

Knowledge and Perceptions of Severe Pre-Eclampsia among Postnatal Women at Mbarara Regional Referral Hospital

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Abstract

Background: Preeclampsia is associated with acute and long-term morbidities. Knowledge of obstetric danger signs and birth preparedness are important strategies at enhancing utilization of skilled care in low income countries. It is generally believed that in light of a looming disaster, those who promote and regulate health and safety need to understand how people think about and respond to risk. We undertook this study because we wanted to know how women in Mbarara perceive vulnerability or risk of death due to severe preeclampsia and how their perceptions influence their response. **Methods:** This was a cross sectional study that recruited mothers on the postnatal ward. These women were expected to have gained knowledge about pregnancy danger signs during their antenatal period. Women were classified to have either high knowledge perceptions or low knowledge perceptions based on their perceived knowledge of symptoms, complications, right decision and perceived dangers. Knowledge about the above areas of assessment was analyzed and classified as high and low knowledge perceptions. **Results:** Eighty three percent (83.0%) did not know any symptom of severe preeclampsia, 99.1% knew less than three symptoms of severe preeclampsia, and 36.6% did not know any complication of severe preeclampsia. **Conclusion:** The knowledge concerning pre eclampsia and its symptoms are still low among women at Mbarara Regional Referral Hospital. Many post natal mothers have misconceptions about severe pre eclampsia and its symptoms. "When I get headache i eat some food or drink water" --- it is a sign of hunger or dehydration" are some of the responses we received from the respondents. **Recommendations:** There is need for the antenatal care service providers to emphasize to the mothers about danger symptoms and signs in pregnancy. Health education during antenatal clinics should be given in a language and methods easily understood by women.

Introduction: Preeclampsia is systemic disease with hypertension accompanied by proteinuria after 20th week of gestation. Eclampsia defined as the occurrence of seizures in preeclampsia (Elisabeth B. L 1996). Although the definition of severe pre-eclampsia varies, several components of this definition are usually accepted: maternal systolic blood pressure ≥ 160 mmHg or diastolic blood pressure ≥ 110 mmHg; maternal neurological disorders such as persistent headaches, phosphene signals, tinnitus, and brisk, diffuse, polykinetic tendon reflexes, eclampsia, acute pulmonary oedema, proteinuria ≥ 5 g/day, oliguria < 500 cc/day, creatinine > 120 $\mu\text{mol/L}$, HELLP syndrome, thrombocytopenia $< 100,000/\text{mm}^3$, and feotal criteria, especially intrauterine growth retardation, oligohydramnios, or feotal death in utero. Mild pre-eclampsia is defined as diastolic blood pressure ≥ 90 mmHg measured on two occasions at least 6 hours apart, combined with proteinuria (two or more occurrences of protein on dipstick, > 300 mg total protein in a 24-hour urine collection, or a protein creatinine ratio > 30 mg/mmol) (Uzan et al., 2011)

As maternal mortality ratios have declined globally, there have been accompanying shifts in the leading causes of maternal deaths, resulting in a higher proportion of maternal mortality due to eclampsia. Pre-eclampsia and eclampsia (PE/E) are now receiving focused attention from donors, governments and providers to further reduce maternal and newborn mortality (<https://www.k4health.org>). Pre-eclampsia is a major cause of maternal mortality accounting for 15–20% maternal mortality in developed countries. Preeclampsia is associated with acute morbidities, long-term morbidities, perinatal deaths, preterm birth, and intrauterine growth restriction (Kiondo 2011). Superficial placentation driven by immune maladaptation, subsequently leads to reduced concentrations of angiogenic growth factors and increased placental debris in the maternal circulation resulting in a hypertensive as a result of maternal inflammatory response (Baha 2005). Whether they had previously experienced pregnancy complications or not, hypertensive women have little knowledge about the *specific* complications they are at risk of (Cynthia 2010).

Knowledge of obstetric danger signs and birth preparedness are strategies aimed at enhancing the utilization of skilled care during low-risk births and emergency obstetric care in complicated cases in low income countries (Kabakyenga 2011). It is generally believed that in light of a looming disaster, those who promote and regulate health and safety need to understand how people think about and respond to risk. There was no available data on what women know and think about symptoms and complications of severe preeclampsia in south western

Uganda. Preliminary observations highlighted potentially lethal gaps in health seeking behaviors in women with severe preeclampsia in SW Uganda including delay to come to hospital even when they had clear symptoms of impending Eclampsia. Other researchers studied factors associated with preeclampsia but neither of these studies addressed the gaps in knowledge and perceptions of women about the symptoms of severe preeclampsia. The study was aimed at understanding how people perceive vulnerability or call it risk of death given that hypertensive disorder are one of the direct causes of maternal mortality. We wanted to know how women in Mbarara perceive vulnerability to severe preeclampsia and how their perceptions influence their response. It was anticipated that our study results would generate useful information that would guide health education during antenatal clinics in Uganda to reduce maternal mortality.

Methods

Study Design: It was a cross sectional study where mothers on postnatal ward at Mbarara Regional Referral Hospital were recruited into the study.

Study Setting Study Site: This study was conducted on postnatal ward of Mbarara Regional Referral Hospital. It is a public hospital funded by the government of Uganda through the ministry of health. It is located in South Western Uganda where it serves as a regional hospital for ten districts, with a population of over 5 million people (Atukunda et al., 2014). The hospital offers specialized services and employs eleven obstetricians and 32 midwives who perform over 10,000 deliveries annually.

Study Population: All mothers on the postnatal ward at Mbarara Regional Referral Hospital during the study period were interviewed. We chose mothers on the postnatal ward because we assumed that all these mothers had gone through the antenatal period and therefore had acquired enough knowledge about the pregnancy danger sign during antenatal care.

Inclusion: All post natal mothers who delivered from 28 weeks and above.

Study variables:

Outcome variables: The out variables were knowledge and perceptions about pre eclampsia. Women at Mbarara hospital maternity ward in South Western Uganda were classified to have either high knowledge perceptions or low knowledge perceptions based on their perceived knowledge of symptoms, complications, decision making, perceived dangers and willingness to move to hospital in case of severe preeclampsia. In univariate analysis for indicators of knowledge, we considered women with high knowledge perceptions to be those who knew at least three symptoms of severe preeclampsia and took decision to go to hospital if any of the symptoms occurred. Those considered to have low knowledge perceptions were women who were aware of less than three symptoms of severe preeclampsia, took wrong decisions, did not know any complication, expressed no fear for severe preeclampsia and continue to believe that their health is safe.

Independent variables: Age, Parity, Education level, ANC attendance, Gestational age etc.

Sample size calculation: The sample size was calculated using the formula of Kelsey et al. A total sample of 112 women was got.

Sampling method: It was by consecutive case sampling.

Study procedures: Mothers on the postnatal ward were recruited on discharge. Informed consent was obtained and a semi-structured questionnaire was administered to all consenting mothers. Data was collected from mothers on social demographic characteristics, obstetric factors, knowledge of symptoms of severe preeclampsia, knowledge of complications of preeclampsia and perceptions about pre eclampsia.

Study instruments; A pre coded questionnaire was developed, pre tested, modified and translated into an appropriate language. This questionnaire was used to collect socio-demographic information, information concerning level of knowledge and practices of all the participants concerning severe pre eclampsia. The questionnaire was administered to the participants by the interviewer.

Statistical analysis: The data was entered in an EXCEL spreadsheet and analyzed using SPSS statistical software, version 20 (SPSS, Chicago, IL, USA). Cross tabulations was conducted to obtain descriptive statistics which were presented as frequencies and percentages.

Ethical approval: Ethical approval to carry out the study was obtained from Mbarara University of Science and Technology Institutional Review Board (MUST IRB number 16/11-15).

Results: We interviewed a total of 112 women who had delivered at Mbarara Regional Referral Hospital. The age range was 16 to 40 years. Majority of women (75%) were in the age group between 20 -30 years. Most of the mothers (67.9%) had delivered at term (37-42 weeks of gestation). Majority of respondents (61.6%) were multiparous women, had lower than secondary education (62.5%) and 70.5% had ever had of preeclampsia, (Table 1). Lack of knowledge about symptoms of severe preeclampsia was as follows did not know headache 90.2%, did not know epigastric pain 97.3%, did not know vomiting 95.5%, did not know convulsions 92.0%, (Table 2).

Out of 112 respondents, (83.0%) did not know any symptom of severe preeclampsia and 99.1% knew less than three symptoms of severe preeclampsia, (Table3). Some of the symptoms perceived as symptoms of severe preeclampsia included, body weakness, difficulty in breathing, sweating, epigastric pain, fear and fever. Of those interviewed, 99.1% were found to have low knowledge.

Lack of knowledge of complications of severe preeclampsia was as follows, does not know convulsions 92.0%, does not know APH 92.0%, does not know IUFD 75.95, and does not know that PET can cause maternal death 63.4%. Of the 112 respondents, 36.6% did not know any complication of severe preeclampsia (Table 4). These were some of the wrong symptoms given by the respondent which they perceived to be complications of severe preeclampsia, congenital malformations and premature delivery.

What respondent would perceive as cause of epigastric pain developed in pregnancy, ulcers 22.3%, don't know 27.75%, worms 7.1%, heavy lifting 5.4%, heart disease 1.85%, malposition 6.3%, (Fig 2). Other perceived causes included, baby turning, deformed diaphragm, tiredness, stomach upsets, baby developing hair, over eating, etc.

What respondent perceives as cause if convulsion/fits developed in pregnancy, malaria 13.4%, anxiety 7.1%, witchcraft 13.4%, high blood pressure 19.6%, heart disease 1.8%, don't know 2.7%, epilepsy 11.6%, (Table6), Other perceived causes of convulsions included, dehydration, fear, heart failure, baby stronger than mother.

What respondents perceived as causes of headache in pregnancy, effect of normal pregnancy 9.8%, malaria 32.1%, dehydration 29.5%, overworking 2.7%, high blood pressure 3.6%, don't know 5.4%, anaemia 1.8%. Other perceived causes included, lack of water in the body, usual headache, typhoid, hunger and just headache.

What respondent perceives as cause of vomiting in pregnancy, malaria 26.8%, effect of normal pregnancy 34.8%, don't know 8%, worms 12.5%. Other perceived causes included the following, stomach upsets, sign of abortion, lack of appetite, infection, food poisoning, etc.

What respondent would think if blurred vision occurred in pregnancy, anaemia 25.9%, dehydration 25.9%, effect of normal pregnancy 10.7%, don't know 10.7%, high blood pressure 0.9%, hunger 2.7%. Others included anaemia, dehydration, effect of normal pregnancy, eye infection, little blood, too much heat and too much sun shine etc. Respondents' decision if any of the complications of severe preeclampsia occurred during, blurred vision 40% will go to hospital, 45% would drink water, others would reduce work and others will take herbs. Other practices given include the following, eats food, eat green vegetables, sit down or take a cold shower, (Table 5 and Fig 1). Decision if epigastric pain occurred, go to hospital 70%, other would reduce work, take herbs, ask elders, take pain killers, take magnesium trisilicate or reduce work. Decision if headache occurred, go to hospital 53%, take water 29%, other would take a pain killer; eat some food because it is a sign of hunger or cold compression of the head among others, (Table 5 and Fig 1).

What respondent would do if vomiting developed in pregnancy, go to hospital 60.7%, nothing 9.8%, take herbs 8%, take water 4.5%, or be patient 2.7%. Other practices given included taking antiemetic, deworming tablets, ask elders while other thought it was effect of all normal pregnancies, (Table 5 and Fig 1).

What respondent perceives as cause of maternal death, bleeding/haemorrhage 25.9%, obstructed labour 15.2%, preeclampsia/eclampsia 11.6%, anaemia and malaria each 0.9%, no idea 29.5%. Other perceived causes included pushing at home, too much thoughts, witchcraft, taking herbs, HIV, pushing early, domestic violence caesarean section and lack of food.

Table: 1, Population characteristics

Variable	Frequency
Age	
<20	11(9.8)
20-30	84(75)
31+	17(15.2)
Gestational age	
28-36	13(11.6)
37-42	76(67.9)
>42	2(1.8)
Parity	
Prime para	43(38.4)
Multipara	69(61.6)
Education	
None	6(5.4)
Primary	64(57.1)
Secondary	28(25.0)
High school	2(1.8)
Tertiary	12(10.7)

Majority of respondents (62.5%) in our study had low education i.e. lower than secondary

Table: 2, Showing Patient Knowledge about Symptoms Preeclampsia

variable	Frequency (%)
Respondent knows about PET	
No	33(29.5)
Yes	79(70.5)
Headache	
No	101(90.2)
Yes	11(9.8)
Epigastric pain	
No	109(97.3)
Yes	3(2.7)
Vomiting	
No	107(95.5)
Yes	5(4.5)
Convulsions /fits	
No	103(92.0)
Yes	9(8.0)

Majority (70.5%) had ever had about preeclampsia; but had little knowledge about its symptoms.

Table: 3, Number of Symptoms of Severe Preeclampsia Respondent Knows:

variable	Frequency
One symptom	
No	93(83.0)
Yes	19(17.0)
Two symptoms	
No	107(95.5)
Yes	5(4.5)
Three symptoms	
No	111(99.1)
Yes	1(0.9)
> three symptoms	
No	111(99.1)
Yes	1(0.9)

Table: 4, Knowledge of Complications of PET

variable	Frequency (%)
Convulsions /fits	
No	103(92.0)
Yes	9(8.0)
APH	
No	103(92.0)
Yes	9(8.0)
IUFD	
No	85(75.9)
Yes	27(24.1)
Maternal death	
No	71(63.4)
Yes	41(36.6)

Decision making

Table: 5, Decision of respondent if any of the following developed

Symptom	Action						
	Go to hospital	Drinks water	Reduce work	Take herbs	Ask elders	Take analgesics	Eat food
Blurred vision	45	50	9	8	-	-	-
Epigastric pain	78	-	5	10	5	14	-
Headache	60	32	-	-	-	15	5

Figure: 1, Mothers' response in case any of the symptoms below develops in pregnancy.

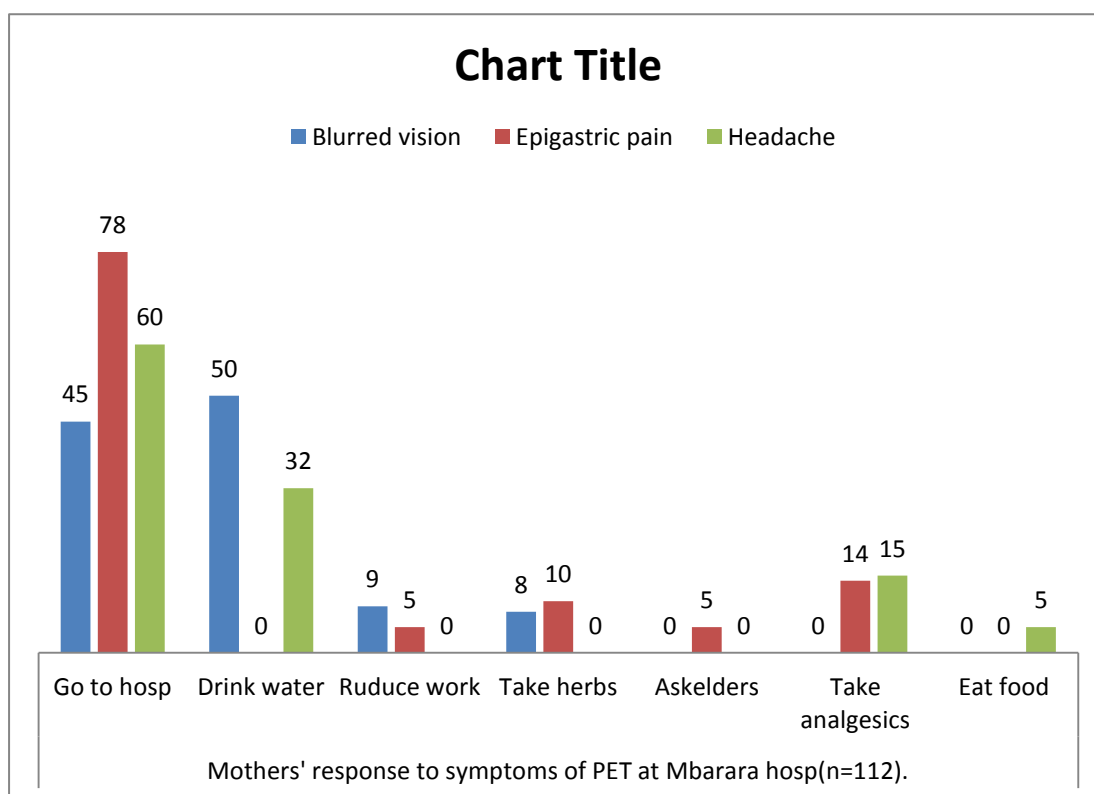


Figure: 2, Respondent's perceptions about epigastric pain.

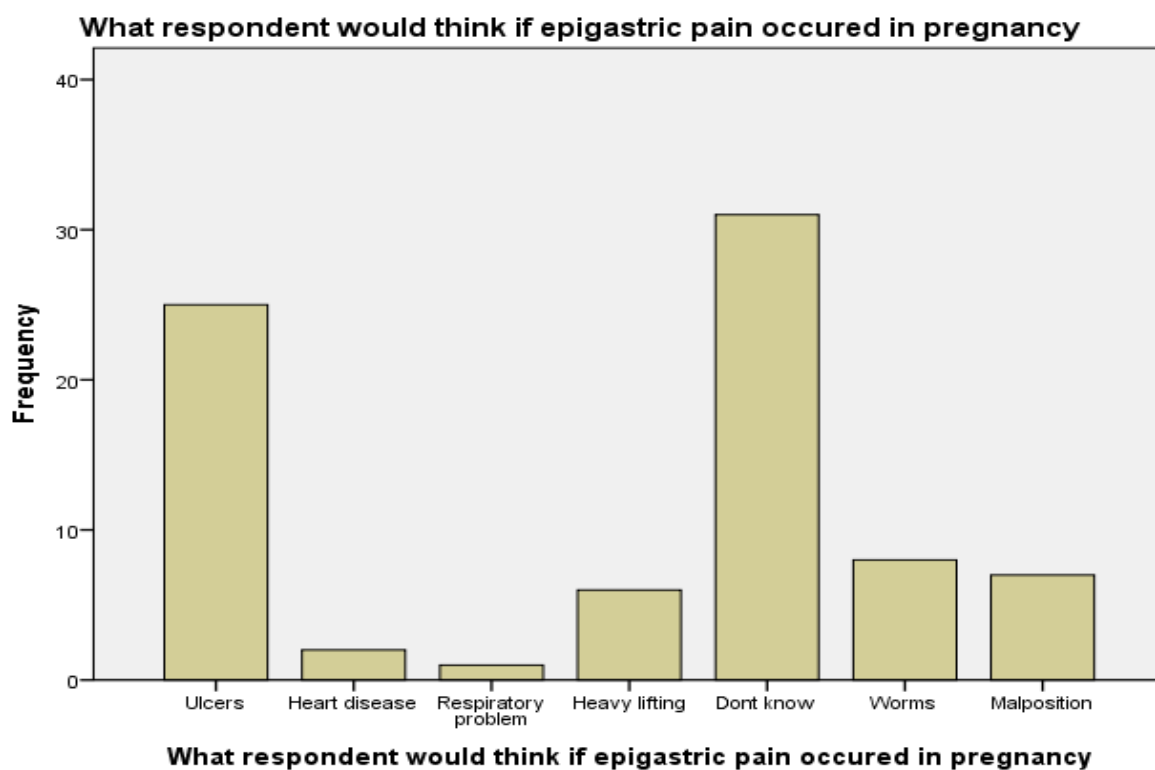
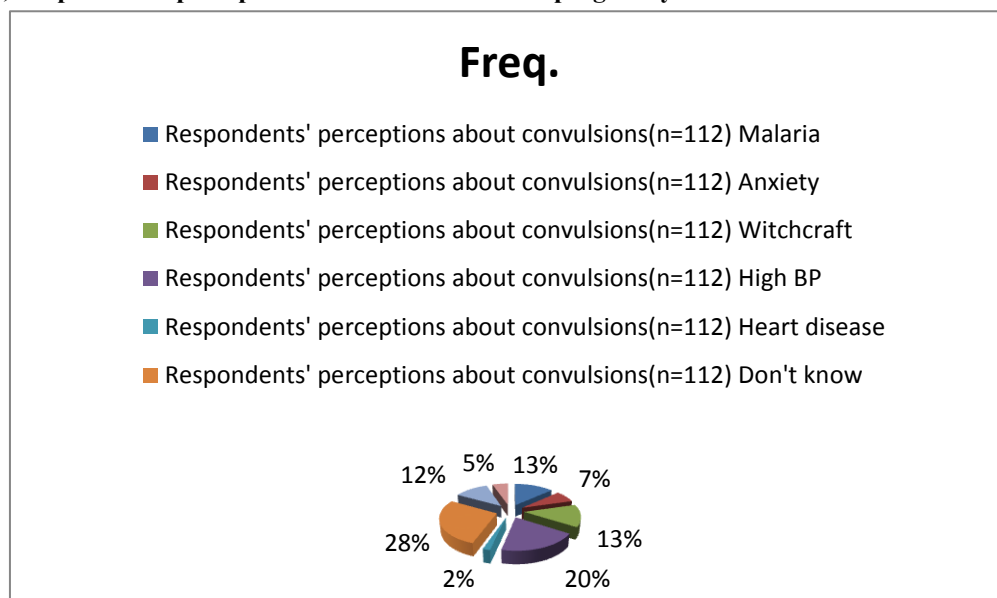


Fig:3, Respondent’s perceptions about convulsions in pregnancy



Discussion of results:

Preeclampsia knowledge levels among respondents.

Out of 112 respondents, (83.0%) did not know any symptom of severe preeclampsia and 99.1% knew less than three symptoms of severe preeclampsia. Of the 112 respondents interviewed 90.2%, 97.3%, 95.5% and 92.0% did not that headache; epigastric, vomiting and convulsions respectively are symptoms of severe preeclampsia. Wrong symptoms perceived as symptoms of severe preeclampsia included, body weakness, difficulty in

breathing, sweating, epigastric pain, fear and fever. Of those interviewed, 99.1% were found to have low knowledge. This is likely because most of the respondents are of low education therefore could not understand the medical language used in antenatal clinics. This could be overcome by translation into the local languages or use of illustrations.

Of the 112 respondents interviewed 92.0%, 92.0%, 75.95%, 63.4% 36.6% did not know that convulsions, antepartum haemorrhage (APH), intrauterine foetal death (IUFD) and maternal death respectively can be complications of preeclampsia. It was also found that 36.6% of respondents did not know any complication of severe preeclampsia. These were some of the symptoms given by the respondent which they perceived to be complications of severe preeclampsia, congenital malformations and premature delivery. This shows lack of focused health education during antenatal care.

Respondents' perception as cause of epigastric pain developed in pregnancy included some of the following, ulcers 22.3%, don't know 27.75%, worms 7.1%, heavy lifting 5.4%, heart disease 1.85%, malposition 6.3%. Other perceived causes included, baby turning, deformed diaphragm, tiredness, stomach upsets, baby developing hair, over eating, etc. There has been a lot of talk about peptic ulcer both in the local and modern medicine and one of the symptoms emphasized is epigastric pain, therefore it is not surprising for women to think that any epigastric pain is caused by ulcers.

Regarding convulsions the respondents' perception as cause of convulsion/fits in pregnancy included, malaria 13.4%, anxiety 7.1%, witchcraft 13.4%, high blood pressure 19.6%, heart disease 1.8%, don't know 2.7%, epilepsy 11.6%. Other perceived causes of convulsions included, dehydration, fear, heart failure, baby stronger than mother. Many women thought that convulsions are due to malaria because malaria is endemic in Uganda and almost all women have seen a baby or someone fitting because of cerebral malaria therefore it is easier to associate the symptoms with what they know than what is new.

Respondents' perceptions as causes of headache in pregnancy, affect of normal pregnancy 9.8%, malaria 32.1%, dehydration 29.5%, overworking 2.7%, high blood pressure 3.6%, don't know 5.4%, anaemia 1.8%. Other perceived causes included, lack of water in the body, usual headache, typhoid, hunger and just headache. Again malaria is one common cause of headache in Uganda.

What respondent perceives as cause of vomiting in pregnancy, malaria 26.8%, effect of normal pregnancy 34.8%, don't know 8%, worms 12.5%. Other perceived causes included the following, stomach upsets, sign of abortion, lack of appetite, infection, food poisoning, etc. It is important to note that women continue to refer to malaria in most of the symptoms because they have lived with it and have had enough sensitization unlike the case with preeclampsia.

What respondents' perceive as causes of blurred vision in pregnancy, anaemia 25.9%, dehydration 25.9%, effect of normal pregnancy 10.7%, don't know 10.7%, high blood pressure 0.9%, hunger 2.7%. There is only a very small proportion of women who talk about high blood pressure which shows limited sensitization and low knowledge about hypertensive disorders in pregnancy.

These were some of the decision made by respondents in event of severe preeclampsia symptoms of severe preeclampsia, in case of blurred vision 40% will go to hospital, 45% would drink water, others would reduce work and others will take herbs. Other practices given include the following, eats food, eat green vegetables, sit down or take a cold shower.

In case of epigastric pain 70% will go to hospital, others would reduce work, take herbs, ask elders, take pain killers, take magnesium trisilicate or reduce work. If headache occurred, 53% of respondents would go to hospital, 29% would take water, other would take a pain killer; eat some food because it is a sign of hunger or cold compression of the head among others. If vomiting developed in pregnancy, 60.7% of respondents would go to hospital, 9.8% would do nothing, 8% would take herbs, 4.5% would take water and 2.7% would be patient. Other practices given included taking antiemetic, deworming tablets, ask elders while other thought it was effect of all normal pregnancies, Majority of women will go to hospital even if they did not know why but they knew there was something wrong which required attention of a health worker. This implies that less information was given to women about the dangers but what was emphasized was to seek medical attention when anything abnormal occurred regardless of the cause.

When asked about what they perceived as causes of maternal death, the following were the respondents' perceptions, bleeding / haemorrhage 25.9%, obstructed labour 15.2%, preeclampsia / eclampsia 11.6%, anaemia and malaria each 0.9%, no idea 29.5%. Other perceived causes included pushing at home, too much thoughts, witchcraft, taking herbs, HIV, pushing early, domestic violence, caesarean section and lack of food. Haemorrhage is the leading cause of maternal death and many women have seen it physically in the community and it is easy to understand, however preeclampsia needs examination by a health worker to come to the diagnosis hence women do not have enough knowledge about its presentation.

Conclusion:

The knowledge concerning pre eclampsia and its symptoms is still low among post natal women at Mbarara Regional Referral Hospital. It is likely that mothers do not understand the medical language used during the

health talks. Many post natal mothers have misconceptions about severe pre eclampsia and its symptoms. "when I get epigastric pain—it is a sign of peptic ulcers-- i take magnesium trisilcate", "when I get headache i eat some food or drink water --- it is a sign of hunger or dehydration" are some of the responses we received from women on the postnatal ward at Mbarara Regional Referral Hospital during a study we carried out in February 2015. Eclampsia and Preeclampsia in south western Uganda will continue to claim lives if people are not helped to change their perceptions of the symptoms and complications of severe preeclampsia.

Recommendations

There is need for the antenatal care service providers to teach the mothers and warn people about dangers signs in pregnancy. Such information if given to mothers can serve as trigger to encourage women to make right decisions. The other pit fall was the fact that the blood pressure was not taken consistently at all visits. Health workers at the antenatal clinic cited lack of equipment as the reason why the examination was not done on fulltime basis. These antenatal clinics are very important if sensitization efforts are to be fruitful especially before eclampsia happens. The government needs to commit resources to enable the antenatal care service providers in all hospitals carryout routine preventative activities. Health talks should be given in a language easily understood by the women, if possible to use illustrations and after check if mothers have understood.

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Authors' contributions:

- 1: Mayanja Ronald.MD, Principal investigator, conceived the idea, developed the concept, involved in data collection, entry, analysis and manuscript writing.
- 2: Chakura Andrew, MD, involved in data collection, entry, analysis and manuscript writing.
- 3: Njagi Joseph. MD, manuscript writing.
- 4: Masembe Sezalio.MD,. MD, manuscript writing.
- 5: Ngonzi Joseph. MD, developed the concept, manuscript writing and submission.

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References:

- Atukunda, E. C.,** Siedner, M. J., Obua, C., Mugenyi, G. R., Twagirumukiza, M. &Agaba,A. G. 2014. Sublingual misoprostol versus intramuscular oxytocin for prevention of postpartum haemorrhage in Uganda: a double-blind randomized non-inferiority trial.
- Baha Sibai,** Gus Dekker, Michael Kupferminc, Pre-eclampsia 2005 DOI: [http://dx.doi.org/10.1016/S0140-6736\(05\)17987-2](http://dx.doi.org/10.1016/S0140-6736(05)17987-2)
- Cynthia H. Chuang ,** Diana L. Velott, Carol S. Weisman Exploring Knowledge and Attitudes Related to Pregnancy and Preconception Health in Women with Chronic Medical Conditions Maternal and Child Health Journal September 2010, Volume 14, Issue 5,pp 713-719 First online: 17 September 2009
- Elisabeth Berg Lohre,** Sara Liljevik, Babill Stray Pedersen, UiOSiaMsuya Evaluation Of Knowledge And Management Practices Of Hypertension In Pregnancy Among Health Care Workers In Moshi Urban, Tanzania
- Jerome K Kabakyenga,** Per-Olof Östergren, Eleanor Turyakira, and Karen O Pettersson ; Knowledge of obstetric danger signs and birth preparedness practices among women in rural Uganda Reprod Health. 2011; 8: 33

Kiondo P¹, Wamuyu-Maina G, Bimenya GS, Tumwesigye NM, Wandabwa J, Okong P; Risk factors for pre-eclampsia in Mulago Hospital, Kampala, Uganda, 2012 Apr; 17(4):480-7. doi: 10.1111/j.1365-3156.2011.02926.x. Epub 2011 Dec 13.

<https://www.k4health.org>; Pre-Eclampsia/ Eclampsia: Prevention, Detection and Management Toolkit

ATUKUNDA, E. C., SIEDNER, M. J., OBUA, C., MUGYENYI, G. R., TWAGIRUMUKIZA, M. & AGABA, A. G. 2014. Sublingual misoprostol versus intramuscular oxytocin for prevention of postpartum hemorrhage in Uganda: a double-blind randomized non-inferiority trial.

UZAN, J., CARBONNEL, M., PICONNE, O., ASMAR, R. & AYOUBI, J.-M. 2011. Pre-eclampsia: pathophysiology, diagnosis, and management. *Vascular health and risk management*, 7, 467.