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Original Article

AWARENESS OF PRE-ECLAMPSIA AND ECLAMPSIA AMONG PREGNANT MOTHERS ATTENDING ANTENATAL CARE AT LUBAGA HOSPITAL KAMPALA DISTRICT A CROSS-SECTIONAL STUDY.

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ABSTRACT

Background

Preeclampsia (PE) is one of the leading causes of maternal morbidity and mortality worldwide and it occurs in women with first or multiple pregnancies during the second or third trimester and is characterized by hypertension with either proteinuria, pulmonary edema, cerebral or visual symptoms, and a high blood pressure.

Methodology

The study employed a descriptive cross-sectional study design because data collection and management were within a short period on a sample of a large population at a specific time. Analysis of data was done using Microsoft Excel 2013 and data was presented in the form of tables, figures, and pie charts.

Results

Nearly half (43%) of the respondents were between 25-29 years with the minority (7%) being above 40 years. 47% of the women lacked knowledge of what Pre-eclampsia and eclampsia are. 87% had adequate knowledge of obesity as a predisposing factor to Pre-eclampsia/eclampsia. The predisposing factors mentioned were Poor nutritional status (7%), and the age of the mother (33%) which reflects inadequate knowledge of the predisposing factors, 60% of the Pregnant Mothers knew only Headache as an effect of PE/E after delivery which indicated inadequate knowledge on the effects of PE/E after delivery.

Conclusion

The majority of respondents lacked adequate Knowledge of the other Predisposing Factors to Pre-Eclampsia and Eclampsia. However, knowledge of Visual disturbances, premature delivery, and death of a baby as effects of PE/E after delivery was low as most respondents knew only Headache as an effect of PE/E after delivery.

Recommendations

The hospital should empower the health workers in supportive communication so that they can help the pregnant women be aware of the seriousness of the condition, the importance of regular checks at a health facility, and the symptoms of worsening pre-eclampsia.

***Keywords**: Pre-Eclampsia, Eclampsia, Pregnant Mothers, Antenatal Care*
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Background

Preeclampsia is a multisystem syndrome that is primarily defined by the development of new-onset hypertension, persistent systolic blood pressure of 140 mm Hg or higher, or diastolic blood pressure of 90 mm Hg or higher after 20 weeks gestation in a woman with previously normal blood pressure, (Brown et al., 2018). Preeclampsia (PE) is one of the leading causes of maternal morbidity and mortality worldwide and it occurs in women with first or multiple pregnancies during the second or third trimester, and is characterized by hypertension with either proteinuria, pulmonary edema, cerebral or visual symptoms, and a high blood pressure, (Bergman et al., 2019 Rana 2022).

It is caused by placental and maternal vascular dysfunction and resolves after birth over a variable period, (Phyllis, Baha 2023) and the risk factors for preeclampsia and eclampsia (PE/E) are younger than 18 or older than 40, black race including African Americans and others with African ancestry and Obesity. Early identification of PE in the first trimester helps the introduction of early preventative measures initiated before 16 weeks of gestation in patients at high risk of PE (Gooda et al., 2020; Riegel et al., 2017).

Globally, 76,000 women and 500,000 babies die each year from PE/E (WHO 2019) These conditions account for an estimated nine percent of maternal deaths in Asia and Africa, and about one-quarter of maternal deaths in Latin America and the Caribbean Preeclampsia is a pregnancy-related hypertensive disorder occurring usually after 20 weeks of

gestation, (Rianne et al 2021) Reports indicated that patient's knowledge about a disease or a condition has significant benefits on compliance to treatment and helps to avert complications associated with t (Ngouakam, et al 2021; Relobhegbe, Oyedunni 2017).

In Bangladesh between 1,000 and 1,200 women die every year from pre-eclampsia and eclampsia (PE/E), contributing to 20 percent of maternal deaths. When a mother dies her baby is at increased risk of dying during the first year of life, (Sultana, Kanij, and Dempsey 2017). The prevalence of pre-eclampsia in Nigeria ranged from 2% to 16.7%, with approximately 37,000 women dying from preeclampsia annually, (Olaoye et al 2019), and in Harare Zimbabwe pregnancy-induced hypertension affects about 5-8% of women and it is associated with pregnancy outcomes as well as maternal mortality and morbidity (Muti et al., 2015).

In the Omo district of Southern Ethiopia, the common factors that have been suggested to increase the risk of preeclampsia among women include pre-existing chronic illnesses, excessive weight gain, prime parity, advanced maternal age, first or second-degree relatives with a history of pre-eclampsia, and other environmental genetic-related factors, (Fikadu et al., 2021) and in North West Ethiopia the overall incidence rate of pre-eclampsia was 3.35 per 100 person-years in 2020. So having a pre-existing history of diabetes mellitus, multiple pregnancies, and being ≥35 years old age were the significant predictors of pre-eclampsia, (Birhanu et al 2020).

In a study done in Uganda, 69% of mothers made only one antenatal visit to WHO (2018) mothers attend antenatal clinics and therefore have no information about preeclampsia and eclampsia, much as WHO recommended that all women must have access to high-quality care before during and after childbirth to optimize maternal health, (WHO 2018). Thus, this study assessed the awareness of pre-eclampsia and eclampsia among pregnant mothers attending antenatal care at Lubaga Hospital Kampala district.

METHODOLOGY

Study Design and rationale

The study employed a descriptive cross-sectional study design. It was a cross-sectional study because data collection and management were within a short period on a sample of a large population at a specific time.

Study Area and rationale

This study took place at Lubaga Hospital a Catholic Missionary Nonprofit (PNFP) hospital located in Lubaga Division of Kampala City. It is one of the fourteen Regional Referral

Hospitals in Uganda, serve a population of 1,046,665 people (2021/22 Lubaga Hospital Annual Report.). Lubaga Hospital is a specialized hospital that provides Pediatrics, Obstetrics and Gynecology, Adolescent Health, and Emergency Medical Services. The study was conducted at Lubaga Hospital Kampala District because several pregnant women sought Antenatal care services at the center and several mothers developed PE/E.

Study population

The study focused on pregnant women who had come to consume antenatal care services because they get elevated blood pressure hence PE/E.

Sample Size Determination

A sample of 30 respondents was used in this study because it is the recommended sample by UNMEB (2009) guidelines for diploma students.

Sampling Procedure

The study employed a probability simple random sampling approach where the interviewer-administered questionnaires to any available respondents who met the required inclusion criteria and consented to participate in the study.

Inclusion Criteria

The study considered all pregnant women consuming ANC services in Lubaga Hospital who voluntarily consented to participate in the study.

Study Variables

Independent variables in this study included demographic characteristics of respondents such as age, education level of mothers, and awareness of pre-eclampsia and eclampsia. The dependent variable was pre-eclampsia and eclampsia.

Research Instruments

The questionnaires comprised both structured and unstructured questions. The purpose of the study was explained to the respondents within the questionnaire.

Data Collection Procedure

An introductory letter from the school administration was obtained and presented to the Lubaga Hospital

administration for permission to conduct this study. The Questionnaires were administered to the respondents who filled them and during data collection, the rights of individuals were respected.

Data Management

Data collected was entered into Microsoft Excel, cleaned, and corrected for outliers. After the collection of data, responses from the questionnaires were studied to make sure that the information obtained was complete, consistent, accurate, and reliable.

Data analysis

Analysis of the data was done using quantitative methods to make the findings easy to understand and make conclusions to the stakeholders. Continuous data was analyzed using descriptive statistics such as mean. Data were entered and analyzed using Microsoft Excel 2016.

The results were presented in the form of narratives, tables, graphs, and charts.

Ethical Considerations.

The study was done following guidelines of the Uganda Nurses and Midwives Examination Board standard research guidelines for Diploma Nursing Programmes. Development of the research proposal and report was under the supervision of a Tutor assigned by Lubaga Hospital Training School issued a letter introducing the researcher to Lubaga Hospital administration for purposes of granting permission to interact with the participants. After getting permission, the researcher went ahead to obtain the required information.

RESULTS

Background Characteristics of Respondents

Results in table 1 show that 23(7%) of the respondents were between the age of 18-24 year,

13(43%) were between 25-29 years, 8(27%) were between 30-34 years, while the minority 2(7%) were above 40 years. Regarding education level, only 1(3%) had no formal education, 6(20%) were of Primary level, 10(33%) were of secondary level, 10(33%) were of Secondary level, and 13(43%) were of Tertiary level.

Results in table 2 show that concerning parity of the respondents, majority 19(63%) were 1-3 gravid while 11(37%) were 4-6 gravid and no one had a gravid of more than 6.

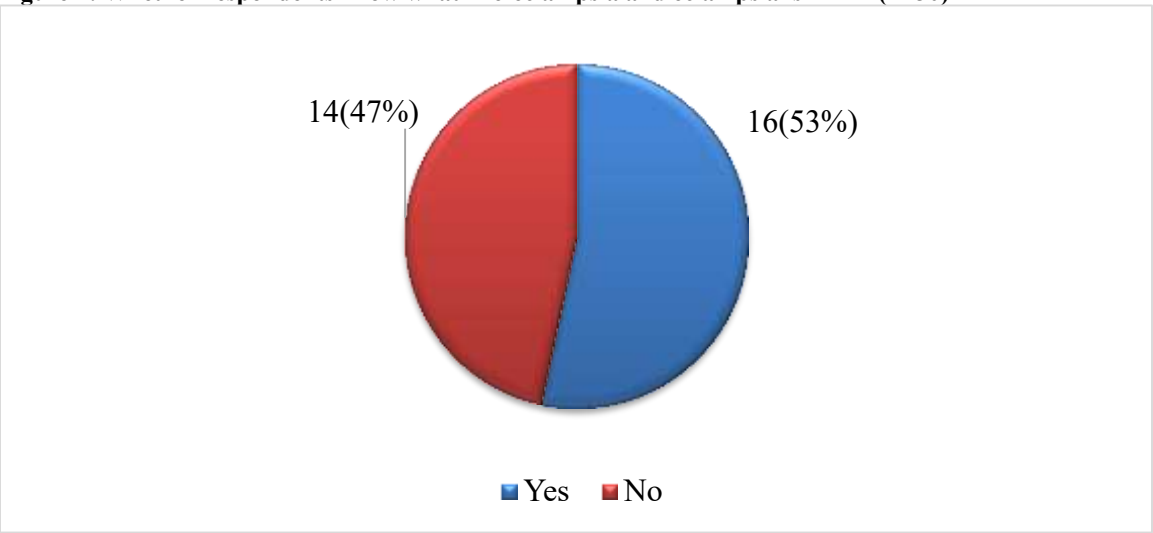
Table 1: The Age, and education level of respondents (n = 30)

Background Characteristic	Variable	Frequency	Percentage (%)
Age	18-24 Years	7	23
	25-29 Years	13	43
	30-34 Years	8	27
	Above 40 Years	2	7
Total		**30**	**100**
Education level	None	1	3
	Primary	6	20
	Secondary	10	33
	Tertiary	13	43
Total		**30**	**100**

Table 2: Parity of the respondent (n = 30)

	Variable	Frequency	Percentage (%)
Parity	1-3 Gravid	19	63
	4-6 Gravid	11	37
	7-9	0	0
	10-12	0	0
Total		**30**	**100**

Figure 1: Whether respondents know what Pre-eclampsia and eclampsia is (n=30)



Knowledge of Pregnant Women about the Predisposing Factors to Pre-Eclampsia and Eclampsia

Whether respondents know what Pre-eclampsia and eclampsia is

Findings in figure 1 revealed that majority 16(53%) of the respondents knew what Pre-eclampsia and eclampsia is, while the rest 14(47%) had no idea what Pre-eclampsia and eclampsia is

Respondents' knowledge on whether obesity predispose to Pre-eclampsia / eclampsia

Respondents were asked whether obesity is a predisposing factor to Pre-eclampsia / eclampsia.

Their responses are presented in figure 2.

Results in figure 2 show that majority 26(87%) of the respondents agreed that obesity predispose to Pre-eclampsia / eclampsia while 4(13%) said no obesity does not predispose to Pre-eclampsia / eclampsia.

Whether ANC utilization influence the prevalence of Pre-eclampsia / eclampsia.

Results in figure 3 show that more than half 19(63%) of the respondents said yes, ANC utilization influence the prevalence of Pre-eclampsia / eclampsia. However, 11(37%) said no

ANC utilization does not influence the prevalence of Pre-eclampsia / eclampsia.

Whether ethnicity cause Pre-eclampsia / eclampsia.

Results in figure 4 show that, many 21(70%) of the respondents said that ethnicity does not cause

Pre-eclampsia / eclampsia. However, a few 9(30%) of the respondents agreed that ethnicity cause Pre-eclampsia / eclampsia.

The predisposing factors to pre-eclampsia and eclampsia as given by respondents.

Results in Table 2 show that among the causes of pre-eclampsia and eclampsia to a woman during pregnancy mentioned by the respondents, multiple pregnancies scored 8(27%), 9(30%) mentioned

Poor nutritional status, 2(7%) mentioned infections, 10(33%) mentioned age of the mother while 1(3%) mentioned work and education.

With the factors which are not predisposing factor to PE/E 8(27%) of the respondents mentioned Age, 9(30%) mentioned Parity, 2(7%) mentioned History of diabetes mellitus,

10(33%) did not choose any of the suggested answers, while 1(3%) mentioned Family history of PE/E.

When asked whether one of the suggestions (Little Blood, Witchcraft, Stress from strained relationships, Ghosts, and Marital tension) could be the cause of PE/E, the majority 18(60%) mentioned that stress from strained relationships could be one of the causes of pre-eclampsia and eclampsia,

4(13%) mentioned Little Blood, 3(10%) mentioned witchcraft and 5(17%) mentioned marital tension.

However, respondents suggested other factors which can predispose a pregnant woman to PE/E and among the suggested ones, high intake of Alcohol was suggested by 1(3%) of the respondents, Lack of enough exercise was suggested by 1(3%), eating fatty foods was suggested by 3(10%), 4(13%) were not sure, 2(7%) suggested stress at home and work, 5(17%) suggested family history, 2(7%) suggested Infection, 5(17%) suggested pressure, 2(7%) suggested death of the baby, 2(7%) suggested cardiac diseases and 3(10%) suggested Obesity.

Figure 2: Knowledge on whether obesity predispose to Pre-eclampsia / eclampsia (n=30)

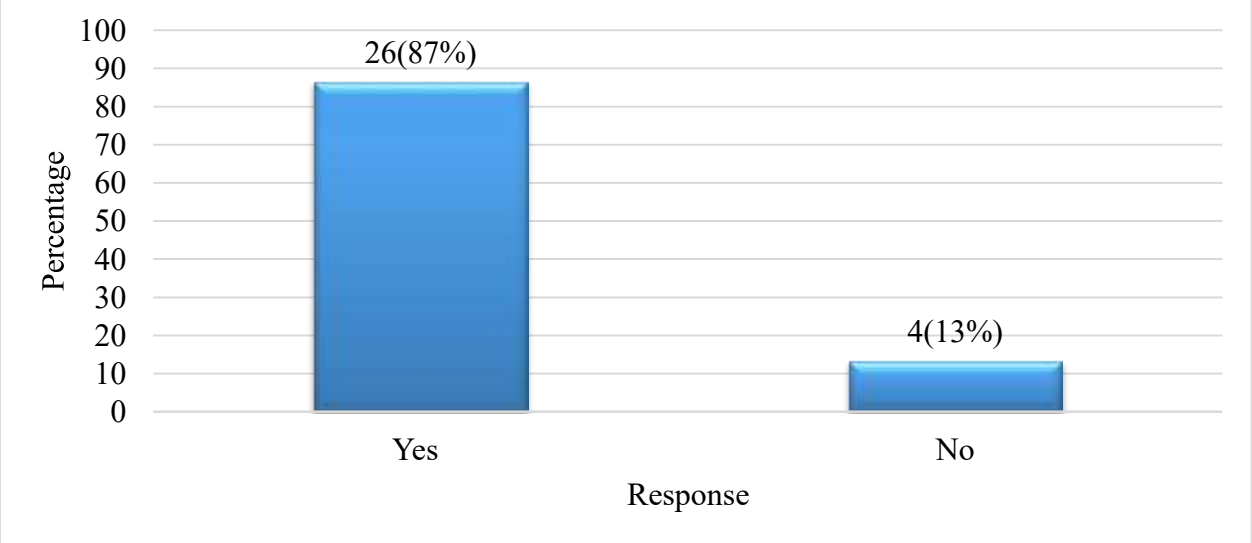


Figure 3: ANC utilization and its influence on the prevalence of Pre-eclampsia / eclampsia.
(n=30)

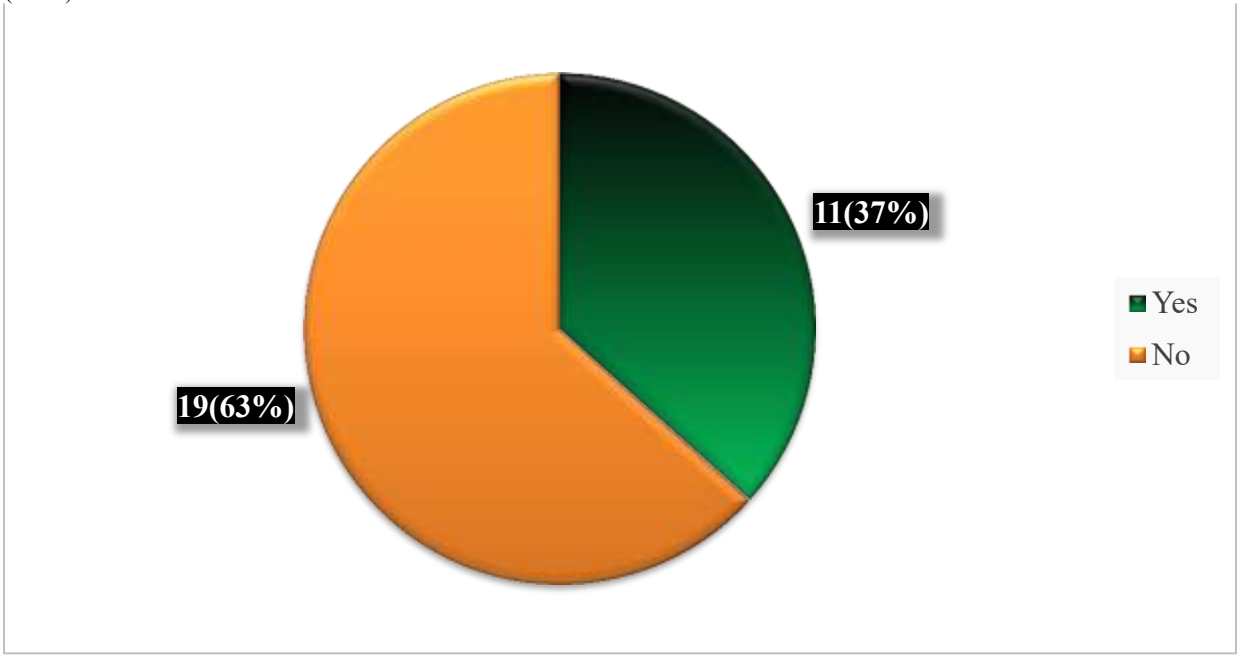


Figure 4: Whether ethnicity cause Pre-eclampsia / eclampsia. (n=30)

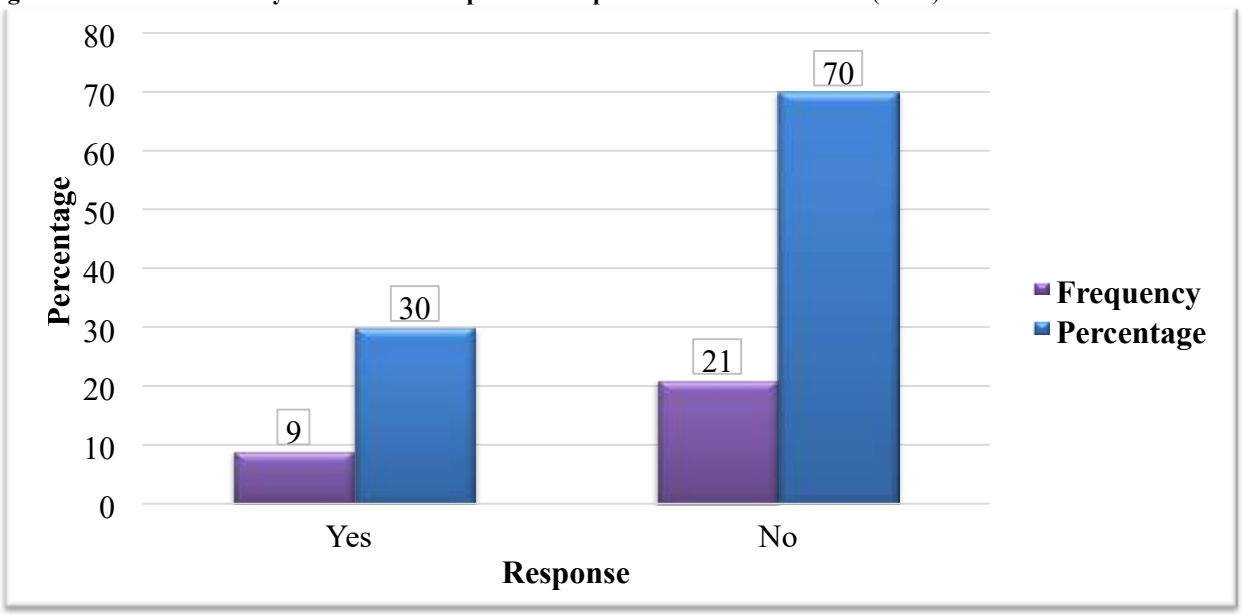


Table 3: The predisposing factors to pre-eclampsia and eclampsia. **(n=30)**

Variable	Response	Frequency	Percentage (%)
Causes of pre-eclampsia and eclampsia to a woman during pregnancy	Multiple pregnancy	8	27
	Poor nutritional status	9	30
	Infections	2	7
	Age of the mother	10	33
	Work and education	1	3
Total		**30**	**100**
Which of the following is not a predisposing factor to PE/E	Age	8	27
	Parity	9	30
	History of diabetes mellitus	2	7
	None of the above	10	33
	Family history of PE/E	1	3
Total		**30**	**100**
Could the following be one of the cause PE/E	Little Blood	4	13
	Witch craft	3	10
	Stress from strained relationships	18	60
	Ghosts	0	-
	Marital tension	5	17
Total		**30**	**100**
Other suggested factors which can predispose a pregnant woman to PE/E	High intake of Alcohol	1	3
	Lack of enough exercise	1	3
	Eating fatty foods	3	10
	Not sure	4	13
	Stress at home and at work	2	7
	Family history	5	17

	Infection	2	7
	Pressure	5	17
	Death of the baby	2	7
	Cardiac diseases	2	7
	Obesity	3	10
Total		**30**	**100**

Table 4: Knowledge of Pregnant Mothers about the Effects of Pre-Eclampsia and Eclampsia on the Mother and Baby

(n = 30)

Variable	Response	Frequency	Percentage
Which of the following is an effect of PE/E	Headache	18	60
	Visual discharges	3	10
	Tiredness	2	7
	Gestational hypertension	3	10
	Health of the mother and the baby	4	13
Total		**30**	**100**
Whether respondents knew whether premature delivery is an effect of PE/E	Yes	14	47
	No	16	53
Total		**30**	**100**
Whether twin delivery can come as a result of PE/E	Yes	6	20
	No	24	80
Total		**30**	**100**
Suggested effects of PE/E	Stroke	1	3
	Blindness	1	3
	Death of Baby	9	30
	Death of Mother	8	27
	Not sure	2	7
	Abortion	4	13
	Premature Delivery	3	10
	Brain damage	2	7
Total		**30**	**100**

Knowledge of Pregnant Mothers about the Effects of Pre-Eclampsia and Eclampsia on the mother and Baby

Results in table 3 show that majority 18(60%) of the respondents agreed that Headache is an effect of PE/E, 3(10) said that visual discharges was an effect of PE/E, 2(7%) mentioned tiredness, 3(10%) mentioned gestational hypertension while 4(13%) mentioned health of the mother and the baby as an effect of PE/E. Regarding whether the respondents knew whether premature delivery is an effect of PE/E nearly half 14(47%) of the respondents, said yes, however 16(53%) of the respondents, said that premature delivery is not an effect of PE/E.

Regarding whether twin delivery can come as a result of PE/E majority of the respondents 24(80%) said no, twin delivery cannot come as a result of PE/E, while a few 6(20%) said yes twin delivery can come as a result of PE/E.

On the other hand, 1(3%) of the respondents mentioned that stroke is an effect of Pre-Eclampsia and Eclampsia, 1(3%) said that blindness is an effect of Pre-Eclampsia and Eclampsia, 9(30%) said that death of baby is an effect of Pre-Eclampsia and Eclampsia, 8(27%) mentioned that death of mother is an effect of Pre-Eclampsia and Eclampsia, 2(7%) said that they were not sure of the effects of Pre-Eclampsia and Eclampsia, 4(13%) mentioned abortion as an effect of PreEclampsia and Eclampsia, others 3(10%) mentioned premature delivery as an effect of Pre-Eclampsia

and Eclampsia, while the rest 2(7%) mentioned brain damage as an effect of Pre-Eclampsia and Eclampsia

Knowledge of Pregnant Mothers about the Prevention of Pre-Eclampsia and Eclampsia

Whether making a future pregnancy plan is a preventive measure to PE/E

Findings in figure 5 revealed that more than half 21(70%) of the respondents agreed that making a future pregnancy plan is a preventive measure to eclampsia and eclampsia. However, 9(30%) did not agree that making a future pregnancy plan is a preventive measure to eclampsia and eclampsia.

Whether the respondents know that managing risk factors like weight and blood pressure can prevent PE/E.

Findings in figure 6 exposed that majority 23(77%) of the respondents knew that managing risk factors like your weight and blood pressure can prevent PE/E. However, the minority of the respondents 7(23%) said no, that managing risk factors like weight and blood pressure cannot prevent PE/E.

Whether improving the number of ANC visits prevent PE/E

Findings in figure 7 show that majority 26(87%0 of the respondents were in agreement with the statement that improving the number of ANC visits prevent PE/E while 4(13%) did not agree with the statement that improving the number of ANC visits prevent PE/E.

Figure 5: Whether making a future pregnancy plan is a preventive measure to PE/E (n=30)

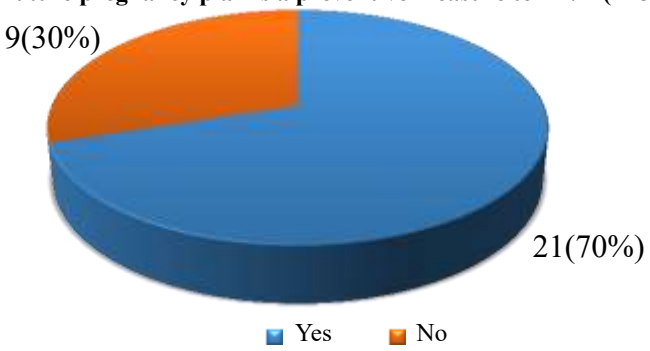


Figure 6: Whether the respondents know that managing risk factors like weight and blood pressure can prevent PE/E

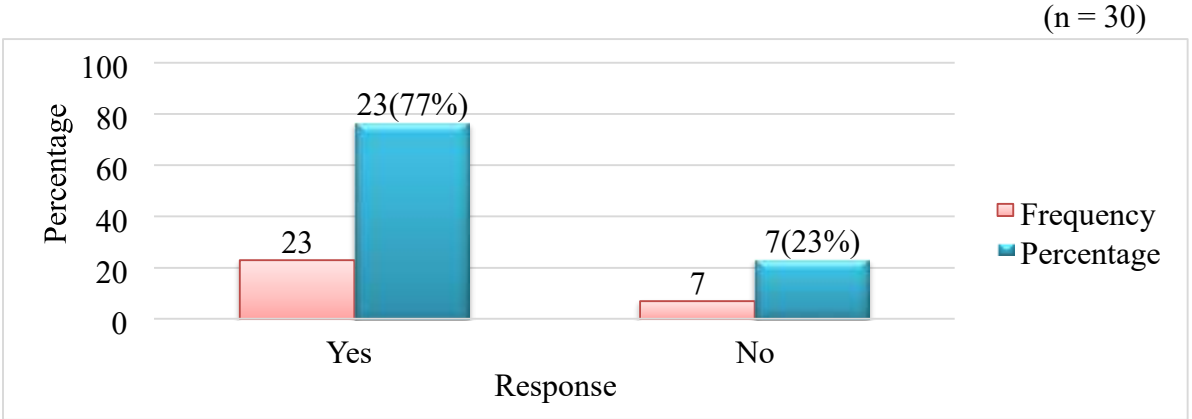


Figure 7: Whether improving the number of ANC visits prevent PE/E (n=30)

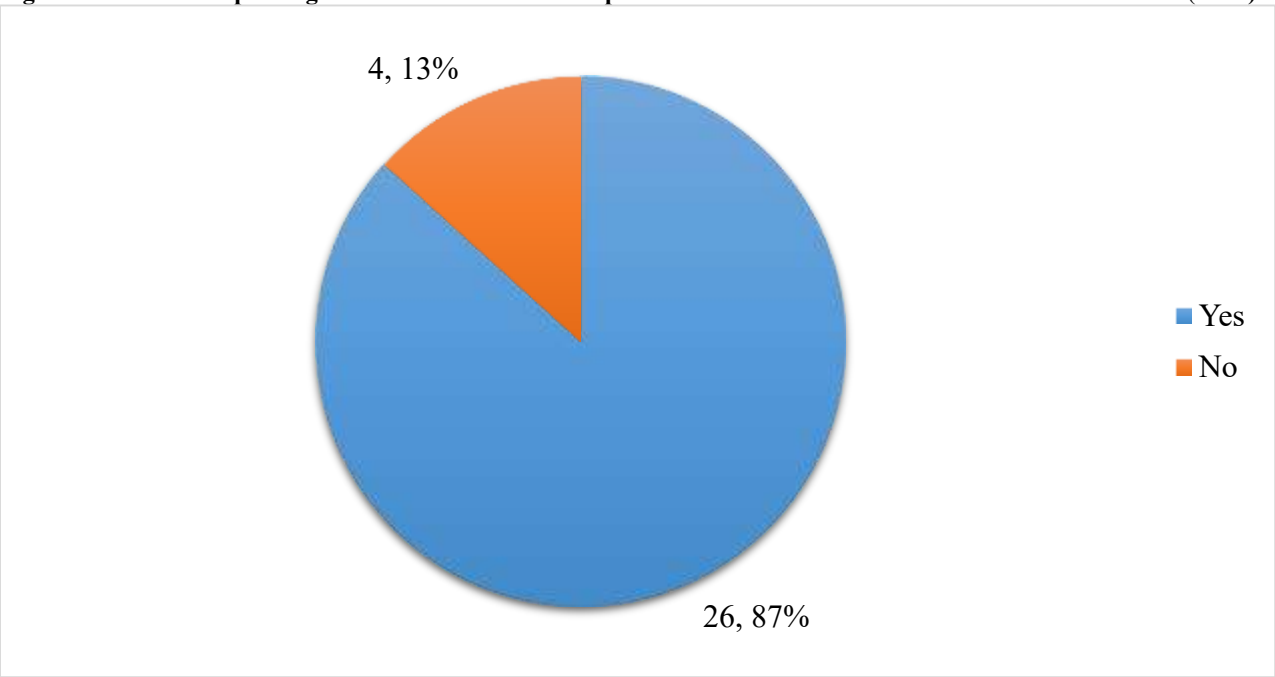


Figure 8: Whether the health facility delivery is one of the measures of controlling PE/E (n=30)

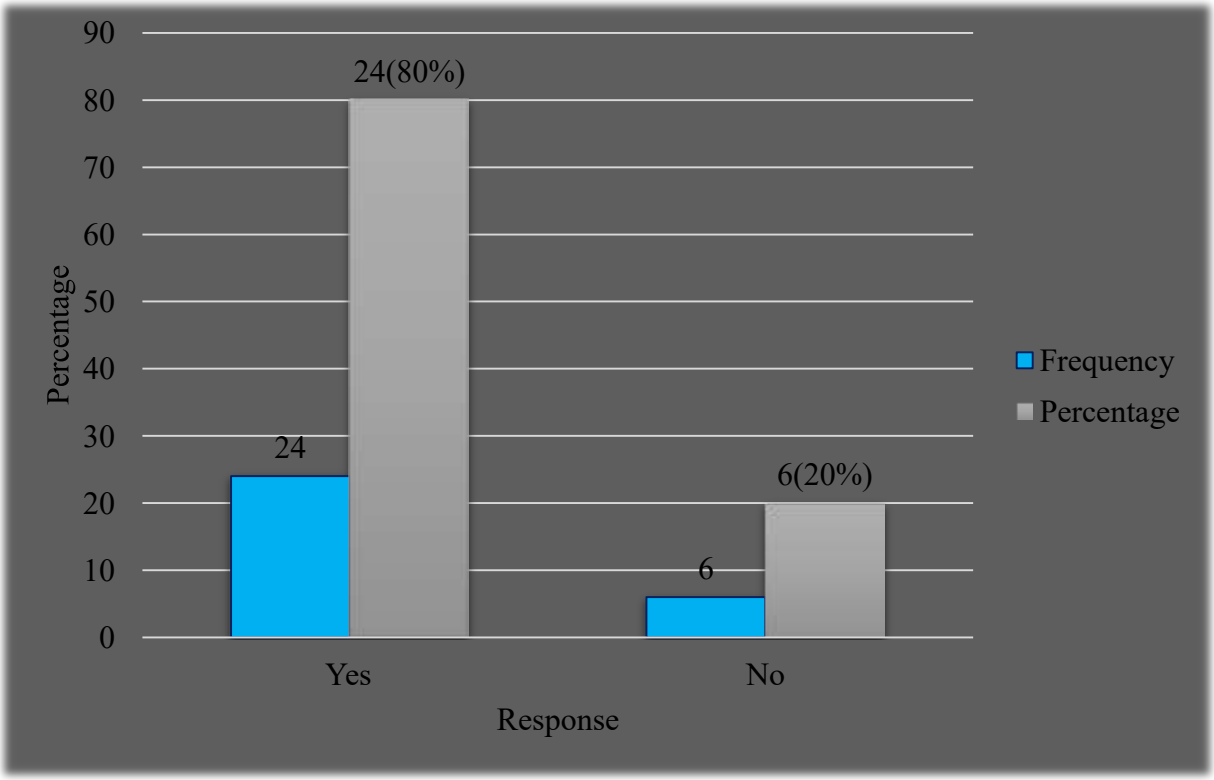


Table 5: More Knowledge on Prevention of Pre-Eclampsia and Eclampsia (n=30)

Variable	Response	Frequency	Percentage (%)
Which of the following measures can be used to control risk factors to PE/E	Maintenance of regular exercise	18	60
	Getting enough sleep	0	0
	Eating health foods	8	27
	Limited salt intake	4	13
	Total	**30**	**100**
Other preventive measures	Physical exercises	10	33
	Going for ANC	3	10
	Low salt intake	2	7
	Avoiding stress	4	13
	Avoiding eating fatty foods	4	13
	Avoid smoking	1	3
	Taking medicine	3	10
	Regular check-ups for blood pressure	3	10
	Total	**30**	**100**

Whether the health facility delivery is one of the measures of controlling PE/E

Results in figure 8 show that majority 24(80%) of the respondents agreed that the health facility delivery is one of the measures of controlling PE/E while 6(20%) did not agree that the health facility delivery is one of the measures of controlling PE/E

Results in Table 4 show that the majority 18(60%) of the respondents said that maintaining regular exercise can be used to control risk factors for PE/E, 8(27%) agreed that eating healthy food can be used to control risk factors to PE/E while 4(13%) agreed that limited salt intake can be used to control risk factors to PE/E on the other hand respondents 10(33%) suggested that physical exercises are one of the preventive measures which can be used to control PE/E, 3(10%) suggested going for ANC, 2(7%) suggested low salt intake, 4(13%) suggested avoiding stress, 4(13%) avoiding eating fatty foods, 1(3%) suggested avoid smoking, 3(10%) suggested taking medicine, while 3(10%) suggested regular check-ups for blood pressure as control of PE/E.

DISCUSSION

Demographic characteristics

A total of 30 respondents were included in this study and findings revealed that of the 30 respondents, nearly half (43%) were between 25-29 years. Age is one of the risk factors that might cause pre-eclampsia especially where mothers are less than 20 years old and more than 35 years old. This finding is comparable with Lia et al., (2022) who reported 49% in the age group 25 – 29 years being the majority in their study. The similarity could be because the majority of childbearing women are within 20 – 30 years of age in most African countries. However, the minority (7%) of the respondents in this current study were above 40 years. and this implies that we are at risk of pre-eclampsia. This finding concurs with those of Birhanu et al., (2020) who reported that being ≥35 years old age was a significant predictor of pre-eclampsia. This could be because older women have weak immune systems which means that any condition can easily attack the mother.

The study also found that the majority (97%) had formal education which implies that they could read and write. This finding suggests that the use of an effective mode of educating women, possibly at antenatal visits and through media channels, could enhance patients' knowledge of PE/E and contribute significantly, as strides towards abating mortalities associated with PE/E in Uganda and Africa as well. However, the minority (3%) had no formal education which is an indicator that they might not bother to look at the available written materials about PE/E, and also might not take the health workers' advice seriously. This is in line with Fondjo et al., (2019) who found out that women who had a primary level of education or no education at all were 1.7 times more likely to develop pre-eclampsia compared to women who had a secondary level of education or higher.

The majority (63%) were 1-3 gravid compared to 37% who were 4-6 gravid. Prime gravidas are at increased risk of pre-eclampsia while prime paternity has been suggested as a possible cause.

However, Pre-eclampsia occurs commonly in mothers with multiple pregnancies (Yushida, Zahara, 2020). Lia et al., (2022) suggested that parity is one of the risk factors associated with pre-eclampsia and eclampsia in childbearing women.

Knowledge of Pregnant Women about the Predisposing Factors to Pre-Eclampsia and Eclampsia

Results revealed that 47% of the women lacked knowledge of what Pre-eclampsia and eclampsia are. This could be that some might have been attending antenatal for the first time and had not yet been taught PE/E. So, these findings highlight the need to health educate women with pregnancies about preeclampsia and eclampsia. The results of this study differ from the findings of previous work done in Ghana, which revealed that 60% of the respondents had low knowledge.

These differences might be due to differences in the study population as the current study dealt with only pregnant women while the previous study focused mainly on pregnant women and their male partners. The findings of the present study showed that those who had adequate knowledge about preeclampsia and eclampsia were 53%. The present findings seem to be in line with other research done in Northwest Ethiopia which found that 59% reported having adequate knowledge of preeclampsia and eclampsia (Mekie et al., 2021)

Results of this study revealed that the majority (87%) had adequate knowledge of obesity as a predisposing factor to Pre-eclampsia/eclampsia. This could be because obesity is always discussed on radio and television and the majority of the respondents stay in Urban areas where radios and

Television sets are common in households. This is in agreement with Kaur, Sharma, and Saxena (2021) who mentioned that obesity is a predisposing factor to PE/E and suggested that losing weight is one of the measures to prevent Pre-eclampsia/eclampsia. Similarly, pregnant women had adequate knowledge that obesity predisposes to PE/E, as reported by Aziza et al., (2022). The minority (13%) of the respondents had inadequate knowledge about obesity as a predisposing factor to Pre-eclampsia/eclampsia. This implies that they are more likely to have poor nutrition habits and it might be hard to convince them to lose weight in case they are overweight which can lead to obesity and then predispose the mothers to PE/E. Kaur, Sharma, and Saxena (2021), in a descriptive study to assess the knowledge and practices regarding the prevention of Pre-eclampsia among antenatal mothers in selected hospitals of Moga, Punjab, say that losing weight if you are overweight/obese and maintaining a regular exercise routine, getting enough sleep and eating healthy foods that are low in salt help in the prevention of preeclampsia.

The results of the current study suggest that 63% of the respondents agreed that ANC utilization influences the prevalence of Pre-eclampsia/eclampsia. This is because health workers always teach and educate women during ANC attendance. However, a sizable number 11(37%) did not agree. This could because they might not be attending ANC services and also might not be aware of the good benefits of Utilizing ANC services. This finding is in line with Mekie et al., (2021) who revealed that improving the numbers of ANC visits and encouraging facility delivery are important measures to improve women's knowledge of pre-eclampsia.

Knowledge of the predisposing factors to pre-eclampsia and eclampsia as given by the respondents seemed to be inadequate. This is because only 27% of the women were able to mention multiple pregnancies, 7% mentioned Poor nutritional status, and only 33% mentioned the age of the mother while very few (3%) mentioned work and education as the predisposing factors to pre-eclampsia and eclampsia. This suggests that women are not educated about the predisposing factors of pre-eclampsia and eclampsia during ANC visits. This finding agrees with a cross-sectional descriptive study done in southwest, Nigeria where results revealed that about thirty-five percent of the pregnant women had poor knowledge of Pre-eclampsia and Eclampsia causes (Aziza et al., 2022).

Knowledge of Pregnant Mothers about the Effects of Pre-Eclampsia and Eclampsia on the Mother and Baby

Results revealed that the majority (60%) of the Pregnant Mothers knew Headache as an effect of PE/E after delivery. This could be because the majority of women after birth complain of headaches. However, the minority (40%) did not know that Headache is an effect of PE/E after delivery. This could be because of failure to attend ANC during pregnancy and also the knowledge gap about the effects of Pre-Eclampsia and Eclampsia. This finding agrees with Martin (2019) who stated that Pre-eclampsia often leads to chronic physical complaints after childbirth such as headaches.

Furthermore, only 10% of the mothers knew that visual discharges were an effect of PE/E. This could be because these knowledgeable mothers have never gone through Pre-Eclampsia and Eclampsia compared to the 90% who did not know that visual discharges were an effect of PE/E. This finding is in line with Bergman et al., (2019) who stated that most of the women in their study complained of visual symptoms but did not know that it was an effect of PE/E.

In addition, a few (7%) of the women mentioned tiredness, and gestational hypertension health of the mother and the baby as effects of PE/E. This finding implies that Pregnant Mothers had low knowledge regarding the effects of Pre-Eclampsia and Eclampsia after birth. This low knowledge is

compared to that found in a study done by Nabulo et al (2021) who revealed that there was low knowledge concerning the effects of PE/E among pregnant mothers.

Further assessment of the respondents' knowledge about the effects of pre-eclampsia and eclampsia on mother and baby as shown in Table 3, revealed that the majority (53%) of the pregnant women did not agree that premature delivery is an effect of PE/E and this finding contradicts with findings of other studies which revealed that in most cases eclampsia leads to preterm birth (Ngwenya 2017). Regarding whether twin delivery can come as a result of PE/E, 80% of the pregnant women said no, twin delivery cannot come as a result of PE/E. On the other hand, 3% of the pregnant mothers mentioned that stroke is an effect of Pre-Eclampsia and Eclampsia, 3% said that blindness is an effect of Pre-Eclampsia and Eclampsia, while 30% said that the death of a baby is an effect. The response on the effects of pre-eclampsia and eclampsia on both the mother and the baby suggests that mothers had little knowledge of the effects of PE/E. This is by Nyirenda, Kasonka, and Vwalika (2019) who reported low knowledge percentages on the effects of PE/E. Also, Oladosu, Okimi, and Oladosu (2022), submitted that there is a gap in knowledge regarding the effect of Pre-eclampsia and eclampsia in Nigeria where Pre-eclampsia is believed to be caused by spirits

Knowledge of Pregnant Mothers about the Prevention of Pre-Eclampsia and Eclampsia

In examining whether making a future pregnancy plan is a preventive measure to PE/E more than half (70%) of the pregnant women agreed that making a future pregnancy plan is a preventive measure to eclampsia and eclampsia. This finding suggests that respondents were aware of the need for future pregnancy planning. This could be because nowadays there are many programs on Television and radio about family planning including planning for pregnancy. This finding concurs with Rana et al., (2022) who found out that the majority of the respondents in their study were aware of future planning for their pregnancy. However, a few (30%) of the respondents did not agree that making a future pregnancy plan is a preventive measure for eclampsia and eclampsia. Pregnancy planning is a preventive measure to PE/E where specialists can work with the woman who would like to become pregnant and develop a plan to reduce the risk for preeclampsia with a future pregnancy. This may include getting the mother as healthy as possible before she becomes pregnant and managing risk factors like weight and blood pressure. Still, this agrees with Rana et al., (2022), however, it contradicts the findings of Roberge et al (2017) who reported a bigger percentage (69%) of respondents not knowing that a future pregnancy plan was a preventive measure to PE/E. This could be that this current study was carried out in an urban area where there is plenty of information channels yet the previous study was done in a rural area.

In assessing whether the respondents knew managing risk factors like weight and blood pressure can prevent PE/E, the majority (77%) of the respondents knew that managing risk factors like weight and blood pressure can prevent PE/E. Meher et al (2017) in their studies about the prevention of PE/E ruled out that their respondents said that drugs can help to prevent these conditions. Also, respondents in the Buea Health District of Cameroon agreed that managing weight and blood pressure can prevent PE/E. Results also revealed that 23% did not know that managing risk factors like weight and blood pressure can prevent PE/E. This could be due to the failure of attending ANC where adequate information about PE/E is provided. This finding is in line with Kaur, Sharma, and Saxena (2021), who urged that losing weight if you are overweight/obese, and controlling your blood pressure and blood sugar are preventive measures for PE/E.

Mekie et al., (2021) in their perception towards pre-eclampsia and perceived barriers to early health-seeking among pregnant women in selected Hospitals of South Gondar Zone, Northwest Ethiopia revealed that improving the numbers of ANC visits and encouraging facility delivery are important measures to improve women's knowledge on pre-eclampsia

Results revealed that the majority (87%) of the respondents were in agreement with the statement that improving the number of ANC visits prevents PE/E. This is in agreement with Mekie et al., (2021) in the study of perception towards pre-eclampsia and perceived barriers to early health-seeking among pregnant women in selected Hospitals of South Gondar Zone, Northwest Ethiopia who revealed that improving the numbers of ANC visits and encouraging facility delivery are important measures to improve women's knowledge on pre-eclampsia. However, the percentages in this current study are bigger than that of a study in Mtwara Regional – Tanzania where only 47% agreed that improving the number of ANC visits prevents PE/E. The difference in percentages could be because the previous study was carried out in a rural area well as the current study was done in urban setting where pregnant women have access to information. The minority (13%) of the respondents did not agree that improving the number of ANC visits prevents PE/E. This shows a lack of proper knowledge on the prevention of PE/E among pregnant mothers. This knowledge gap could be that these mothers who did not agree do not attend ANC and also do not take the trouble to find out more about their conditions when pregnant. A study done in Uganda by Ornella et al., (2015), reported that 69% of the mothers made only one antenatal visit. It also revealed that fewer mothers attend antenatal clinics and therefore have no information about preeclampsia and eclampsia (Ornella et al 2015), much as WHO recommended that all women must have access to high-quality care before, during, and after childbirth to optimize maternal health (WHO 2018).

In evaluating whether health facility delivery is one of the measures of controlling PE/E, the majority (80%) of the pregnant mothers in this study were aware that health facility delivery is one of the measures of controlling PE/E. This high awareness could be because of attending ANC where they are taught about the advantages of delivering from a health facility. These findings are comparable to those of Kaur, Sharma, and Saxena (2021) who found that Good knowledge regarding the prevention of preeclampsia was found to be a satisfactory practice.

In addition, findings revealed that 60% of the respondents were aware that maintaining regular exercise can be used to control risk factors for PE/E. Maintaining regular exercises helps in the reduction of fats in the body which in turn helps to reduce the weight of the mothers in case they are obese. This finding was in line with Roberge et al (2017) who reported that maintaining a regular exercise routine was a preventive measure to control risk factors for PE/E. However, the minority (40%) did not agree that maintaining regular exercise can be used to control risk factors for PE/E which indicated a lack of knowledge on exercise among pregnant women. This could be because many women think that exercise is for the sports people and do not bother to do it. After all, they are not in sports.

Moreover, the findings of this study revealed that only 27% of the respondents were aware that eating healthy food can be used to control risk factors for PE/E. This knowledge could have been obtained through attending ANC services. This is in line with Kaur, Sharma, and Saxena (2021) whose findings revealed that eating healthy foods that are low in salt and avoiding caffeine are preventive measures for PE/E. More than half (73%) of the respondents lacked the proper knowledge of eating healthy food as a preventive measure for PE/E. These findings differ from other studies where the majority of respondents were aware of the preventive measures. This could be because a few had no formal education and could not read material written about nutrition and also some might not have attended regular ANC services where nutrition information is provided.

Conclusion

Though knowledge of obesity and ANC utilization was satisfactory, the majority of respondents lacked adequate Knowledge of the other Predisposing Factors to Pre-Eclampsia and Eclampsia. However, knowledge of Visual discharges, premature delivery, and death of a baby as effects of PE/E after delivery was low as most respondents knew only Headache as an effect of PE/E after delivery. Nonetheless, knowledge of Pregnant Mothers about the Prevention of Pre-Eclampsia and Eclampsia was adequate as the majority could suggest the correct and effective preventive measures for Pre-Eclampsia and Eclampsia

Limitations of the study

Access to new material on the internet was not easy since some files required one to subscribe to access them and at times not easy to understand.

Recommendations

Recommendations to the ministry of health

It is this study's recommendation to the Ministry of Health to introduce relevant and innovative education programs for all pregnant women and their husbands, community members in general (especially those responsible for family decision-making), and at primary and secondary schools. This could be part of national programs to accelerate the reduction of maternal morbidity and mortality that include community education and mobilization on pre-eclampsia, hemorrhage, and obstructed labor.

The ministry should also develop and use culturally and linguistically appropriate materials, particularly for under-resourced community settings. The seriousness of the condition, the importance of regular checks at a health facility, and the symptoms of worsening pre-eclampsia such as frontal headache, epigastric pain, and visual disturbances should be included in these programs

Recommendations to Lubaga Hospital, Kampala District

Midwives/nurses should be trained in supportive communication so that they can help pregnant women be aware of the seriousness of the condition of Pre-eclampsia and Eclampsia, the importance of regular checks at a health facility, and the symptoms of worsening preeclampsia such as frontal headache, epigastric pain, and visual disturbances

Further studies

This study focused on the knowledge of predisposing factors, effects, and prevention of Preeclampsia and eclampsia. Therefore, this study recommends a study on the Impact of Self-Care Guidelines on Women's Awareness and Identification of Early Signs and Symptoms of Preeclampsia

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Abbreviations and acronyms

PNFP: Private not for profit
ANC: Antenatal care
BP: Blood pressure
PE/E: Pre-eclampsia and eclampsia
WHO: World Health Organization
UNMEB: Uganda Nurses and Midwifery Examination Board

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