analysis: Data entry and statistical analysis were performed using computer software: the statistical package for social sciences (SPSS), version 20. Suitable descriptive statistics were used, such as; frequency, percentage, median, range, mean and standard deviation. Continuous data were checked for normality by using the Shapiro Walk test. For all the tests used, statistical significance was considered at p–value < 0.05.

VII. Results

Table (1): shows the nurses' socio-demographic and job characteristics. As regard age, half of the studied subjects (50%) were in the age group ranging between 20 to less than 30 years, while those aged 50 or more constituted 6.7% of the subjects. Concerning their educational level, the majority of the nurses (86.7%) had a nursing diplomas and did not have a Certificate of specialization (93.3%). Regarding the experience in nursing, the mean years of experience in nursing of the nurses were around 10.8±9.3.

Table (2): Shows the satisfaction of nursing care performance for pregnant women suffering from preeclampsia throughout the study phases. It shows a statistically significant improvement between the adequate performance of nursing care for pregnant women suffering from preeclampsia throughout the pre and post-program except read the mother record, insert indwelling catheter as prescribed, administer the prescribed medication and collect samples, and sent it to the lab. All nurses did not perform this care in different timings of the study.

Table (3): Shows the nursing care during labor and postpartum for pregnant women suffering from preeclampsia throughout the study phases. It shows a statistically significant improvement between the adequate performance of nursing care for pregnant women pre and post-program, except in the assessment and care of the newborn. All nurses did not perform this care in different timings of the study.

Table (4) Shows the Socio-demographic characteristics of the control and study groups. Regarding age, about the highest percent (60.0%) of the study subjects in the control group had their age from 30 years to more than 40 years. While more than two thirds (70%) of the subjects in the study group had age below 30 years. However, there was a statistically significantly difference between both groups (P< 0.037).

Regarding the level of education, about half of mothers in both groups had Diploma levels of education. And more than half of the study mothers were house wife; there were no statistically significant difference between both groups regarding the level of education, and job status.

The characteristics of the obstetric history of the control and study mother's *table 5*. The number of pregnancies in the two groups control and study, with about half of the mothers' primgravida.50% of the mothers nullipara related to number of delivery. Thus, there was no statistically significant difference between the two groups regarding the numbers of pregnancy and delivery.

As regards the duration of the current pregnancy, the mean score of subjects of the control group before applying the program 32.9±3.6, compared to 36.5±1.3 of the study group after applying for the program. However, the mean score of the duration of the current pregnancy was statistically significant differences between the two groups.

Table 6 shows the results of the examination of the control and study groups of mothers. As regards, the blood pressure the mean score 154.1±7.1 of systolic blood pressure (mmHg) of the mothers in the control group, compared with 148.3±7.2 of the mothers in the study group. Was statistically significantly different between the two groups (P<0.015).

As regards the degrees of edema the half of mothers in the control group had +2 degree of edema, compared with 70.0% of the mothers in the study group. There was not statistically significantly different between the two groups. According to the abdominal examination, the mean score of the duration of pregnancy to the mothers in the control group 32.9±3.6, compared with 36.5±1.3 to the mothers in the study group. Was statistically significantly different between the two groups (P<0.001). Regarding the fetal heart beats 60.0% the heart beats of the fetus in the control group from 160 to more than 190 beats / min, while, more than half 55.0% the heart beats of the fetus in the study group from 130 to less than 160 beats / min, there was a statistically significant different between the two groups (P<0.014). According to the current complications, the highest percent 75.0% of the mothers in the control group suffering from complication the half of them complain from hemorrhage. Compared with 30.0% of the mothers in the study group suffering from complications, there was a statistically significant different between the two groups (P<0.0001). According to post-partum complications the highest percent 70.0% of the mothers in the control group are suffering from complications. More than two-third of them complain from vaginal hemorrhage. Compared with 25.0% of the mothers in the study group suffering from complications. There was a statistically significant different between the two groups (P<0.0001).

Table 7 shows the characteristics of the newborn babies of the control and study groups of mothers. statistically significantly babies are lives were observed among mothers in the study group (100.0%), compared to mothers in the control group (95.5%), as seen in the table. The higher percentages of newborns of mothers in the control group were suffering from respiratory distress (68.2%), compared to (27.3%) newborns of mothers in the study group. Meanwhile, higher percentages (68.2%) preterm baby of mothers in the control group, Compared to (13.6%) preterm baby of mothers in the study group.

As regards the Apgar score 45.5%, 72.7% at the first and fifth minute the score from 7 to 10, respectively, for the newborns of mothers in the study group, compared to 18.2%, 36.4% at the first and fifth minute the score from 7 to 10, respectively, for the newborns of mothers in the control group, there was a statistically significant different between the two groups (P<0.0001).

Table (1): Distribution of the nurses according to their Socio-demographic and job characteristics data (n=30)

Socio-demographic characteristics	No.	%
Age (years)		
Less than 20	3	10.0
20-	15	50.0
30-	5	16.7
40-	5	16.7
More than 50	2	6.7
Range	18-55	
Mean±SD	30.6±10.3	
Educational level		
Nursing diploma	26	86.7
Technical of nursing	2	6.7
Faculty of nursing	2	6.7
Certificate of specialization		
Yes	28	93.3
No	2	6.7
Duration of experience		
Less than 10	17	56.7
10-	5	16.7
20-	6	20.0
More than 30	2	6.7
Range	1-31	
Mean±SD	10.8±9.3	

Table (2): Nurses' performance for pregnant women suffering from preeclampsia throughout pre and post-program

Nursing care performance of pre-eclampsia	Time					
	Pre (n=30)		Post (n=30)		Chi-Square test (X^2)	P- value
Greeting the mother.	23	76.7	26	86.7	Fisher	FEP=1.0
Read the mother record.	30	100.0	30	100.0	-NA-	-NA-
Place the mother in the on bed in her side.	15	50.0	15	50.0	-NA-	-NA-
Assist doctor during local physical examination	22	73.3	30	100.0	7.94	0.005*
Monitor Vital signs as prescribed	27	90.0	30	100.0	Fisher	FEP=0.237
Assess degree of edema.	0	0.0	30	100.0	60.0	(0.0001)*
Start IV infusion as prescribed	30	100.0	30	100.0	-NA-	-NA-
Monitor IV fluid closely.	2	6.7	21	70.0	25.45	(0.0001)*
Perform urine analysis for protein as prescribed	22	73.3	30	100.0	7.94	0.005*
Insert indwelling catheter as prescribed	30	100.0	30	100.0	-NA-	-NA-
Measure and Record fluid intake and output.	13	43.3	30	100.0	23.72	(0.0001)*
Measure woman weight daily.	0	0.0	30	100.0	60.0	(0.0001)*
Administer the prescribed medication	30	100.0	30	100.0	-NA-	-NA-
Report woman's response to therapy.	1	3.3	23	76.7	33.61	(0.0001)*
Assess deep tendon reflexes every shift.	0	0.0	27	90.0	49.09	(0.0001)*
Not left the woman to go toilet alone.	0	0.0	13	43.3	16.6	(0.0001)*
Collect samples and sent to lab	30	100.0	30	100.0	-NA-	-NA-
Observe signs of immediate seizure	3	10.0	24	80.0	29.7	(0.0001)*
Monitor any dangerous signs	7	23.3	30	100.0	37.3	(0.0001)*
Monitoring uterine and fetal status as prescribed	28	93.3	30	100.0	Fisher	FEP=0.492*
Explain any procedures to the woman	13	43.3	21	70.0	4.34	(0.037)*
Assess signs of labor.	18	60.0	30	100.0	15.0	(0.0001)*
Perform a nursing care plan using nursing process.	0	0.0	8	26.7	Fisher	FEP=0.005*

Table (3): Nursing care during labor and the postpartum period for pregnant women suffering from preeclampsia throughout pre and post-program

Nursing Care Performance during Labor and Post Partum	Time				Chi-Square Test	P- value
	Pre (n=30)		Post (n=30)			
	No	%	No	%		
Monitor the blood pressure	22	73.3	30	100.0	Fisher	FEP=0.005*
Check for edema	0	0.0	29	96.7	56.13	(0.0001)*
Detect protein urea levels	1	3.3	21	70.0	28.71	(0.0001)*
Prepare equipment and intravenous lines	28	93.3	30	100.0	Fisher	FEP=0.492*
Label bottles	19	63.3	21	70.0	0.3	(0.584)*
During labor						
Note signs of progress labor	22	73.3	28	93.3	4.32	(0.038)*
Put wedge under the right buttock in lithotomy position or C.S.	6	20.0	23	76.7	19.29	(0.0001)*
Administer O2 during labor to the patient	19	63.3	26	86.7	3.35	(0.007)*
Assessment and care of Newborn.	0	0.0	0	0.0	-NA-	-NA-
Postpartum						
Observe the amount of vaginal bleeding	23	76.7	28	93.3	Fisher	FEP=0.146
Palpate the uterus and massaged when needed	13	43.3	22	73.3	5.55	(0.018)*
Check B.P. and pulse every 4 hours for 48 hours	22	73.3	28	93.3	3.32	(0.028)*
Instruct the woman to report headache or visual disturbances	28	93.3	30	100.0	Fisher	FEP=0.492*
Record intake and output for 48 hours	29	96.7	30	100.0	Fisher	FEP=1.0

*X2: Chi-Square test FEP: Fisher's Exact test *significant at P≤0.05 -NA-: Not applicable*

Table (4): Socio-demographic characteristics of the control and study groups of mothers.

Personal characteristics	Control Group (n=20)		Study Group (n=20)		Significance
	No.	%	No.	%	
Age (years)					
Less than 20	2	10.0	1	5.0	
20-	6	30.0	14	70.0	
30-<40	12	60.0	5	25.0	
Range	19-38		17-38		t=2.167
Mean±SD	30.6±6.9		26.2±5.9		P=0.037*
Educational level					
Read and write	1	5.0	1	5.0	
Primary	4	20.0	2	10.0	MCP=0.784
Preparatory	2	10.0	3	15.0	

Diploma	10	50.0	10	50.0	
University	3	15.0	4	20.0	
Employment					
House wife	12	60.0	11	55.0	X^2=0.175
Employed	8	40.0	9	45.0	P=0.676

All are live in urban areas. t: t-test Z: Mann Whitney test
*MCP: Monte Carlo test X2: Chi-Square test *significant at P≤0.05*

Table (5): Obstetric history of the control and study groups of mothers

Obstetric History	Control Group (n=20)		Study Group (n=20)		Test	P- value
	No	%	No	%		
The number of pregnancies:						
1	10	50.0	10	50.0		
2-3	6	30.0	10	50.0		
4	4	20.0	0	0.0		
Range	1-4		1-3			
Mean±SD	2.2±1.3		1.6±0.7		Z=1.213	0.225
The number of deliveries:						
Prime	10	50.0	10	50.0		
1-2	6	30.0	10	50.0		
3	4	20.0	0	0.0		
Mean±SD	1.1±1.2		0.6±0.7		Z=1.169	0.242
Duration of current pregnancy (weeks): Mean±SD	32.9±3.6		36.5±1.3		t=3.94	0.001*

*t: t-test Z: Mann Whitney test *significant at P≤0.05*

Table (6): Results of examination of the control and study groups of mothers

Results of Examination	Control Group(n=20)		Study Group (n=20)		Significance
Systolic blood pressure (mmHg)					
Range	140-160		140-150		t=2.561
Mean±SD	154.1±7.1		148.3±7.2		P=0.015*
Diastolic blood pressure (mmHg)					
Range	90-110		90-110		t=1.665
Mean±SD	99.2±5.5		99.2±5.5		P=0.104
General condition	**No.**	**%**	**No.**	**%**	
Degrees of edema					
+1	0	0.0	2	10.0	
+2	10	50.0	14	70.0	^{MC}P=0.064
+3	7	35.0	4	20.0	
+4	3	15.0	0	0.0	
Abdominal examination					
Duration of pregnancy (gestational weeks)					

Range Mean±SD	24-37 32.9±3.6		33-38 36.5±1.3		t=3.94 P=0.001*
Fetal heart beats (beats/min) 100- 130- 160-<190	3 5 12	15.0 25.0 60.0	4 11 5	20.0 55.0 25.0	MCP=0.014*
Current complications No Yes #	5 15	25.0 75.0	14 6	60.0 30.0	X^2=15.14 P<0.0001*
Intra uterine fetal growth retardation Eclampsia Hemorrhage No	8 2 10 5	40.0 10.0 50.0 25.0	1 0 5 14	5.0 0.0 25.0 60.0	
Postpartum complications No Yes # Vaginal hemorrhage Convulsions Bleeding disorder	6 14 9 1 7	30.0 70.0 64.4 7.1 50.0	15 5 3 0 2	75.0 25.0 60.0 0.0 40.0	X^2=14.4 P=0.0001*

*t: t-test Z: Mann Whitney test MCP: Monte Carlo test *significant at P≤0.05*

Table (7): Characteristics of a newborn babies of the control and study groups of mothers

Characteristics of A newborn Babies	Control Group (n=20)		Study Group (n=20)		Significance
	No.	%	No.	%	
Fate of pregnancy Living Stillbirth	21 1	95.5 4.5	22 0	100.0 0.0	YP=0.1*
Respiratory distress No Yes	8 14	36.4 63.6	16 6	72.7 27.3	X^2=13.065 P<0.0001*
Preterm labor Pre-term Full-term	15 7	68.2 31.8	3 19	13.6 86.4	X^2=15.13 P<0.0001*
Apgar score at 1st minute 0-3 4-6 7-10	7 11 4	31.8 50.0 18.2	3 9 10	13.6 40.9 45.5	t=4.536 p<0.0001*
Range Mean±SD	2-7 4.1±1.2		3-8 5.9±1.4		
Apgar score at 5th minute 0-3 4-6 7=10	1 13 8	4.5 59.1 36.4	0 6 16	0.0 27.3 72.7	t=4.604 p<0.0001*

Range Mean±SD	0-9 5.6±1.9		5-10 7.9±1.4		
Need resuscitation	8	36.4	3	13.6	t=1.742 P=0.009
Need incubator	14	63.6	6	27.3	X^2=13.065 P<0.0001*

^ *Number is more than that of mothers as two babies from each group had twins*

*X2: Chi-Square test t: t-test Z: Mann Whitney test YP: Yates corrected Chi-Square test *significant at P ≤0.05*

VIII. Discussion

Nurses have an important and effective role in the prevention of complications of preeclampsia, assistance in early detection, and appropriate management of these disorders to minimize the adverse effects in both mother & infant through attending the antenatal clinic periodically during pregnancy. Furthermore, collaborative efforts from all members of the health team, as well as appropriate self-care practices of women with PIH is required. The nurse should be knowledgeable and highly skillful in providing nursing care according to women's needs and problems to save their lives *(Gilbert & Hartman, 1995).* Therefore, this study was undertaken to provide nurses, as healthcare providers, with the skills necessary to provide care to women with preeclampsia.

Regarding nurses' performance about nursing care for preeclampsia pregnant women. The present study revealed that the majority of nurses had the unsatisfactory and inadequate practice of the care for pre-eclampsia before program implementation; while after the program most of them provide satisfactory nursing care for women with preeclampsia. This is probably because that most nurses had basic deficit knowledge about nursing care for women with preeclampsia. This may lead to an inability of nurses to provide satisfactory nursing care. These results are in the same line with *Tawfek (2002)*, who reported that most nurses did not perform nursing care for women with hypertension disorder with pregnancy (HDP) before the training program.

Novak and Broom,1999, mentioned that nursing care of mild preeclampsia in the hospital includes the following: Check and record vital signs (pulse, temperature and respiration), history is taken, documents risk factors, and any symptoms outlined before blood pressure, and women's weight gain should be obtained, looks for evidence of generalized edema or pitting edema. Ask women about warning signs and symptoms. Perform urine analysis for protein as prescribed (using dipstick test). Assist doctor during a physical examination and monitoring of fetal heart rate (FHR) and refer hypertensive women to perform their laboratory studied and other investigation as ordered.

According to the study findings, the highest percent (60.0%) of the study subjects in the control group had their age from 30 years to more than 40 years. At the same time about (70.0%) of the subjects in the study group had their age below 30 years, with mean ages of 30.6 and 26.2, respectively. This finding is in agreement with those of the previous studies *Gida (2002)* reported that more than two-thirds of the preeclampsia mothers in port said had their age ranging between 25 years and more. Moreover, *Mabie and Sibai (1992)* found that the highest incidence of preeclampsia was among pregnant females of 20 years or more. Alternatively, *Gibson and Carson (2002)* have reported that preeclampsia is more common at extremes of maternal age.

The present study findings showed that half of the mothers in both groups had Diploma levels of education. Moreover, more than half of the study mothers were house wife. These characteristics are similar to those documented for most preeclamptic women in many studies. *Rooney (1994)* reported that a uniform incidence of toxemia had been found throughout all social classes. However, *Whitfield (1995)*; *Leifer (1999)* reported that patients with low socioeconomic classes are more likely to develop preeclampsia. The high incidence of preeclampsia among low family income group may be related to bad nutrition, ignorance, and lack of medical care and seeking of regular prenatal care among this group.

In the present study, as regards the risk factors of preeclampsia experienced by women was found that, about more than one third of women in both groups had previous history of preeclampsia. The characteristics of obstetric history of the study subjects of both groups were similar in some aspects to those of preeclampsia women discovered in many others studies. These findings are in line of *Abbas et al. (1999)* who stated that women with a history of preeclampsia are at increase risk of preeclampsia in later pregnancies.

Furthermore, women whose mothers suffered from preeclampsia are three times more likely to develop symptoms associated with preeclampsia than other women *(Murray et al., 2002).* In the present study, about one third of the studied women in both groups had a family history of preeclampsia.

Gravidity has been considered, in many studies, as risk factor in pregnancy- induced hypertension. In the present study, about half of the studied women in both groups were primgravida and nullipara. *Wallenburg (1990)* reported that nulliparous women are twice as likely to develop preeclampsia as multiparas, and this risk is particularly high at extremes of age. Multiparous women who have suffered from preeclampsia in

previous pregnancies are at increased risk, compared to multiparas who have not.

According to *Churchill and Beevers (1999)* who stated that maternal age an important factors and clearly for preeclampsia. Preeclampsia is very common in very young women who had poor antenatal care, with an important contribution from social class. Also, it is common in the first pregnancy (in primipara it was 13.5% compared with 7.1% in multipara) and women over the age of 30 years because of associated multiparty and differences in social class. This is supported by the finding of the present study. There are several factors as age, parity, education and socio-economic factors. It was found that, women with lower socio-economic factors are reported to have a higher incidence of PIH, also, the primigravida and nullipara women, the incidence is increased.

One of the objectives of this study was to test the hypothesis that women with pregnancy- induced hypertension who receive nursing care after applying nursing program will have better maternal and fetal outcomes during pregnancy and after delivery, compared to women with the same diagnosis who receive nursing care before applying the nursing programs. Accordingly, both mothers and their fetuses were assessed during pregnancy and the postnatal period.

Regarding the results of the examination of the mother's in study and control groups. A statistically significant improvement in blood pressure monitoring was found among mother's study group compared to those in the control group ($P<0.015$). For the mothers in the post-program group, the main systolic and diastolic blood pressure are decreased. in this respect, *Kyngas and Lahdenpera (1999)* discovered a statistically significant connection between compliance with medication and the diastolic blood pressure reading. Those who had good compliance with medication had lower diastolic blood pressure than patients with poor compliance.

On the same line and in agreement with the present study finding, *Dickason and Siiverman (1995)* have reported that preeclampsia mothers who were treated at the hospital, and monitored by frequent medical and nursing care, showed more improvement in the level of blood pressure and fetal outcome. Similar results were reported by *El-Said (1993).* The author has attributed these results to mother's compliance with the health instructions which given by the nurses throughout the nursing intervention.

The presence of edema with excessive weight gain is a problem in preeclampsia. The present study results showed a slight decrease in the proportion of women in the study group suffering from edema (20.0%) had +3 degree of edema compared with more than one third (35.0%) of mothers in the control group. A similar finding was reported by *El-Said (1993).* The degree of edema did not show more improvement in the nursing intervention group mothers, as no differences were noted between the edema assessments.

Depending edema is common in normal pregnancy, but generalized edema is a sign of preeclampsia. Pregnant women could be taught to recognize generalized edema as a sign needing rapid referral to a center where blood pressure and proteinuria can be measured, and treatment arranged *(Gibson and Carson, 2002).* This might explain the previous results. However, since excessive weight gain with excessive edema is a major problem for patients with severe preeclampsia, more attention should be given to the daily measurements of patient's weight, as well as instructing her to care for edema.

Urinalysis to detect proteinuria is also recommended in women with pregnancy induced hypertension, as this is an important prognostic factor. A very small percentage or women who develop preeclampsia may show proteinuria before the rise in blood pressure (*Pernoll, 1995; Grunrwald, 1997).* In the present study, improvement of the main score 2.2 ± 0.5 of proteinuria was observed for the mothers in the study group, compared with 3.0 ± 0.7 to the mothers in the control group. There was a statistically significant difference between the two groups ($P<0.0001$). This result is in agreement with *El-Said (1993).* Who found a decrease in proteinuria among women in the nursing intervention group, whereas proteinuria had increased markedly among women in the control group.

Regarding the current complications, the highest percent 75.0% of the mothers in the control group suffering from complications, half of them complains from hemorrhage. Compared with 30.0% of the mothers in the study group are suffering from complication. There was a statistically significant difference between the two groups ($P<0.0001$). A similar finding was reported by *El-Said (1993).* Who found that the majority of the study sample in the control group suffering from bleeding during pregnancy. However, 40% of the mothers in the intervention group suffering from bleeding during pregnancy.

Concerning the type labor and postpartum examinations of the mothers in study and control groups. According the type of delivery, the majority of the study sample 95.0%, 90.0% of the mothers in the pre and post program, respectively, had Cesarean section delivery. However, this difference was not statistically significant between the two groups. *El-Said (1993)* has reported similar results as regards the mode of delivery slightly more cesarean section deliveries were found in the intervention group, although the difference was not statistically significant.

Natal care is very important to reduce the complications of preeclampsia and improve the maternal and newborn outcome. Simpson and Creehan (2001) reported that it is important to be alert for signs

and symptoms of complications of preeclampsia such as postpartum hemorrhage and HELLP syndrome. The finding of the present study was noticed that the highest percent 70.0% of the mothers in the control group are suffering from complications after labor; more than two-third of them complains from vaginal hemorrhage. Compared with 25.0% of the mothers in the study group suffering from complication. There was a statistically significantly difference between the two groups (P<0.0001). This is possibly due to the mothers received good nursing care before, during and after labor.

In the present study, a statistically significant different between women in the two study groups regarding their fetal outcome. No case of stillbirth infants, were reported among women in the study group, while; only one case of stillbirth infant was reported among women in the control group. Moreover, 6 cases of respiratory distress among women in the study group, Compared to 14 cases in the control group. As regards premature infants 3 cases was reported among women in the study group, compared to 15 cases in the control group. However, as regards infant's growth at birth, all growth measurements for infants of pregnancy induced hypertensive women in the study group were statistically significantly better than those of infants of mothers in the control group (P<0.0001).

In agreement with the preceding findings of the present study, *Wong et al. (1998)* have reported that women with hypertensive diseases who receive inadequate care experience particularly greater risk of subsequent prematurity and low birth weight infant. This may be related to the progress of maternal condition that reflects directly on fetal health. Moreover, in agreement with the present study findings,

Abd Rabo (1992) has reported rates of neonatal losses of 20.0% and 2.0% in the control and intervention groups, respectively. There were statistically significant differences between the two study groups.

Many others, *Lowdermilk& Perry,2006 And Chen and Chang, 1995,* mentioned that nursing care of severing preeclampsia represents emergency obstetric care. Immediate and continuous care by nurses aimed to prevent maternal and fetal mortality. The nurse should be place the patient in absolute bed rest on her side. Check and remove denture, record and report blood pressure frequently (at least every 4 hours) or with a continuous monitoring device to detect any increase, Obtain blood studies as ordered (i.e. complete blood count, platelet count, liver function, blood urea nitrogen, and creatine and fibrin degradation products) to assess renal and liver function and the development of DIC, assess and recorded the degree of edema, perform urine analysis for protein as prescribed, collect24 hrs, urine as ordered, measure and recorded woman's weight. She should assess for signs of labor, assess deep tendon reflexes every shift, and Observes dangerous signs and symptoms.

IX. Conclusion

a) *Based on the results of the present study, it can be concluded that*

Educational program for nurses working in the maternity units showed a great impact on their performance with mothers suffering from preeclampsia. With the perspective of the impact of the educational program on maternal and the fetal and newborn health conditions, the study revealed a statistically significant improvement to the mother's receiving nursing care after nursing educational program implementation. It was particularly obvious in the lower of blood pressure, proteinuria, and prenatal and postnatal complications. Similarly, fetal outcome was statistically significant improvement in the mothers group receiving nursing care after nursing educational program implementation as regards newborn measurements, and prenatal and postnatal complications.

X. Recommendations

Encourage nurses to attend continuing education in the form of workshops, conferences, training programs and review update nursing care related to preeclampsia. Standardized protocols for the treatment of emergency obstetric, including preeclampsia, should be developed for the legal protection of nurses during their clinical practices. Frequent and scheduled In-services training should be applied at the hospital. Establish a library with recent scientific books and periodicals in the Arabic language. Future research regarding study the psychological aspects of women with preeclampsia. And studying factors affecting women with preeclampsia self-care practices.

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