The Effectiveness of Educational Program on Nurses' Competencies Regarding Pre-Eclampsia Care in Three Hospitals in Sudan2021

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Abstract:-Background- Preeclampsia is a major problem, particularly in developing countries that add significantly to high maternal and fetal morbidity and mortality worldwide. Nurses can play a major role in preventing maternal death related to preeclampsia. Aim: to evaluate the effectiveness of educational programs on nurses' competencies regarding pre-eclampsia care. Methods: A Quasi-experimental hospital base studywas conducted in the hospitals in Wad Medani town -Sudan, a purposive sample of 105 nurseswasselected purpossively. Data wascollectedusingaquestionnaire to assess the nurse's knowledge and an observational checklist to evaluate the nurse's practice.

Results: The total mean for post-test Knowledge was (2.56) while the pre-knowledge was (1.715) with a P. Value equal to 0.000. This means the respondents were better in Knowledge after the program. The total mean for post-test practice was (2.189), while the pre-test practice was (1. 306) which is statistically significant as evident by the P. Value equal to 0.00. this means that the respondents were better in practice after the program with highly statistically significant differences. Conclusion:All the study findings reflect nurses' desire, willingness, and motivation to learn as evident by the study nurses' knowledge and practice about pre-eclampsia improvement in post-test.Recommendations for continuous educational programs to improve nurses' competencies regarding preeclampsia care in the study setting.

Keywords:- Educational program; competency; pre-eclampsia; nurses.

I. INTRODUCTION

Pre-eclampsia (PE) are serious public health problem globally and in Sudan that affects a group of pregnant women [1].These conditions have severed obstetrics implications for decades has been located at the international level as one of the three major causes of maternal death[2].Globally PE contributes to the death of a pregnant woman every three minutes [3]. By conservative estimates, these disorders are responsible for 76,000 maternal and 500,000 infant deaths each year [4].In developing countries, a woman is seven times as likely to develop pre-eclampsia as a woman in a developed country. From 10-25% of these cases will result in maternal death[5]. Sudan has a high maternal mortality rate of 295 deaths per 100,00 live births, according to the UNFPA 2020 State of World Population report, while the world average is 211 deaths [6]. Women during pregnancy need special care and follow-up from health care facilities such as scanning regularly for pre-eclampsia and applying rigorous care plans for pregnant women who are at risk, as well as awareness of signs and symptoms of pre-eclampsia are important at health care facilities to protect women from fetal complication and ensuring women receive appropriate care on the proper time[7]. Nurses have a vital role in preventing maternal mortality because of eclampsia. Hence, the value of estimating nurses' knowledge about PE is very important [8].

According to a recent World Health Organization (WHO) assessment, Sudan is one of the eleven nations that account for 65 percent of maternal mortality worldwide.

To reduce this high maternal mortality rate improving the provision of emergency obstetric care (Emoc) in all health facilities, and expanding nursing & midwifery training and coverage, especially in rural areas is recommended [9]. Most deaths due to pre-eclampsia can be avoidable through the provision of timely and effective care to the women presenting with these complications. Optimizing health care to prevent and treat women with

hypertensive disorders is a substantial step to achieve the WHO goals. Thus, improving the quality of maternal healthcare for women is a necessary step towards the achievement of the health targets of the Sustainable Development Goals (SDGs) and the targets and indicators of WHO's Thirteenth General Program of Work, particularly for achieving universal health coverage[10].Because of pre-eclampsia, nurses play a critical role in minimizing maternal death. Hence, the value of estimating nurses' knowledge and practiceabout pre-eclampsia,and to accomplish this, it is important for nurses to improve their nursing competencies and utilize them in their daily practice. Thus, the nurse's role is very crucial in providing nursing care for pre-eclamptic cases; they must be competent in their knowledge and practices. The researchers selected this study to evaluate the effectiveness of educational programs on nurses' competencies regarding pre-eclampsia care to participate in improving maternal and fetal health and reducing mortality.

II. MATERIAL &METHODS

A quasihospital-based study: pretest and posttest for the same group used to evaluate the effect of educational programs on nurses' competencies regarding preeclampsia care 2021. The study was conducted in the obstetrics and gynecological departments of the police hospital, military hospital &Obstetrics and Gynecology hospital in Wad Medani town in Gezira Scheme which was the largest agricultural project in Sudan. This setting is the high flow rate of cases of preeclampsia who attended from different surrounding cities and villages in the rural area provide services to public clients and care for a woman during pregnancy and labor, as well as for infertility and gynecological problems, in addition to family planning services. Different qualifications of nurses who hold a diploma, BSC, and MSC degrees in nursing science worked in obstetrical departments in the study setting during the study period A purposive sample of all nurses working in obstetrics and Gynecological words and operating rooms their total number was 105 nurses, they were taken from the above-mentioned hospital (62nurses were selected from wad Madani obstetrics&gynecology hospital, 25 nurses from a military hospital, and 18 nurses from the police hospital.

A pilot study was done and the Cronbach Alpha coefficient for practice items was 0.878 so the study instruments were valid and reliable for conducting the researchstudy. Data were collected in three phases (pretest, implementation of the program, and posttest). Data presented using descriptive statistics in the form of frequencies and percentages for qualitative variables and quantitative variables and categorical variables will compare using the chi-square test statistical significanceis be considered at p-value <0.05 for each question presented in the result (tables or figures). ethical approval was obtained from the scientific research ethical committee of the faculty of nursing science, National Ribat university the researchers met both medical and nursing directors of the selected setting to clarify the purpose of the study and take their approval. Consent was obtained from each nurse to participate in the study after the objective of the study was explained from the researcher and informed the nurses that

the study was voluntary and, the study has no physical, social, or psychological risk to the participant. they were allowed to not participate, and they had the right to withdraw from the study at any time without giving any reason, each nurse was informed about time throughout the study, such as duration of pretest, discussion, previewing education video, training on certain procedures and posttest Moreover they were assuring their information would be confidentialProcedures of data collection for the study data were collected by the researchers. The data was collected from the beginning of September 2021 to the end of September 2021 follow up after 3month. Implementation of the study was carried out at the obstetrics and gynecology department (ICU, HDU, ANW, PNW,) of the study settings. The researchers began the study by visiting the setting area selected three days per week, from 9 a.m. to 1 p.m. Sometimes the researcher would go during the afternoon or night shift, the time was determined according to the participating nurses' suitable time.

- Interviewing phase: - The researchers attended inpatient to assess the provided care for pre-eclampsia, At the beginning of the interview, the researchers greeted each nurse, utilizing proper channels of communication, explaining the purpose of the study, and took their verbal agreement.

- Assessment phase: Assessment began at the first contact with the nurses in the morning. Data related to age, qualification and years of experience,nurses' knowledge regarding care of pre-eclampsia women. The time taken by each nurse to fill the form was about 15-20 minutes. Two to three nurses fill out the questionnaire daily to avoid disruption of the service in the department. The observation checklist was done by the researchers for the care of pre-eclamptic women. The observation was repeated after three months, and the average taken took about 1- 2 hours or more. The observation was scheduled for a weekday as well as morning, evening, and night shifts to avoid observing each participant more than once.

III. RESULT

Qualification	Frequency	Percent
Diploma	55	52.4%
Bachelor	46	43.8%
Master	4	3.8%
Total	105	100%
years of experience		
1-5	81	77.1%
6-10	19	18.1%
11-15	5	4.8%
Total	105	100%
Training courses in care of preeclamptic		
Yes	12	11.4%
No	93	88.6%

Table 1: Shows the demographic characteristics of the participants

Table (1) The participant's qualifications that more than half had a Diploma degree of 55(52.4%) while4(3.8%) had master's degrees,81 (77.1%) of the study population had years of experience between (1-5 years) (88.6%) of the study population did not receive training courses while (11.4%) received.

Procedure	Level of performance	Pretest		Post-test		Pretest		Post-test		**P-value**
Care of Pre-eclamptic Mother		N	%	N	%	Mean	Std	Mean	Std	
Wight measurement and record it	Done competent	34	32.4	80	76.2	2.09	.856	1.30	.590	0.00
	Done incompetent	28	26.7	18	17.1					
	Not done	43	41.0	7	6.7					
Measure blood pressure	Done competent	54	51.4	73	69.5	1.69	.788	1.35	.571	0.00
	Done incompetent	30	28.6	27	25.7					
	Not done	21	20.0	5	4.8					
Lower extremities assessment for edema	Done competent	11	10.5	41	39.0	2.55	.679	1.81	.748	0.00
	Done incompetent	25	23.8	43	41.8					
	Not done	69	65.7	21	20.0					
Assess fetal heart rate	Done competent	6	5.7	94	89	2.73	.559	1.10	.308	0.00
	Done incompetent	16	15.2	11	10.5					
	Not done	83	79.0	0	0.0					
Checks urine for proteinuria	Done competent	16	15.2	79	75.2	2.40	.742	1.10	.354	0.00
	Done incompetent	31	29.5	26	24.8					
	Not done	58	55.2	0	0					
Checked intake and out put	Done competent	12	11.4	97	92.4	2.43	.691	1.25	.434	0.00
	Done incompetent	36	34.3	6	5.7					
	Not done	57	54.3	2	1.9					
Given treatment as order	Done competent	77	73.3	97	92.4	1.50	.845	1.09	.314	0.00
	Done incompetent	4	3.8	7	6.7					
	Not done	24	22.9	1	1					

Table 2:Performanceof study population according to their practice in the care of preeclamptic mother   N=105

Table (2) The result of participants'practices about measuring weight and blood pressure high significant. the participants should assess thefetal heart rate program,44(63%), and increase post educational program to70(100%). their practice of checking urine for protein (15.2%) and increased post-educational program 97(75.2%), indicates thatthere was astatistically significant difference before and after regarding all items of the performance with increased competent of nurses after the program in relation to nurses competent regarding thecare of preeclamptic mother (p=< 0.05).

Statement	Years of experience	Score of knowledge				P-value
		poor	*Average*	*good*	*Total*	
The patient progresses from mild Preeclampsia to severe	1-5	10	11	60	81	0.00
	6-10	0	5	14	19	
	11-15	4	0	1	5	
	Total	14	16	75	105	
Nursing care of severe pre-eclampsia	1-5	8	14	59	81	0.000
	6-10	2	3	19	19	
	11-15	4	0	1	5	
	Total	14	17	74	105	

Table 3: Correlation between years of experience and level of knowledge

The result shows a positive statistically significant correlation between years of experience and level of knowledge.

Statement	years of experience	Score of performance				P-value
		Done correctly	*Done Incorrectly*	*Not done*	*total*	
Assessing fetal heart rate	1-5	4	12	65	81	0.033
	6-10	0	2	17	19	
	11-15	6	2	1	5	
	Total	6	16	83	105	
Intrapartum nursing care of pre-eclamptic mother	1-5	4	12	65	81	.000
	6-10	0	2	17	19	
	11-15	2	2	1	5	
	Total	**6**	**16**	**83**	**105**	

Table 4: Correlation between years of experience and level of performance

The result of the study samplefoundthat years of work experience influence nurses' performance with highly statistically significant

The study illustrated that in the relation between the study group years ofexperience and qualification concerning knowledge (definition, risk factor, causes, signs, complications of preeclampsia and eclampsia) and level of performance (Checks urine for proteinuria Checked intake and output, given treatment as order, Monitor women with eclampsia) there was no statistically significant relation p-value more than 0.05

Statement	qualification	Score of knowledge				P-value
		poor	Average	good	total	
Determining a sign of magnesium sulfate toxicity by nurses	Diploma	41	3	11	55	0.005
	bachelor	21	13	12	46	
	master	0	0	4	4	
	total	62	16	27	105	
The serious sign of severe pre-eclampsia	diploma	36	6	13	55	0.00
	bachelor	18	18	10	46	
	master	0	2	2	4	
	total	54	26	25	105	

Table 5: correlation between qualification and level of knowledge

The table shows that there are statistically significant differences in nurses' knowledge according to their qualifications after program in favor of bachelor and master certificates.

Statement	qualification	Score of performance				P-value
		Done correctly	Done Incorrectly	Not done	total	
Checking signs of labor	Diploma	0	3	52	55	0.003
	Bachelor	1	3	42	46	
	Master	2	0	2	4	
	Total	3	6	96	105	
Checking urine for proteinuria	Diploma	10	16	29	55	0.000
	Bachelor	4	14	28	46	
	Master	2	1	1	4	
	total	16	31	58	105	

Table 6: Correlation between qualification and level of performance

The result shows a positive statistically significant correlation between qualification and level of performance before & after training.

Items	Groups	Means	Standard Deviation	P-value
Knowledge	Pre	1.715	.131196	0.000
	post	2.56	.190304	
Practice	Pre	1.306	.2281	0.003
	post	2.189	.9582	

Table 7: Comparison between Pre- and Post-intervention on knowledge and practice NO=105:

The total score of knowledge clarifies that the total mean recorded for post Knowledge was (2.56) whilst the pre-knowledge recorded the total mean (1.715). this means that the respondent's nurses were better in Knowledge after the program. The total mean recorded for post-practice was (2.189), whilst as pre-practice recorded the total mean was (1. 306). this means that the respondent's nurses were better in practice after the program with highly statistically significant differences.

IV. DISCUSSION

This study was done to evaluate the effectiveness of educational programs on nurses' competencies regarding pre-eclampsia care in obstetrics departments.

Regarding the demographic characteristics of the studied sample, it was found thatthe educational level,52% of the study sample, diploma 52.4% bachelor 43.8% and master 3.8%, this result may be due tomigration of qualified providers. This resultcomes in contrast with the study done in Bangladesh by Chowdhury [11]. stated that more than half of the study participants had a bachelor 's innursing and less than one-third had a diploma.

Regarding nurses' years of experience, this study showed that (81%) ofthem have years of experience between 1 to 5 years This result disagrees with a study done in ZAMBIA[12]. which found that slightly abovehalf of the respondents have been working for 1- 10 years while 48% ofrespondents have been working for over 11 years and above. This indicates thatmore nurses working in these hospitals have more years of experience than 5years.

The Majority (88%) of the study participants did not receive any training program regarding pre-eclampsia care which is in the same line with the study done by Mohamady in Egypt [13]who found most nurses did not receive training courses. This may be due to a lack of training courses related to pre-eclampsia care which may be rationalized by shortage of staff, lack of facility and the large number of patients which prevents nurses to taking the training course, and this can be affected negatively on the quality of obstetrics care.

Concerning the total knowledge score of the study nurses about pre-eclampsia, the present study findings revealed that the level of total knowledge of the studied nurses about pre-eclampsia improved from poor and average to good knowledge after the intervention. This is rationalized by nurses' interest in gaining information about pre-eclampsia and eclampsia. This finding comes in agreement with shadeen[14]. There was a highly statistically significant difference between pre and post-test regarding nurses' knowledge about pre-eclampsia and eclampsia.

Regarding nurses' performance in nursing care for pre-eclamptic mothers. The present study revealed that mostnurses had inadequate practice before program implementation, while after the program most of them (PV=0.000) provide competent nursing care for women with pre-eclampsia. This is probably because most nurses had basic deficit knowledge about nursing care for women with pre-eclampsia. This may lead to an inability of nurses to provide satisfactory nursing care. This result agrees with another study done by (Roth[15].confirmed that the practice is lacking routines and important procedures are omitted. The Probability to find critical symptoms is therefore reduced. WHO[16].reported that nurses perform pre-eclampsia assessment according to facility protocol, focused assessment for frequent BP measurements, laboratory studies, 24-hour urine collection, daily weights, and fetal monitoring. A woman is confined to bed rest and has frequent assessments for blurred vision, epigastric pain, persistent headaches, and fetal surveillance for wellbeing.

V. CONCLUSION

The current study indicated that the educational programs are effective inincreasing knowledge, improving practice and performance of the study participants, and improving the ability of the study participants regarding the assessment of the patient and reducing complications.

- **Based on the study the researchers recommended**
  - ➢ Frequent and scheduled training programs should be applied to nurses in the hospital for refreshing their knowledge and practices about preeclampsia
  - ➢ Future research should be encouraged to take patients' contributions into consideration and focus on patient outcomes and satisfaction. It is necessary to review the basic knowledge about pregnancy pre-eclampsia definition classification and severe signs and symptoms management and antennal care and care of laboring women.

REFERENCES

[1.] Duley L. The Global Impact of Pre-eclampsia and Eclampsia. SeminarsinPerinatology.2009;33(3):130-137.
http://dx.doi.org/10.1053/j.semperi.2009.02.010

[2.] Mikat B, Gellhaus A, Wagner N, Birdir C, Kimmig R, Köninger A.Early Detection of Maternal Risk for Preeclampsia. ISRN Obstetricsand Gynecology. 2012;2012:1-7.

[3.] Khalid, Hajira, et al. "Efficacy of the Labetalol versus Methyldopa inPregnancy Induced Hypertension among patients visiting Tertiary CareHospital." Journal of The Society of Obstetricians and Gynecologists of Pakistan11.2(2021):143-146.

[4.] Ferranti, Erin P., et al. "Early pregnancy serum metabolite profilesassociated with hypertensive disorders of pregnancy in African American women: a pilot study." Journal of pregnancy 2020.

[5.] AROWOSOLA, FolukeEbunoye, and John ObafemiSOTUNSA."Factors Influencing Cardiovascular Risk of Preeclampsia in Mothers atEkiti State University Teaching Hospital, Ado Ekiti, Nigeria." (2021).

[6.] Sudan: IPC Acute Food Insecurity Analysis April 2021 – February2022: Issued May 2021 - Sudan [Internet]. ReliefWeb. 2022 [cited 11February2022]. Availablefrom:https://reliefweb.int/report/sudan/sudan-ipc-acute-food-insecurityanalysis-april-2021-february-2022-issued-may-2021

[7.] Ahmed, Safaa S., Hanaa K. Helmy, and Amel A. Mohamed. "Impact ofa tailored intensive educational program upon preeclampsia on nurses'knowledge at Beni-Suef City, Egypt." Int J Nursing Sci 7.4 (2017): 79-83.

[8.] Guille C. Rate of Suicide Among Women Nurses Compared WithWomen in the General Population Before the COVID-19 GlobalPandemic. JAMA Psychiatry. 2021;78(6):597.

[9.] Mohammed, Abdalla A., et al. "Maternal mortality in KassalaState Eastern Sudan: a community-based study using reproductive agemortality survey (RAMOS)." BMC pregnancy and childbirth 11.1(2011): 1-6.

[10.] Akinokun R. Reducing maternal mortality in Sub-Saharan Africathrough emergency obstetric care. European Journal of Midwifery.2021;5(September):1-2

[11.] Chowdhury A., Khatun R., Muhammad F., Nurse's knowledgeregarding the management of eclampsia at a selected private hospital inBangladesh 2017https://www.researchgate.net/publication/32215990 8

[12.] Banda, Esther Namw Aba. "Knowledge And Practice of Midwives In Management Of Eclampsia InChipata District registered midwives."MUFULIRA, ZAMBIA. April (2010).87

[13.] Mohamady, Shaimaa Hassan, and Sahar A. Elkheshen. "Efficacy of Self-Instructional Guide on Knowledge and Practices Regarding Careof Pre-eclampsia Women among Staff Nurses." American Journal ofNursing 5.6 (2017): 235-242.

[14.] Shaheen, Assist Prof AE. "Effect of Educational Program on theKnowledge of Nurses Caring for Women with Eclampsia and Preeclampsia. International Journal of Novel Research in Healthcare andNursing2020 Vol. 7, Issue 2, pp: (577-587), Available at:www.novelty journals.co"

[15.] Roth, Cheryl K., et al. "Developing protocols for obstetricemergencies." Nursing for Women's Health 18.5 (2014): 378-390. WHO, Maternal mortality-Fact sheet N°348- Updated November2015.