

Nurses' Compliance with Safety Practices in intensive care unit among women with Severe Preeclampsia

Soheir Ibrahim Sobhy ⁽¹⁾, Niven R.Basyuni ⁽²⁾, Violet Nicola Ghattas ⁽³⁾

⁽¹⁾ Professor Emeritus of Obstetric and Gynecologic Nursing Faculty of Nursing, Alexandria University,

⁽²⁾ Professor of Obstetrics and Gynecologic Nursing Faculty of Nursing, Alexandria University,

⁽³⁾ Lecturer, Obstetric and Gynecologic Nursing, Damanhour University, Damanhour, Egypt

Abstract: Preeclampsia or eclampsia is an unpredictable multi organ disorder, unique to human pregnancy. It is associated with significant maternal and fetal morbidity and mortality. World-wide treatment of this disorder remains a challenge. Pregnant women with severe preeclampsia need continuous care for safe confinement, early detection of difficulties and prompt treatment in an appropriate period. Nurses play a vital role in providing safety practices in the management of patients with severe preeclampsia. Aim of the study: To assess Nurses' Compliance with Safety Practices on intensive care unit among women with Severe Preeclampsia .Design: A descriptive exploratory research design was carried out in the present study started by the beginning of July 2018 and continued until the end of September 2018. Setting: The study was carried out at the intensive care unit and eclampsia unit of El-Shatby Maternity University hospital in Alexandria and the intensive care unit of Damanhur Medical National Institute in Damanhur. Subjects: The study compromised all nurses working in the previously mentioned settings 60 nurses distributed as thirty eight nurses from El-Shatby and the remaining twenty two were from Damanhur. Selected Tool: Two tools were used for data collections, Nurses' knowledge about preeclampsia and safety practices in caring of pregnant women with severe preeclampsia questionnaire: observational checklist. Results: Less than one-half (45%) of nurses were working as supervisors with bachelors, while slightly more than one-third (36.67%) of them had less than 5 years of experience in nursing. Years of experience displayed that less than three-quarters (73.33%) of nurses had less than 5 years experience in ICU and eclampsia unit. None of nurses had any training programs about preeclampsia or safety practices in caring of pregnant women with severe preeclampsia that less than three quarters (71%) of them had fair knowledge about preeclampsia compared to 17% had weak knowledge while 12% had good general knowledge about preeclampsia. that less than three quarters (71.67%) of them were fairly complaint with safety practices. On the other hand, less than one quarter (23.33%) of them were complaint with safety practices and 5% of them were not complaint. Conclusion: Only less than one quarter of the nurses were compliant with safety practices in caring of pregnant women with severe preeclampsia.

Keywords: PIH (pregnancy induced hypertension), compliance, safety practice.

I. INTRODUCTION

Many women expect pregnancy to be a happy and wonderful period in their lives where they spend nine months waiting to hold her bundle of joy in her arms. Every woman hopes for normal pregnancy and normal delivery so that she can cradle and nurse a healthy baby. Although pregnancy is a normal process, some of the mothers may face various problems related to pregnancy and child birth which can lead to maternal morbidity and mortality ^(1, 2).

Every minute of every day, somewhere in the world, a woman dies as a result of complications arising during pregnancy, childbirth or puerperium. Worldwide, Maternal Mortality Ratio (MMR) was estimated as 251 per 100,000 live births in

2008; 230 per 100,000 live births in 2010, 210 per 100,000 live births in 2013 and 140 per 100,000 live births in 2015. However, almost all (99%) of these deaths occur in the developing countries. In Egypt, MMR was estimated as 82 per 100,000 live births in 2008; it had declined to 66 per 100,000 live births in 2010, 45 per 100,000 live births in 2013 and 33 per 100,000 live births in 2015 ^(3,4).

Pregnancy induced hypertension (PIH) is the third leading cause of maternal mortality in the developed and developing countries. Globally there are over 4 million cases of preeclampsia and eclampsia; 63,000 end by death. Approximately preeclampsia and eclampsia account for 10–15% of maternal deaths. In developing countries, the majority of maternal deaths result from eclampsia, while in developed countries, deaths are due to complications of preeclampsia ⁽⁵⁾.

Preeclampsia is a pregnancy specific, multisystem disorder characterized by the development of hypertension, edema and proteinuria after 20 weeks of gestation. It may be mild to severe in character, and can result in negative complications as abruption placenta, acute renal failure, disseminated intravascular coagulation, cerebrovascular and cardiovascular complications, the HELLP (Hemolysis, Elevated Liver enzymes and Low Platelets) syndrome and maternal death ^(6,7).

Screening of preeclampsia requires simple tools like sphygmomanometer; stethoscope which is supposed to be available at all levels of care. Early detection of the disorder is of prime importance so as to institute proper treatment to the pregnant women. However, diagnosing preeclampsia is not easy as the symptoms manifest late. Initial signs and symptoms of the disease include hypertension, proteinuria, edema and rapid weight gain. In severe preeclampsia, symptoms include headache, blurring of vision, epigastric pain, cough with or without difficulty in breathing. Classical signs and symptoms for diagnosing pre-eclampsia include raised blood pressure 140/90mmHg or higher, proteinuria of more than 300mg in 24 hours urine ^(8,9).

The cause of preeclampsia is unknown. It is often called the “disease of theories” as many causes have been proposed, yet none has been well established. Experts believe that decreased levels of prostaglandins and a decreased resistance to angiotensin II lead to a generalized arterial vasospasm leading to endothelial damage. The brain, liver, kidney, and blood are particularly susceptible to multiple dysfunctions. Several risk factors have been identified that may predispose a woman to developing preeclampsia. These include; nulliparity; familial history; multiple gestation; patient history of diabetes mellitus, chronic hypertension, renal disease, trophoblastic disease, as well as malnutrition ^(10,11).

Thus, the aim of care for these women, is to monitor the condition of the woman and her fetus and if possible to prevent complications by using appropriate interventions and treatment. Worldwide, the delivery of health care is challenged by a wide range of safety problems. All patients have the right to effective, safe care at all times. Unintended harm to patients undergoing treatment is not a new phenomenon. The response in those days was clearly and solely punitive ⁽¹²⁾.

Today, the solutions for improving patient safety offer a more constructive approach. This is determined by how well caregivers work together as a team, how effectively they communicate with one another and with patients. In addition to how carefully the care delivery processes and supporting systems of care are designed. With the growing recognition of safety problems in health care, it is now time to create and disseminate “Solutions” for patient safety ^(13,14).

Fortunately, political leaders in some countries are framing their arguments for reforming health care in terms of higher quality. In addition to the elimination or correction of practices that are known to be unsafe or wasteful. Similarly, patients and their families are becoming increasingly skilled in accessing information to make personal health care decisions about treatments and their choice of providers, and demanding safer care as well. Health-care practitioners are also becoming more proficient at incorporating evidence-based knowledge into their clinical decision-making practices ⁽¹⁵⁾.

II. SUBJECTS AND METHODS

The present study was conducted to fulfill the following aim:

- To assess Nurses' Compliance With Safety Practices on intensive care unit among women with Severe Preeclampsia

Research question

- What is Nurses' Compliance with Safety Practices on intensive care unit among women with Severe Preeclampsia?

Material

Design:

A descriptive exploratory research design was adopted in this study.

Settings:

The study was carried out in the intensive care unit and eclampsia unit of El-Shatby Maternity University hospital in Alexandria and the intensive care unit of Damanhur Medical National Institute in Damanhur. These settings were selected because they had an increase turnover of women suffering from severe pre-eclampsia, which enabled the researcher to fulfill the observations necessary for the study.

Subjects:

The study compromised all nurses working in the previously mentioned settings 60 nurses distributed as thirty eight nurses from El-Shatby and the remaining twenty two were from Damanhur.

Tools:

Two tools were used for data collection.

Tool I: Nurses' knowledge about preeclampsia and safety practices in caring of pregnant women with severe preeclampsia questionnaire:

A structured questionnaire which was developed by a researcher after extensive review of recent and relevant literatures. It comprised 45 items to assess nurses' knowledge regarding preeclampsia and safety practices in caring of pregnant women with severe preeclampsia. It consisted of 7 main groups of questions as following: General knowledge about preeclampsia (N=7), general knowledge about safety measures (N=3), physical safety practices (N=12), Chemical safety practices (N=9), Biological safety practices (N=5), Environmental safety practices (N=5) and psychological safety practices (N=4).

A scoring system for nurses' knowledge about preeclampsia was used. Every knowledge item (7) was given a score: correct & complete answer (3), correct but incomplete answer(2) as well as incorrect answer or don't know(1), The total score of knowledge ranged from 21 and was classified as good(17-21), fair(12<17) and weak(7<12). A scoring system for nurses' knowledge about safety practices in caring of pregnant women with severe preeclampsia was used. Every knowledge item (38) was given a score: correct & complete answer (3), correct but incomplete answer(2) as well as incorrect answer or don't know(1).The total score of knowledge ranged from 38-114 and was classified as good(88-114), fair (63 <88) and weak (38<63). In addition, Socio-demographic and academic data for the study subjects were collected such as age, qualification, place of work, position, years of experience and attendance of relevant training programs.

Tool II: Nurses' compliance with safety practices in caring of pregnant women with severe preeclampsia observational checklist:

This tool was developed by the researcher after reviewing the recent& relevant literatures to assess nurses' compliance with safety practices in caring of pregnant women with severe preeclampsia. It consisted of the following physical, chemical, biological, environmental and psychological safety practices. A scoring system for nurses' compliance with safety practices in caring of pregnant women with severe preeclampsia was used.

Board of sub items of the previously mentioned safety practices in caring of pregnant women with preeclampsia was observed and scored as follows: Done correct / complete = (3), Done correct / incomplete = (2), Incorrect /not done = (1), and Not applicable = (0). Sum of the observed checked items of "compliance " will be divided by the total and multiplied by 100. The level of compliance will be classified into: Compliant = over 75%, Fairly compliant = 50-75%, Non-compliant = less than 50%.

METHOD

The study was executed according to the following steps:

International Journal of Novel Research in Healthcare and Nursing

Vol. 6, Issue 2, pp: (1227-1239), Month: May - August 2019, Available at: www.noveltyjournals.com

Approval:

- Official letter from El-Shatby Maternity University hospital in Alexandria and the intensive care unit of Damanhur Medical National Institute in Damanhur to take their permission to collect data after explaining the purpose of the study.

Tools used:

- Tools were developed by the researcher after extensive review of relevant and current literature.
- Tools were tested for content validity by a jury of 5 experts in the field, the recommended modifications were done and the final form was finalized after proving valid.
- Tools were checked for their reliability by cronbach's alpha test and the result was reliable (0.838).

Pilot study:

- A pilot study was carried out on 6 nurses (excluded from the study sample) to test the feasibility of the study. The purposes of the pilot study were to ascertain relevance, clarity and applicability of the tools and detect any problem peculiar to the statements as sequence and clarity that might interfere with the process of data collection. Results of the pilot study after conducting the pilot study, it was found that the sentences of the tools were clear and relevant; however, few words had been modified. Following this pilot study the tools were revised, reconstructed and made ready for use.

Data collection

- Data was collected using questionnaire, which was completed by the nurse individually.
- Each nurse was observed 3 times (for at least 6 hours / shift) until her practice covered the items of tool II.
- Data was collected over a period of 6 months starting from the beginning of June 2018 till the end of November 2018.
- Data were collected 2-3 days/week during the morning & evening shifts.

Statistical analysis:

Analysis of data was done by the researcher as follows:

- The collected data was categorized, coded, computerized, tabulated and analyzed using Statistical Package for Social Sciences (SPSS) version 16 program.
- Statistical measures were used such as simple frequency tables to describe and summarize categorical variables.
- Cross tabulation was used to explore relationships between variables.
- A descriptive and analytical statistics were used such as percentages, mean and SD.
- Chi-square, Fisher Exact and One-Way ANOVA tests were also used to find out the difference in the results at 0.05 level of significance.

Ethical considerations:

- Written informed consent from the study subjects was obtained after explanation of research purpose.
- Confidentiality of the collected data was maintained.
- Anonymity of the study subjects was ensured.
- The right to withdraw from the study at any time was explained and assured.

III. RESULTS

Table (I): Number and percent distribution of the nurses according to their socio-demographic and academic data

| Socio-demographic & academic data | No (60) | % |
|-----------------------------------|----------------------|-------|
| Age (years): | | |
| 22-<30 | 35 | 58.33 |
| 30-<40 | 18 | 30.00 |
| 40-45 | 7 | 11.67 |
| Mean ± SD | 30.03 ± 6.151 | |

| | | |
|---|---------------------|-------|
| Current residence: | | |
| Urban | 52 | 86.67 |
| Rural | 8 | 13.33 |
| Place of work: | | |
| El-Shatby Maternity University Hospital In Alexandria | 38 | 63.33 |
| Damanhur Medical National Institute | 22 | 36.67 |
| Qualification: | | |
| Bachelor | 27 | 45.00 |
| Technical | 21 | 35.00 |
| Diploma | 12 | 20.00 |
| Position (Employee rank): | | |
| Supervisor | 27 | 45.00 |
| Technician | 21 | 35.00 |
| Diploma nurse | 12 | 20.00 |
| Years of experience in nursing: | | |
| <5 | 22 | 36.67 |
| 5-<10 | 14 | 23.33 |
| ≥10 | 24 | 40.00 |
| Mean ± SD | 9.5 ± 6.497 | |
| Years of experience in ICU and Eclamptic Unit: | | |
| <5 | 44 | 73.33 |
| 5-<10 | 7 | 11.67 |
| ≥10 | 9 | 15.00 |
| Mean ± SD | 5.65 ± 5.728 | |

Table (I) shows the number and percent distribution of the nurses according to their socio-demographic and academic data. It was found that more than one half (58.33%) of the nurses aged from 22 to less than 30 years whereby 30% of them aged from 30 to less than 40 years compared to 11.67% aged from 40 to 45 years. The mean age of the nurses was 30.03 ± 6.151 years old.

Concerning qualification and position (Employee rank) more than two fifths (45%) of nurses were working as supervisors who had bachelors, more than one third (35%) of them were working as technicians with technical degree and one fifth (20%) had diploma degree and were working as diploma nurses.

The table also illustrates that more than one third (36.67%) of the nurses had less than 5 years of experience in nursing, compared to less than one quarter (23.33%) of them had from 5 to less than 10 years and 40% of them had 10 or more years with a mean of 9.5 ± 6.497 years. Meanwhile, less than three quarters (73.33%) of the nurses had less than 5 years of experience in ICU and eclamptic unit compared to 11.67% had from 5 to less than 10 years while 15% of them had 10 or more years of experience in I C U and eclamptic unit with a mean of 5.65 ± 5.728 years.

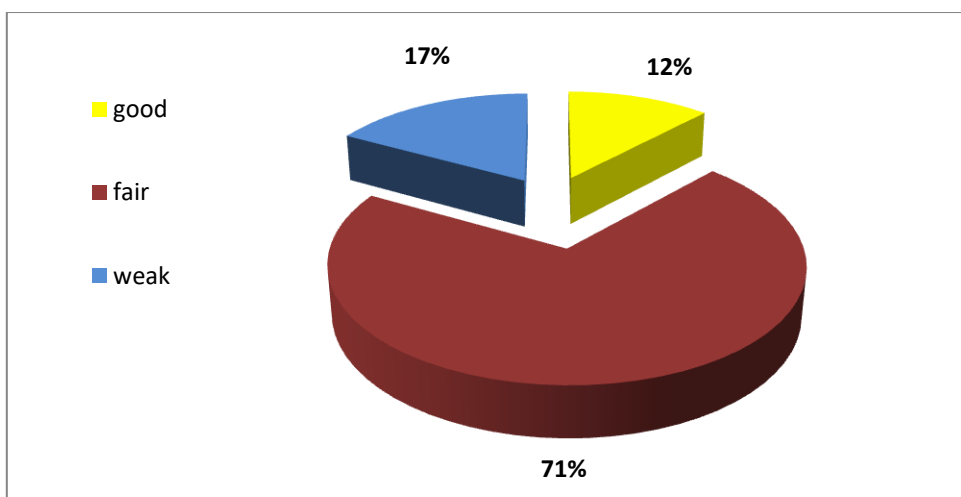


Figure (1) Percent distribution of nurses according to their total score of knowledge about preeclampsia

Figure (1) illustrates the percent distribution of nurses according to their knowledge about preeclampsia. It was noted that less than three quarters (71%) of them had fair knowledge about preeclampsia compared to 17% had weak knowledge while 12% had good general knowledge about preeclampsia.

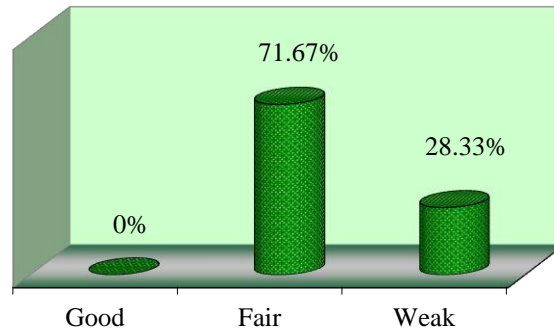


Figure (2) Percent distribution of nurses according to their total score of knowledge about safety practices in caring of pregnant women with severe preeclampsia

Figure (2) demonstrates the percent distribution of nurses according to their total score of knowledge about safety practices in caring of pregnant women with severe preeclampsia. Regretly, it was observed that none of the nurses (0%) had good knowledge about safety practices in caring of pregnant women with severe preeclampsia. On the contrary, less than three quarters (71.67%) of them had fair knowledge.

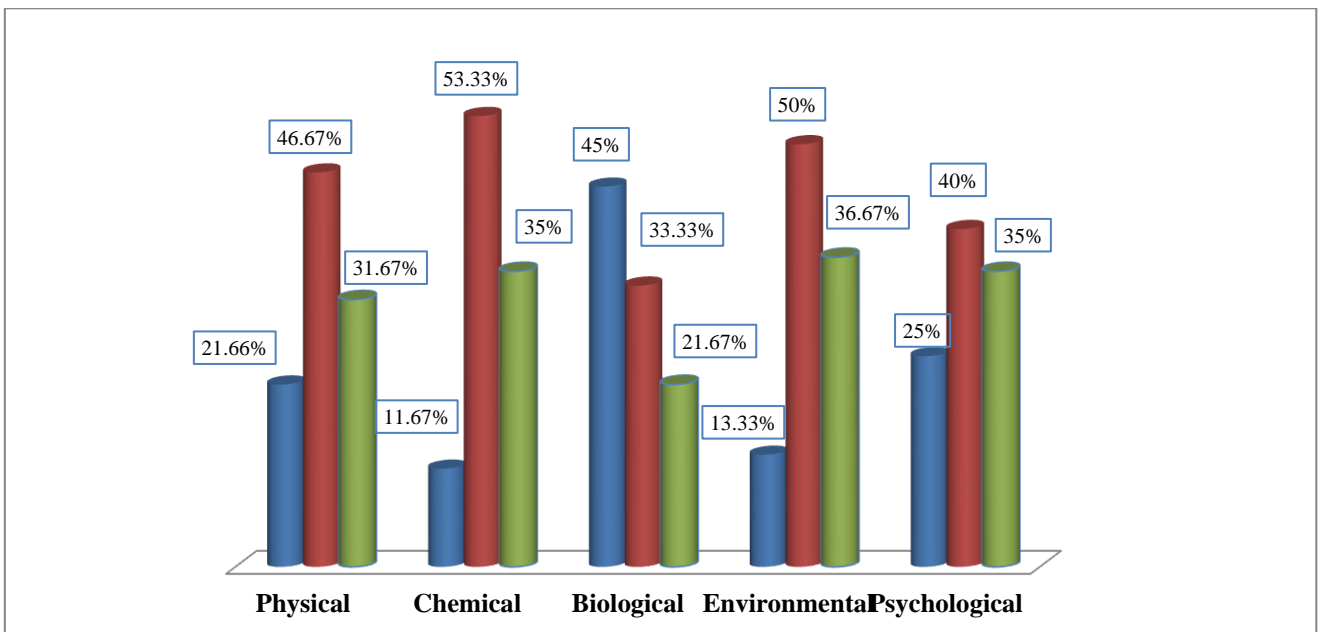


Figure (3) Percent distribution of nurses according to their compliance with safety practices in caring of pregnant women with severe preeclampsia

Figure (3) illustrates the percent distribution of nurses according to their compliance with safety practices in caring of pregnant women with severe preeclampsia. It was found that there was a statistically significant correlation between nurses' compliance of different types of safety practices in caring of pregnant women with severe preeclampsia and each other ($p=0.000$). As it was found that almost one half (45%) of nurses were compliant with biological safety practices, compared to psychological safety practices (25%), physical safety practices (21.66%), environmental safety practices (13.33%) and chemical safety practices (11.67%).

One the other hand, one half and more (50% & 53.33%) of the nurses were fairly compliant with environmental and chemical safety practices respectively, compared to 36.67% and 35% respectively of those who were non-compliant. Meanwhile, two fifths and more (40% & 46.67%) of the nurses were also fairly compliant with psychological and physical safety practices respectively, compared to 35% and 31.67% respectively of those who were non-compliant.

Table (II): Relationship between nurses' socio-demographic & academic data and their total score of knowledge about preeclampsia

| Socio-demographic & academic data | Total score of knowledge about preeclampsia | | | | | | Total (60) | | F/ α 2 (P) |
|--|---|-------|-----------|-------|-----------|-------|------------|-------|-------------------|
| | Good (7) | | Fair (43) | | Weak (10) | | No | % | |
| | No | % | No | % | No | % | | | |
| Age (years): | | | | | | | | | |
| 22- | 2 | 05.71 | 27 | 77.15 | 6 | 17.14 | 35 | 58.33 | 6.904 (0.141) |
| 30- | 5 | 27.77 | 10 | 55.56 | 3 | 16.67 | 18 | 30.00 | |
| 40-45 | 0 | 00.00 | 6 | 85.71 | 1 | 14.29 | 7 | 11.67 | |
| Current residence: | | | | | | | | | |
| Urban | 6 | 11.55 | 38 | 73.07 | 8 | 15.38 | 52 | 86.67 | 0.498 (0.779) |
| Rural | 1 | 12.50 | 5 | 62.50 | 2 | 25.00 | 8 | 13.33 | |
| Place of work: | | | | | | | | | |
| El-Shatby Maternity University Hospital In Alexandria | 3 | 07.90 | 27 | 71.05 | 8 | 21.05 | 38 | 63.33 | 2.465 (0.292) |
| -Damanhur Medical National Institute | 4 | 18.18 | 16 | 72.73 | 2 | 09.09 | 22 | 36.67 | |
| Qualification: | | | | | | | | | |
| Diploma | 1 | 08.33 | 10 | 83.33 | 1 | 08.33 | 12 | 45.00 | 1.376 (0.848) |
| Technical | 2 | 09.52 | 15 | 71.43 | 4 | 19.05 | 21 | 35.00 | |
| Bachelor | 4 | 14.81 | 18 | 66.67 | 5 | 18.52 | 27 | 20.00 | |
| Position (Employee rank) : | | | | | | | | | |
| Nurse | 1 | 08.33 | 10 | 83.33 | 1 | 08.33 | 12 | 45.00 | 1.376 (0.848) |
| Technician | 2 | 09.52 | 15 | 71.43 | 4 | 19.05 | 21 | 35.00 | |
| Supervisor | 4 | 14.81 | 18 | 66.67 | 5 | 18.52 | 27 | 20.00 | |

F (P): Fisher Exact Test & P for FET-Test

α 2 (P): Chi-Square Test & P for α 2 Test

*: Significant at $P \leq 0.05$

Table (II) shows the relationship between nurses' socio-demographic and academic data and their total score of knowledge about preeclampsia. It was observed that none of the socio-demographic and academic characteristics had any statistical significance on the total score of nurses' knowledge about preeclampsia.

As it was found that more than three quarters (77.15%) of nurses aged from 22 to less than 30 years, more than one half (55.56) of nurses aged from 30 to less than 40 years compared to majority (85.71%) of nurses aged from 40 to 45 years had fair knowledge about preeclampsia. In addition, qualification and position (employee rank) display that the majority of diploma nurse (83.33%) compared to (71.43%) of the technicians who had a technical institute had fair knowledge about preeclampsia.

However, two thirds (66.67%) of nurse supervisors who had bachelor degree of nursing had fair knowledge about preeclampsia, (18.52%) had weak knowledge and only (14.81%) had good knowledge about preeclampsia. This table also makes clear that less than three quarters (72.73%, 71.42% & 70.83%) of nurses who had less than 5 years, who had from 5 to less than 10 and who had ten or more years of experience in nursing respectively had fair knowledge about preeclampsia.

Considering years of experience in ICU and eclamptic unit, it was found that less than two thirds (65.91%) of nurses who had less than 5 years of experience in ICU and eclamptic unit had fair knowledge about preeclampsia while only 14.29% of nurses with experience from 5 to less than 10 years had good knowledge about preeclampsia although none of the nurses who had 10 or more had good knowledge about preeclampsia.

Table (III): Relationship between nurses' socio-demographic & academic data and their total score of knowledge about safety practices in caring of pregnant women with severe preeclampsia

| Socio-demographic & academic data | Total score of knowledge about safety practices | | | | Total (60) | | F/ α 2 (P) |
|---|---|-------|-----------|-------|------------|-------|-------------------|
| | Fair (43) | | Weak (17) | | No | % | |
| | No | % | No | % | | | |
| Age (years): | | | | | | | |
| 22- | 22 | 62.86 | 13 | 37.14 | 35 | 58.33 | 3.225 (0.199) |
| 30- | 15 | 83.33 | 3 | 16.67 | 18 | 30.00 | |
| 40-45 | 6 | 85.71 | 1 | 14.29 | 7 | 11.67 | |
| Current residence: | | | | | | | |
| Urban | 38 | 73.08 | 14 | 26.92 | 52 | 86.67 | 0.382 (0.536) |
| Rural | 5 | 62.50 | 3 | 37.50 | 8 | 13.33 | |
| Place of work: | | | | | | | |
| - El-Shatby Maternity University Hospital In Alexandria | 28 | 73.68 | 10 | 26.32 | 38 | 63.33 | 0.208 (0.648) |
| - Damanhur Medical National Institute | 15 | 68.18 | 7 | 31.82 | 22 | 36.67 | |
| Qualification: | | | | | | | |
| Diploma | 11 | 91.67 | 1 | 08.33 | 12 | 45.00 | 4.623 (0.099) |
| Technical | 16 | 76.19 | 5 | 23.81 | 21 | 35.00 | |
| Bachelor | 16 | 59.26 | 11 | 40.74 | 27 | 20.00 | |
| Position (employee rank) : | | | | | | | |
| Nurse | 11 | 91.67 | 1 | 08.33 | 12 | 45.00 | 4.623 (0.099) |
| Technician | 16 | 76.19 | 5 | 23.81 | 21 | 35.00 | |
| Supervisor | 16 | 59.26 | 11 | 40.74 | 27 | 20.00 | |
| Years of experience in nursing: | | | | | | | |
| <5 | 11 | 50.00 | 11 | 50.00 | 22 | 36.67 | 8.378 (0.015)* |
| 5-<10 | 11 | 78.57 | 3 | 21.43 | 14 | 23.33 | |
| ≥10 | 21 | 87.50 | 3 | 12.50 | 24 | 40.00 | |
| Years of experience in ICU & Eclamptic Unit: | | | | | | | |
| <5 | 28 | 63.64 | 16 | 36.36 | 44 | 73.33 | 5.479 (0.064) |
| 5-<10 | 7 | 100.0 | 0 | 00.00 | 7 | 11.67 | |
| ≥10 | 8 | 88.89 | 1 | 11.11 | 9 | 15.00 | |

F (P): Fisher Exact Test & P for FET-Test

α 2 (P): Chi-Square Test & P for α 2 Test

*: Significant at $P \leq 0.05$

Table (III) shows the relationship between nurses' socio-demographic and academic data and their total score of knowledge about safety practices in caring of pregnant women with severe preeclampsia. It was found that none of the nurses had good knowledge about safety practices in caring of pregnant women with severe preeclampsia.

Regarding age, less than two thirds (62.86%) of nurses aged from 22 to less than 30 years had fair knowledge about preeclampsia. Compared to the majority of nurses (83.33% & 85.71%) aged from 30 to less than 40 and from 40 to less than 45 years of nurses had fair knowledge about safety practices in caring of pregnant women with severe preeclampsia.

Current residence also manifests that less than three quarters (73.08%) of the urban dwellers had fair knowledge about safety practices in caring of pregnant women with severe preeclampsia compared to more than one quarter (26.92%) of them who had weak knowledge.

On the other hand, less than two thirds (62.5%) of the rural dwellers had fair knowledge while 37.5% of them had weak knowledge about safety practices in caring of pregnant women with severe preeclampsia.

This table also makes clear that there was a significance relationship between nurses' years of experience in nursing and their knowledge about safety practices in caring of pregnant women with severe preeclampsia. As it was found that one half (50%) of nurses who had less than 5 years of experience had weak knowledge compared to (78.57% and 87.5%) of nurses who had from 5 to less 10 years and who had 10 or more years of experience in nursing respectively had fair knowledge about safety practices in caring of pregnant women with severe preeclampsia.

Table (IV): Relationship between nurses' socio-demographic & academic data and their total score of compliance with safety practices in caring of pregnant women with severe preeclampsia

| Socio-demographic & academic data | Total score of compliance with safety practices | | | | | | Total (60) | | F/ α 2 (P) |
|---|---|-------|-----------------------|-------|-------------------|-------|------------|-------|-------------------|
| | Compliant (14) | | Fairly compliant (43) | | Non compliant (3) | | | | |
| | No | % | No | % | No | % | No | % | |
| Age (years): | | | | | | | | | |
| 22- | 11 | 31.43 | 22 | 62.86 | 2 | 05.71 | 35 | 58.33 | 7.534 (0.110) |
| 30- | 1 | 05.56 | 17 | 94.44 | 0 | 00.00 | 18 | 30.00 | |
| 40-45 | 2 | 28.57 | 4 | 57.14 | 1 | 14.29 | 7 | 11.67 | |
| Current residence: | | | | | | | | | |
| Urban | 11 | 21.15 | 38 | 73.08 | 3 | 05.77 | 52 | 86.67 | 1.364 (0.506) |
| Rural | 3 | 37.50 | 5 | 62.50 | 0 | 00.00 | 8 | 13.33 | |
| Place of work: | | | | | | | | | |
| El-Shatby Maternity University Hospital In Alexandria | 8 | 21.05 | 27 | 71.05 | 3 | 07.90 | 38 | 63.33 | 1.973 (0.373) |
| Damanhur Medical National Institute | 6 | 27.27 | 16 | 72.73 | 0 | 00.00 | 22 | 36.67 | |
| Qualification: | | | | | | | | | |
| Diploma | 2 | 16.67 | 8 | 66.66 | 2 | 16.67 | 12 | 45.00 | 5.649 (0.227) |
| Technical | 4 | 19.05 | 17 | 80.95 | 0 | 00.00 | 21 | 35.00 | |
| Bachelor | 8 | 29.63 | 18 | 66.67 | 1 | 03.70 | 27 | 20.00 | |
| Position (employee rank): | | | | | | | | | |
| Nurse | 2 | 16.67 | 8 | 66.66 | 2 | 16.67 | 12 | 45.00 | 5.649 (0.227) |
| Technician | 4 | 19.05 | 17 | 80.95 | 0 | 00.00 | 21 | 35.00 | |
| Supervisor | 8 | 29.63 | 18 | 66.67 | 1 | 03.70 | 27 | 20.00 | |
| Years of experience in nursing: | | | | | | | | | |
| <5 | 8 | 36.36 | 13 | 59.09 | 1 | 04.55 | 22 | 36.67 | 9.942 (0.414) |
| 5-<10 | 3 | 21.43 | 10 | 71.43 | 1 | 07.14 | 14 | 23.33 | |
| ≥10 | 3 | 12.50 | 20 | 83.33 | 1 | 04.17 | 24 | 40.00 | |
| Years of experience in ICU & Eclamptic Unit: | | | | | | | | | |
| <5 | 10 | 22.73 | 33 | 75.00 | 1 | 02.27 | 44 | 73.33 | 2.934 (0.569) |
| 5-<10 | 2 | 28.57 | 4 | 57.14 | 1 | 14.29 | 7 | 11.67 | |
| 5-<10 | 2 | 22.22 | 6 | 66.67 | 1 | 11.11 | 9 | 15.00 | |
| ≥10 | | | | | | | | | |

F (P): Fisher Exact Test & P for FET-Test

α 2 (P): Chi-Square Test & P for α 2 Test

*: Significant at $P \leq 0.05$

Table (IV) shows the relationship between nurses' socio-demographic and academic data and their total score of compliance with safety practices in caring of pregnant women with severe preeclampsia.

It was observed that none of the socio-demographic and academic characteristics had any statistical significance on the total score of nurses' compliance with safety practices in caring of pregnant women with severe preeclampsia. As it was found that less than two thirds (62.86%) of nurses aged from 22 to less than 30 years, compared to vast majority of nurses (94.44%) aged from 30 to less than 40 years were fairly compliant with safety practices in caring of pregnant women with severe preeclampsia while more than one quarter (28.57%) of nurses aged from 40 to 45 years were compliant with safety practices in caring of pregnant women with severe preeclampsia.

Furthermore, it was found that less than one quadrant (22.73%) of nurses who had less than 5 years, compared to 28.57% of nurses who had from 5 to less than 10 years of experience in ICU and eclamptic unit were compliant with safety practices in caring of pregnant women with severe preeclampsia.

On the other hand, two thirds (66.67%) of nurses with 10 or more years of experience in ICU and eclamptic unit were fairly compliant with safety practices in caring of pregnant women with severe preeclampsia.

IV. DISCUSSION

Despite the fact that the greatest number of labor and pregnancies occur in a healthy manner, many pregnancies are at risk. About 15% of all pregnant women have possibly dangerous complications. Some women need antenatal interference and others require complicated obstetrical intervention to survive. Pregnancy induced hypertension (PIH) is one of the most common medical disorder during pregnancy as it is considered the third leading cause of maternal mortality in the developed and developing countries.⁽¹⁶⁾

Nurses, midwives and doctors are the professionals who are responsible for the care of women during pregnancy, childbirth and during the postnatal period. To attain optimal support for safe maternal health, all health sectors in maternity and women healthcare facilities, should focus on promoting health. Hence the present study aimed to identify nurses' compliance with safety practices in caring of pregnant women with severe preeclampsia.⁽¹⁷⁾

Nurses' knowledge about preeclampsia

The findings of the present study revealed that the most of the study subjects had fair knowledge about preeclampsia. This result is in accordance with Khatun R. Et al (2017)⁽¹⁶⁾, who had studied legitimating of nurses' knowledge through policies and protocols about clinical practice in Australia. They had reported that the majority of their subjects had fair knowledge about preeclampsia

In the same context, two Egyptian studies supported the same finding. First: Abdelhakm E and Said A (2017)⁽¹⁷⁾, who had deliberated developing nursing management, protocol for maternity nurses regarding emergency obstetric care in Benha University, Egypt. Their results revealed that the majority of nurses had poor knowledge about preeclampsia. Second: El Menshawy S (2016)⁽²⁶⁾, who had studied evaluation of evidence based knowledge and practices regarding assessment of preeclampsia and eclampsia among nurses at Mansoura governmental hospitals in Egypt. Their results had indicated that the majority of nurses had fair knowledge about preeclampsia.

On the other hand the finding of the recurrent partially in line with, Abdel Fatah S. (2017)⁽¹⁸⁾, who had evaluated assessment of nurses' practical skills during providing care for mothers medically diagnosed with preeclampsia in Ain Shams Maternity University Hospital in Egypt agreed with the results of the present study. As they revealed that the majority of nurses had poor knowledge about preeclampsia

On the other hand, this same findings contradicts with the results of Munira thnamma M and Laks hmamma T (2013)⁽²⁰⁾ who had studied knowledge of staff nurses regarding management of pregnancy induced hypertension in Karnataka. Their results had indicated that the majority of nurses had good knowledge about preeclampsia

This study results may be attributed to many factors. Some of them are the fact that nurses did not receive adequate information or may need for refreshing in-services training regarding management of pre-eclampsia and eclampsia during labor. Besides, the lack of awareness of the importance of nurses' knowledge as a source of mothers' wellbeing, daily high load of patients, insufficient percentage of training courses, lack of supervision, and miss estimation of policy makers to the nurses role.

Nurses' knowledge about safety practices

A new reality is obligated that nurses' perceptions about safety are important because organization with strong safety culture consistently report fewer work place injuries and harmful events⁽²¹⁾. Concerning nurses' knowledge about safety practices in caring of pregnant women with severe preeclampsia, the findings of the present study revealed that none of the study nurses had good knowledge about safety practices in caring of pregnant women with severe preeclampsia; meanwhile 71.67% of them had fair knowledge.

This result is in accordance with the results of two studies^(22, 23). First: Ali M (2015), who had studied critical care patient's safety: Assessment of nurses' perception, knowledge and practices among nurses at Mansoura emergency hospital in Egypt. Their results had indicated that more than three quarters of their subjects had poor knowledge about safety practices. Second, El Atroush H (2010) who had studied work related hazards facing nurse interns in ICU: A

program for protection at Ministry of health hospitals in Al-Dakahlia governorate, Egypt. They had reported that the majority of their study subjects had fair knowledge about safety practices in preeclampsia.

On the other hand, this present findings contradict with the results of Paulo S (2015)⁽²⁴⁾ who had studied knowledge and attitudes of nurses regarding patient rights in Turkey. Their results had revealed that the majority of their study subjects had good knowledge about patient safety practices.

Nurses' compliance with safety practices in caring of pregnant women with severe preeclampsia

The Findings of the current study indicate that less than one-quarter of the nurses were compliant with safety practices in caring of pregnant women with severe preeclampsia. Similar findings were documented by two studies^(23 25). First, the previously mentioned Abd El Aziz A (2017) study, found that the mean percent of nurse's perception of patient safety standards was 15%. Second, the previously mentioned El Atroush H (2010) study. He had reported that the minority of their study subjects were compliant with psychological safety practices provided to the patients with severe preeclampsia.

The present study revealed that there was no significant correlation between nurses' knowledge about preeclampsia with each of nurses' age, current residence, and place of work, qualification, employee rank, and years of experience in nursing or in ICU or eclamptic unit. This result is in accordance with the findings of three other studies: The previously mentioned El

with severe preeclampsia with each of nurses' age, current residence, and place of work, qualification, employee rank, and years of experience in ICU or eclamptic unit. However, there was a significant positive correlation between nurses' Menshawy S (2016)⁽²⁶⁾ study who revealed that there was no significant correlation between nurses' knowledge about preeclampsia and their socio-demographic characteristics. Kavithap, Tesfey A, et al (2014)⁽²⁷⁾ and the previously mentioned Munirathnamma M. Et al (2013)⁽²²⁾ studies who revealed that there was no significant relation between nurses' knowledge regarding emergency obstetric management and their age.

On the other hand, this same finding is in congruent with the results of two other studies⁽²³⁾. Mousa O. Et al (2013) and Chiari P, Giancesini G, et al (2010)⁽¹⁹⁾ studies which revealed that the socio-demographic characteristics of the study subjects, nurses' knowledge about preeclampsia mostly depend on their years of experience. Abdelhakm E and Said A (2017)⁽¹⁷⁾ study showed that, there was positive statistically significant correlation between nurses' knowledge and their age before and after applying protocol. There was a positive statistically significant correlation between knowledge and years of experience before and after applying protocol. Besides, deluciam and Weinter B(2011)⁽²⁸⁾ studied performance in nursing. They found that work experience influences nurses' performance. The study also revealed that there was a statistically significant correlation between total scores of nurses' knowledge and practice before and after applying nursing management protocol.

The present study also revealed that there was no significant correlation between nurses' knowledge about safety practices in caring of pregnant women knowledge about preeclampsia with their years of experience in nursing.

In addition, the present study also revealed that there was no significant correlation between nurses' compliance with safety practices in caring of pregnant women with severe preeclampsia with each of nurses' age, current residence, and place of work, qualification, employee rank, and years of experience in nursing or in ICU or eclamptic unit (Table IV). This result is in accordance with the findings of the previously mentioned Atia A (2015)⁽²⁹⁾ study found that there was no statistically significant relation between nurses' performance and their age. This unsatisfactory level of nurses' practice showed the importance of continuous education, protocols and regular updating clinical courses for nurses to promote their knowledge and practices. Therefore, it is essential that nurses should be well trained and educated on obstetrical emergencies especially in the emergency department. Since they play a vital role to inform the doctor and begin the initial assessment and management of these situations.

V. CONCLUSION AND RECOMMENDATIONS

Conclusion

According to the findings of the present study, it can be concluded that only less than one quarter of the nurses were compliant with safety practices in caring of pregnant women with severe preeclampsia.

Recommendation

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

- It is beneficial for all governmental and university hospitals to provide massive , continuous and adequately planned in -service training programs for patient safety practices in order to develop the best practice of nurses and maintain safety and wellbeing of patients.
- Development of patient safety committee by hospital administration is mandatory.
- Effective supervision for nursing staff is essential for guidance, monitoring and evaluating nursing practice related to patient safety standards.
- The nursing curriculum should be revised and updated to include patient safety practices in all aspects of patient care.
- Increasing nurses' awareness of the importance of their knowledge as a source of mothers' wellbeing by encouraging them to attend training programs and conferences.
- Providing nurses with recent and evidence based knowledge regarding management of obstetrical emergencies.
- Providing specific policies, procedures manual or posters in work place about patient safety practices in preeclampsia.
- Providing infection control training programs for nurses, providing enough sinks in patient's area as well as essential supplies as soap, paper towel, alcohol, protective clothing and its adequate distribution through the different shifts

Future researches

- Designing preeclampsia safety practices standards regarding protocol for health care providers especially staff nurses through evaluation the recommended protocol.
- The study can be replicated on a large sample for generalizing the findings.

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International Journal of Novel Research in Healthcare and Nursing

 Vol. 6, Issue 2, pp: (1227-1239), Month: May - August 2019, Available at: www.noveltyjournals.com

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