# SYMPTOMS OF IMMINENT ECLAMPSIA AMONG WOMEN ATTENDING CARE AT MUHIMBILI NATIONAL HOSPITAL: A CASE REFFERENT STUDY

**John France**

**MMed (Obstetrics and Gynaecology) Dissertation**

**Muhimbili University of Health and Allied Sciences**

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# CERTIFICATION

The undersigned certify that he has read and hereby recommend for acceptance by the Muhimbili University of Health and Allied Sciences a dissertation entitled: "S**ymptoms of imminent eclampsia among women attending care at Muhimbili national hospital: A case referent study",** in partial fulfillment of the requirements for the degree of Master of medicine in Obstetrics and Gynaecology of the Muhimbili University of Health and Allied Sciences.

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Dr. Progestine S. Muganyizi

(SUPERVISOR)

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Date

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**DEDICATION**

This dissertation is dedicated to my wife Ritha, my son Rwechungura and my daughter Asimwe.

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I am so grateful to the Almighty God, for granting me peace, health and strength throughout the preparations of this work.

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# ABSTRACT


## Background

Preeclampsia affects about 5 to 10% of all pregnancies and eclamptic seizure is one of its serious complications. In many developing countries including Tanzania, maternal and perinatal mortality due to eclampsia are high. As yet, primary prevention of eclampsia is not possible since the causes are largely unknown. Headache, visual disturbance, abdominal pain, nausea, and vomiting have been reported by various studies to precede most eclamptic seizures; thus could be used to predict and therefore prevent some cases given the availability of magnesium sulphate. These symptoms however are also common in normal pregnancy and post delivery mothers due to physiological changes of pregnancy and common disease conditions that usually affect pregnant women in our settings. The present study evaluated the characteristics of symptoms that are consistent with imminence of eclampsia

## Methodology

This was a case referent study in which 123 eclamptic and 123 non eclamptic mothers that best matched in terms of age, parity, gestation age and delivery were enrolled, making a total of 246 women. The presence and characteristics of headache, visual disturbance, abdominal pain, nausea, and vomiting were enquired. A 4 grade scale was used to grade the severity of headache. In the rest of symptoms, common presenting features were utilized.

**Results**

Headache was common in both groups but was more frequent in eclamptic than in referent group of women (88% vs. 43%, p <0.001). In eclamptic mothers headache was mainly severe, frontal and most of the seizures happened within one week of the onset of headache, as compared to referent women where headache was mostly mild and either frontal or generalized. Visual problems were significantly frequent in eclamptics than in referent women, (39% vs. 3% p<0.001). Of the eclamptic mothers who presented with visual problems, 45(94%) had blurring of vision, 32(67%) had blind spots, 10(21%) had photophobia and only 7(15%) had total blindness. A total of 47(98%) of eclamptic mothers developed seizures within 12hours of the onset of visual problems. The frequency of abdominal pain was not significantly different between eclamptic and referent mothers (47% vs.38% p=0.156), however upper quadrant abdominal pain was significantly reported in eclamptic than in referent group of women (36% vs.9%, p=0.001). There was no significant difference on the type of abdominal pain presented by both groups. Nausea was common in both eclamptics and referent group of women (60% vs. 54%, p=0.303). There was no difference on presentation with vomiting among eclamptic and referent women (62% vs. 68% p=0.516) and in both groups the type of vomiting was commonly non projectile.

**Conclusion**

This study has revealed that headache, abdominal pain, nausea and vomiting are common to pregnancy whether or not complicated by preeclampsia/eclampsia. The characteristics of headache, visual disturbances and abdominal pain differ between eclamptics and

women without preeclampsia/eclampsia. In a pre eclamptic woman, an onset of a severe frontal headache or upper quadrant abdominal pain would suggest an occurrence of seizures within one week. Visual disturbance is the most ominous sign as seizures ensue within 12 hours of its onset. Nausea and vomiting cannot be reliably used to predict eclampsia.

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# ABBREVIATIONS

| | |
|---|---|
| **4GS** | Four Grade Scale |
| **ANC** | Antenatal Care |
| **CVA** | Celebrovascular Accident |
| **GIT** | Gastrointestinal tract |
| **HCG** | Human Chorionic Gonadotrophin |
| **HELLP** | Hemolysis Elevated Liver enzymes and Low Platelets |
| **I/V** | Intravenous |
| **ICU** | Intensive Care Unit |
| **Mgso4** | Magnesium sulphate |
| **MNH** | Muhimbili National Hospital |
| **MUHAS** | Muhimbili University of Health and Allied Sciences |
| **NHBP-EP** | National High Blood Pressure Education Program |
| **NRS** | Numerical Rating Scale |
| **NS** | Normal Saline |
| **PE** | Preeclampsia |
| **UK** | United Kingdom |
| **USA** | United States of America |

# INTRODUCTION

Pre-eclampsia (PE) is a multisystem disorder of unknown cause that is unique to human pregnancy. It is characterized by abnormal vascular response to placentation that is associated with increased systemic vascular resistance, enhanced platelet aggregation, activation of coagulation system and endothelial cell dysfunction[1].

Endothelial cell damage alters the vasodilator to vasoconstrictor ratio resulting in hypertension. As a result of; generalized vasospasms, fibrin and platelet deposits, blood flow for many organs is occluded. In the kidney vasospasms leads to glomeruloendotheliosis that allows plasma protein to filter into the urine producing proteinuria. In severe cases the liver is affected where sub capsular haemorrhage, necrosis and edema of the liver cell occurs producing epigastric pain and impaired liver function. The brain becomes edematous and this in conjunction with hypertension and DIC can produce thrombosis and necrosis of blood vessel walls resulting in headaches, visual disturbances and celebrovascular accident[2].

Between 5 and 10% of all pregnancies are reported to be complicated by PE and the majority of cases occur in healthy nulliparous women [3,4]. Other risk factors for PE include first pregnancy from a new partner, extremes of maternal age, hydatidiform mole, multiple pregnancies and maternal diabetes. The latter is believed to be related to greater mass of placental tissue[2].

Pre-eclampsia/eclampsia is a major obstetric problem leading to substantial maternal and perinatal morbidity and mortality worldwide, especially in developing countries[1]. Berg and colleagues (2003) reported that almost 16% of 3201 pregnancy-related deaths in the United

States were from complications of pregnancy-related hypertension[5]. PE/eclampsia was ranked as the third cause of maternal death contributing to 12% of these deaths in a community based study in Ilala district, Dar es Salaam[6]. At Muhimbili National hospital hypertensive disorders were found in 16% of the women attending ANC[7].

Preeclampsia is usually diagnosed in the presence of hypertension associated with proteinuria.[8,9,10] Hypertension is defined as a blood pressure of at least 140mm Hg (systolic) or at least 90mmHg (diastolic) on at least two occasions taken at least 6 hours apart after the 20$^{th}$ week of gestation in women known to be normotensive[8,9,10]. Proteinuria is defined as excretion of 300mg or more of protein in every 24 hours or 300mg/l or more in at least two random urine samples taken at least 6 hours apart[8].

One of the most serious complications of preeclampsia is eclamptic seizures that can occur any time during the antepartum, intrapartum or postpartum period. In a study done by Sibai and colleagues eclampsia was noted more frequently as term approaches and about 50% of cases develop before delivery. The remaining 50% are divided equally between intrapartum and postpartum[11]. Chames and co workers (2002) reported that 25% of eclamptic seizures developed beyond 48 hours postpartum[5]. While in a study done by Kartz and colleagues in USA when patients were categorized with respect to onset of seizures in relation to labour, 53% had seizures before the onset of labour, 36% had intrapartum seizures, and 11% had postpartum seizures[12].

## LITERATURE REVIEW

The etiology and pathophysiology of preeclampsia and eclampsia is still not fully understood in spite of intense basic research, thus effective primary prevention is not possible at this stage.[13] When trying to assess the natural progression of PE, Carroli and colleagues in 2001 found that not all cases of hypertensive diseases follow orderly progression from mild to severe disease, and that women may be found to be suffering from any stage of the disease without having apparently passed through the preceding stages.[14]

Although hypertension is a requisite to diagnosing preeclampsia, the degree of blood pressure alone is not always a dependable indicator for eclamptic seizures.[5] Sibai in 1988 reported that only 40% of patients with eclampsia had severe hypertension and 20% had BP levels below 140/ 90 mmHg.

The absence of clear signs to predict the risk of progression from preeclampsia into eclampsia has made researchers to investigate symptoms that can be used to predict the imminence of eclampsia. Some signs and symptoms are recognized to precede the eclamptic convulsions; however they are not necessary for their development.[15] Headaches and visual symptoms are common with severe preeclampsia, and associated convulsions define eclampsia.[5] According to Ian Donald eclampsia is impending when the following are present; headache-usually generalized but may be localized to the occipital or occasionally to the frontal region, visual disturbance-blurring of vision and photophobia, epigastric discomfort, nausea, vomiting, and oliguria.[16] Hadassah and colleagues (2003) stated that the development of neurologic symptoms, including: headache, visual disturbances, epigastric pain, oliguria, and depression of consciousness, are a portent of imminent convulsions.[17] Venkat and colleagues found out that in about 85% of women with eclampsia, the first fit was preceded

by one or more of these sypmtoms while Douglas and Redman, reporting on 383 cases of eclampsia in the UK during 1992, stated that only 59% of these women had antecedent symptoms.[18,19] Furthermore when Kartz and colleagues (2000) in USA evaluated patients' seizures in relation to signs and symptoms of preeclampsia; headaches were noted before a seizure in 34 of 53 cases (64%). Several women said that it was the worst headache of their lives. Most described it as both throbbing and piercing in nature. Visual disturbances were reported by 16 of the 50 patients (32%). These visual changes varied from blurred vision to scotoma to bright flashing lights. However in this study epigastric pain and nausea were only queried irregularly, and therefore were not quantified[12]. Cunningham and colleagues stated that although visual disturbances are common with severe preeclampsia, blindness is said to be rare with preeclampsia alone. However it may follow eclamptic convulsions in up to 10% of women and it has been reported to develop up to a week or more following delivery[5]. It has also been reported that up to 38% of eclamptic seizures can occur without previous signs and symptoms.[17]

Although most symptoms of imminent eclampsia have been consistently suggested by different researchers, there has not been a consensus on their characteristics. Only a few studies have described this phenomenon. These were small studies with few patients,and were done in a different settings, thus they do not necessarily reflect the local situation as the presentation and severity of preeclampsia could be modified by geographical area , ethnicity and race.[20] On the other hand, the same symptoms of headache, vomiting, visual problems, nausea and vomiting are also common in normal pregnant and post delivery mothers as a result of physiological changes of pregnancy or with infections which are common to pregnant women in our setting. During normal pregnancy the pituitary gland enlarges by approximately 135 percent, this is why some women suffer from headache during pregnancy, the increase may also be sufficient to compress the optic chiasma and reduce visual fields.[2,5]

As a result of relaxation of the smooth muscles of the stomach and hypomotility in addition to the raised oestrogen and HCG, nausea and vomiting complicate about 70% of pregnancies. This usually begins around 4-8 weeks and continues until around 14-16 weeks however in a small percentage of women the symptoms may persist till late pregnancy. In advanced pregnancy the stomach and intestines are displaced by the enlarging uterus. Raised intragastric pressure without an accompaning increase in tone of the cardiac sphincter causes reflux of the acid with epigastric or retrosternal pain.[2] George and collegue stated that headaches in women, pregnant or not pregnant, are usually innocent but can be frightening and debilitating.Women have more frequent headaches than men do, and it is no surprise that women may be seen by the obstetrician or gynecologist, with headache as a chief complaint.The frequently postulated eye strain, chronic sinusitis, and ear disease rarely produce chronic headache, although in pregnancy the retention of fluid in sinuses or behind the tympanum may indeed produce pain.[21]

## PROBLEM STATEMENT

Preeclampsia affects about 5 to 10% of all pregnancies and is not confined to any population group[1]. As yet, primary prevention of pre-eclampsia/eclampsia is not possible since the causes are largely unknown. Its diagnosis and treatment is life saving as reflected in fatality rates from eclampsia, ranging from 5% in developing countries to less than 1% in developed countries.[22]

In many developing countries the incidence of eclampsia remains high, causing a significant maternal and fetal morbidity and mortality particularly when it occurs in the antepartum period.[23]

Tanzania is among developing countries in which maternal and perinatal mortality due to eclampsia is high. The exact incidence of eclampsia in this country is unknown and the few available data are those from MNH. At this hospital eclampsia account not only for the commonest single cause of maternal deaths, but also the second highest cause associated factor in fetal loss[23].

In Dar es Salaam a study done by Urassa and colleagues (2006), the hospital incidence of eclampsia was 200/10,000, the Population based incidence of eclampsia was 67/10,000 and Case fatality rate for eclampsia at MNH was 5%[24]. In the most recent study (2009) at MNH, the hospital based incidence of eclampsia was 504/10,000 and the case fatality rate was 7.7% [25].

The absence of clear signs to predict the risk of progression from preeclampsia into eclampsia may have contributed to the rising incidence of eclampsia and its associated complications. Some signs and symptoms are recognized to precede the eclamptic convulsions; however they

are not necessary for their development. Very few studies have shown some characteristics of these symptoms but none of the studies have contrasted these characteristics with those that are found in non eclamptic pregnant mothers.

## RATIONALE

The prediction of eclampsia using biological and physical measurements is unreliable.[26] Currently there are no reliable, valid, or economic methods of screening for eclampsia. In addition, investigations into uncovering reliable predictors of eclampsia are lacking, so we can develop tests that will help detect eclampsia and prevent those seizures that are at present unpredictable.[17] Symptoms of imminence of eclampsia may be a reliable way to prevent some cases given the presence of Magnesium sulphate, however there is scanty literature that has distinguished between symptoms due to other causes and impending eclampsia.

## RESEARCH QUESTION

The characteristics of symptoms of imminent eclampsia among eclamptic mothers is not known. Could they be diferrent from those encoutered in women without preeclampsia/elampsia?

# OBJECTIVES

## Broad objective

To characterize symptoms of imminent eclampsia and compare with similar symptoms among referent group of women who received maternity services (ANC or delivery) at MNH.

## Specific objectives

1. To determine the proportion of eclamptic mothers who present with symptoms of imminent eclampsia during the index pregnancy.
2. To determine the proportion of referent group of women with similar symptoms as for imminent eclampsia during the index pregnancy.
3. To describe the characteristics of symptoms of imminent eclampsia in eclamptic mothers and referent women.
4. To compare the clinical presentation of symptoms of imminent eclampsia among eclamptic mothers with referent group of women.

# METHODOLOGY

## Study design

A case referent cross section study design was adopted.

## Study period

Data collection was conducted for 4 months from April to August 2010.

## Study setting

The study was done at MNH maternity block.

Muhimbili National Hospital is one of the four referral hospitals in Tanzania. It offers specialized obstetric services for Dar es salaam city and its suburbs, through its department of obstetrics and gynecology. The city of Dar es salaam is estimated to have a population of 3 million people (census 2002).

There are 3 districts in Dar es Salaam; Ilala, Temeke and Kinondoni. Each district has a district hospital which provides some emergency obstetric care. However most of obstetric emergencies in Dar es Salaam are referred to MNH. In addition patients are also referred from nearby Coast region particularly from districts of Kisarawe, Kibaha and Bagamoyo. Apart from the referred patients, a substantial number of patients with or without obstetric complication come directly from home.

The MNH maternity building consists of 7 wards. Four wards each with 38 bed capacity are used to admit antenatal and postnatal mothers. Other wards are labour ward, postnatal ward for observation of those who deliver normally and the other ward is used as an obstetric ICU for the patients with severe pre-eclampsia and eclampsia and mothers in critical condition.

There is a neonatal special care unit which provides neonatal care to premature and sick neonates born at MNH and those referred from other hospitals.

In the labour ward there are about 20-30 deliveries each day. All deliveries are entered instantly in the delivery register book by the attending midwife and later the information is transferred to maternity computer data base. In average about 450 patients are admitted in the MHN maternity ICU per year. Patient are either transferred in from the antenatal, postnatal and labour wards or are referred from public district and private hospitals in Dare es Salaam and Coastal regions. The causes of admission in the ICU are eclampsia, severe preeclampsia, cerebral malaria, epilepsy, celebrovascular accident (CVA) and others; however the majority of admissions (70%) in this ward are due to eclampsia. Upon admission the diagnosis of the patient is made by the doctor (a resident, registrar or specialist) and management is instituted instantly. Patients with severe preeclampsia and eclampsia are managed with antihypertensives (Methyldopa, Nifedipine and Hydrallazine) to lower the blood pressure and magnesium sulphate (usually 4 gram loading dose by slow i/v then 4gram in 500mils NS every 4hours) is given to prevent or control the fits until 24hours post delivery.

**Study population**

This constituted eclamptic mothers admitted at MNH with a diagnosis of Eclampsia.

Referents were mothers matching eclamptic cases who sought maternity services (i.e., ANC or Delivery) at MNH during the study period.

**Study sample & Sampling Procedures**

We wished to compare the incidence of visual disturbance among eclamptic mothers with women without PE/eclampsia. According to Kartz et al (2000) the incidence of visual

disturbance was 32% for eclamptics. We hypothesized that the incidence among referent group of women would be lower, say 15%. Thus the minimum required sample size would be 216, ie 108 eclampsia and 108 referent women calculated by assuming 95% confidence and power of 80%. [27]

**Matching variables**

Matching of eclamptic with referent women was done for age, parity, gestation age and whether or not they had delivered at the time of interview. All eclamptic women who were admitted at the eclamptic ward during the study period were enrolled. A ratio of 1:1 was used such that to every one eclamptic mother enrolled, one referent woman that best matched in terms of the above variables was selected.

**Exclusion criteria**

1. Mothers who were of unsound mind.
2. Mothers with eclampsia that developed more than 72 hours after delivery
3. Women who were critically ill or could not communicate verbally.
4. When there was lack of documented matching characteristics like age, parity or gestation age.

**Data collection**

Data was collected using interviewer administered questionnaire. Information was obtained both directly from the participants and from the patient's case note. A patient who had an episode of eclamptic fits was asked of the presence and characteristics of headache, visual disturbances, abdominal pain, nausea and vomiting just before they lost consciousness. Data was collected for 24 hours by the principle investigator and research assistants.

Eclamptic mothers were diagnosed based on standard criteria.

**Procedure for identifying referent women**

After obtaining a suitable eclamptic mother, the first best matching referent woman in terms of age, parity, gestation age and whether pregnant or post delivery was identified. Referent women were obtained from the antenatal wards, postnatal wards and antenatal clinic during that time or any time during the study period as soon as she was available. A variation of 1to 2 years for age and 1 to 2 weeks for gestation age was considered acceptable.

**Data Analysis**

Data was coded and entered using Epi Info version 6 computer program while analysis was through SPSS version 16. Comparison was made using Chi square and Fischer's exact test.

## Diagnostic measures for Symptoms

**Measure of pain severity**

A standard measure known as the four grade scale (4GS) was employed to characterize the severity of headache among the participants. This is recommended for assessing headache severity in the International Headache Society guidelines for controlled trials of drugs in migraine.[28] The 4GS was found to be as effective as the visual analogue scale in this regard.[29] By using this scale the pain severity was categorized as **No pain, Mild, Moderate and Severe pain**. Participants were supposed to describe their pain according to these scales. The degrees of pain were assigned grades such that No pain = grade 0, mild pain = grade 1, moderate pain = grade 2 and severe pain = grade 3.

**Other symptoms**

There are no universal standards for measuring the severity of visual problems, abdominal pain nausea and vomiting. However the common presentations of these symptoms which have also been used in previous studies were adopted, pilot tested and utilized in this study. For instance; in visual symptoms we enquired for blurring of vision, blind sports, photophobia, and total blindness. For abdominal pain we asked for type and site of pain. For nausea we asked for severity while vomiting we asked whether it was projectile or non projectile.

## Definition of terms

### Preeclampsia

BP ≥140/90 mm Hg after 20 weeks' gestation and recorded at least twice in not less than 6 hours interval, plus Proteinuria of 300 mg/24 hours or 1+ dipstick

### Eclampsia

Seizures in a pregnant woman 20 or more weeks that cannot be attributed to other causes in a woman with/without preeclampsia.

### Symptoms of imminent eclampsia

These are symptoms that commonly develop before the occurrence of eclamptic fit. For the purpose of this study, these symptoms were headache, visual disturbances, abdominal pain, nausea and vomiting.

### A referent mother

For the purpose of this study, a referent mother is the one who was pregnant or had delivered with no features of preeclampsia/eclampsia, who was matching on age, parity, gestation age and status of delivery to an eclamptic mother .

## Ethical consideration and clearance

### Ethical issues

Participants were asked to provide private information, for example about paternity of her index and previous pregnancy and information about a history of abuse in an attempt to control for confounders. They were reassured that this information would be used absolutely for the purpose of this research. Prior thorough information about the study was given to every mother before they consented for the study. Anonymity was maintained during the interview and every subject participating was required to fill the informed consent form

before they were recruited. Any mother had a right to participate or decline from participating anytime during the course of the study without required explanations..

**Ethical clearance**

Ethical clearance was provided by the MUHAS- College research and publication board, and permission to conduct the study was granted by the MNH director.

## RESULTS

During the study period 130 eclamptic mothers were admitted at the MNH eclamptic ward. Seven women were not included in the study because 5 of them were critically ill and 2 had complete loss of memory. One hundred and twenty three eclamptic women were enrolled for the study. Their ages ranged from 16 to 37 years with median age of 22years. The mean gestation age was 35.5weeks and the mean parity was 2. Of these 83 had delivered and 40 had not delivered at the time of interview. One hundred and twenty three referent women that closely matched the enrolled eclamptic mothers in terms of age, parity, gestation age and delivery status were also recruited making a total 246 mothers. (See table 1)

**Table 1: Baseline characteristics of the eclamptic and referent mothers (N=123)**

| *Characteristic* | *Eclamptic n(%)* | *Referents n(%)* | *Total* |
|---|---|---|---|
| **Age (yrs)** | | | |
| <20 | 36(29.%) | 35(29%) | 71(29%) |
| 20-35 | 86(70%) | 86(70%) | 172(70%) |
| >35 | 1(1%) | 2(1%) | 3(1%) |
| **Parity** | | | |
| Primigravida | 82(67%) | 85(69%) | 167(68%) |
| Multipara | 41(33%) | 38 (31%) | 79(32%) |
| **GestationAge(weeks)** | | | |
| <28 | 3(2.4%) | 1(1%) | 4(2%) |
| 28-37 | 52(42.3%) | 54(44%) | 106(43%) |
| ≥37 | 68(55.3%) | 68(53%) | 136(55%) |
| **Delivery** | | | |
| Delivered | 83(68%) | 86(70%) | 169(69%) |
| Undelivered | 40(32%) | 37(30%) | 77(31%) |

Majority of eclamptic mothers (70%) were between 20-35years of age. Most of them were primipara ( 68%), about half of them were at term, and 70% were already delivered at the time of interview.

**Table 2: The proportion of women presenting with symptoms of or similar to those of imminent eclampsia during the index pregnancy (N=123)**

| *Characteristic* | *Eclamptics n(%)* | *Referents n(%)* | *P value* |
|---|---|---|---|
| **Headache** | | | |
| Yes | 108(88) | 53(43) | <0.001 |
| No | 15(12) | 70(57) | |
| **Visual problem** | | | |
| Yes | 48(39) | 4(3) | <0.001 |
| No | 75(61) | 119(97) | |
| **Abdominal pain** | | | |
| Yes | 58(47) | 47(38) | 0.156 |
| No | 65(53) | 76(62) | |
| **Nausea** | | | |
| Yes | 74(60) | 66(54) | 0.303 |
| No | 49(40) | 57(46) | |
| **Vomiting** | | | |
| Yes | 76(62) | 71(58) | 0.516 |
| No | 47(38) | 52(42) | |
| **≥ one symptom*** | | | |
| Yes | 111(90) | 66(54) | <0.001 |
| No | 12(10) | 57(46) | |

* headache, abdominal pain and visual problem.

Almost all symptoms were common in both groups, however headache and visual problems were significantly more frequent in eclamptics than in referent women[ (88% vs. 43%, p <.001) and (39% vs.3%, p<.001 ) respectively].

**Table 3: The clinical presentation of headache among eclamptics as compared to referent group of women during the index pregnancy (eclamptics N=108, Referents N=53)**

| *Characteristic* | *Eclamptics n(%)* | *Referents n(%)* | *P- value* |
|---|---|---|---|
| **Headache severity** | | | |
| Mild | 12(11.1%) | 29(54.7%) | |
| Moderate | 46(42.6%) | 21(39.6%) | <0.001 |
| Severe | 50(46.3%) | 3(5.7%) | |
| **Site of headache** | | | |
| Frontal | 71(65.7%) | 22(41.5%) | |
| Occipital | 4(3.7%) | 1(1.9%) | |
| Parietal | 11(10.2%) | 7(13.2%) | 0.01 |
| Vertical | 5(4.6%) | 2(3.8%) | |
| Generalized | 17(15.7%) | 21(39.6%) | |

Most of the headache in eclamptics were significantly severe than that of referent women (46.3% vs 5.7%, p<.001). The site of headache in eclamptic mothers was mostly frontal (65.7%) as compared to the referent women in whom the presentation with frontal and generalized headache was about equal (41.5% and 39.6% respectively).

**Table 4: Characteristics of visual problems presented by eclamptic mothers during the index pregnancy, N=48**

| *Characteristics* | *n* | *%* |
|---|---|---|
| **Blurring of vision** | | |
| Yes | 45 | 94 |
| No | 3 | 6 |
| **Blind spots** | | |
| Yes | 32 | 67 |
| No | 16 | 33 |
| **Photophobia** | | |
| Yes | 10 | 21 |
| No | 38 | 79 |
| **Total blindness** | | |
| Yes | 7 | 15 |
| No | 41 | 85 |

Of the eclamptic mothers who presented with visual problems, the commonest visual complaint was blurring of vision (94%), and the least was total blindness (15%). The type of visual problems among eclamptics and referent women were not compared statistically because of extremely small numbers in referent group of women. However unlike in eclamptics, none of the referent women reported total blindness.

**Table 5: The clinical presentation of abdominal pain among eclamptics as compared to referent group of women during the index pregnancy (eclamptics N=58, referents N=47)**

| *Characteristic* | *Eclamptics n(%)* | *Referents n(%)* | *P- value* |
|---|---|---|---|
| **Site abdominal pain** | | | |
| Upper | 21(36.2%) | 4(8.5%) | |
| Lower | 32(55.2%) | 26(55.3%) | <0.001 |
| General | 5(8.6%) | 17(36.2%) | |
| **Type of pain** | | | |
| Dull aching | 12(20.7%) | 5(10.6%) | |
| Colicky | 21(36.2%) | 17(36.2%) | |
| Cramping | 8(13.8%) | 16(34.0%) | <0.321 |
| Burning | 7(12.1%) | 2(4.3%) | |
| Other | 10(17.2%) | 7(14.9%) | |

Upper quadrant abdominal pain was significantly reported in eclamptics than in referent group of women [21(36.2%) vs.4 (8.5%) P= 0.001). There was no significant difference on the type of abdominal pain presented by both groups.

**Table 6: The clinical presentation of nausea and vomiting among eclamptics as compared to referent group of women during the index pregnancy (eclamptics N=76, referents N=71)**

| *Characteristic* | *Eeclamptics n(%)* | *Referents n(%)* | *P- value* |
|---|---|---|---|
| **Severity of nausea** | | | |
| Non severe | 44(60%) | 45(68%) | |
| Severe | 20(27.0%) | 15(23%) | 0.529 |
| Very severe | 10(13%) | 6(9%) | |
| **Type of vomiting** | | | |
| Projectile | 4(5%) | 0(.0%) | 0.121 |
| Non projectile | 72(95%) | 71(100.0%) | |

Nausea tended to be very severe in eclamptics than in referent women, though the difference was not statistically significant [13% vs. 9%, P =.529]. The type of vomiting was commonly non projectile in both groups, except in 4(5%) of the eclamptic mothers, who presented with projectile vomiting.

**Table 7: Time elapsed from the onset of symptoms to development of fits among eclamptic mothers (headache N=108, abdominal pain N=58, nausea N=74,vomiting N=76, visual problems N=48)**

| *Characteristic* | *N* | *%* |
|---|---|---|
| **Headache** | | |
| 0-7 days | 96 | 89 |
| >7 days | 12 | 11 |
| **Abdominal pain** | | |
| 0-7 days | 41 | 71 |
| >7 days | 17 | 29 |
| **Nausea** | | |
| 0-7 days | 27 | 37 |
| >7 days | 47 | 63 |
| **Vomiting** | | |
| 0-7 days | 29 | 38 |
| >7 days | 47 | 62 |
| **Visual problems** | | |
| 0-12hours | 47 | 98 |
| 12hours | 1 | 2 |

In majority of eclamptic mothers with headache and abdominal pain, (89% and 71% respectively), fits occurred within 7 days from the onset of symptoms. While almost all of the mothers (98%) had fits within 12hours following visual problems. Most of nausea and vomiting was experienced more than 7 days before the onset of eclamptic fits (63% and 62% respectively).

## DISCUSSION

Eclamptic seizure is one of the serious complications of preeclampsia[22] and in many developing countries including Tanzania, maternal and perinatal mortality due to eclampsia are high.[23] As yet, primary prevention of eclampsia is not possible since the causes are largely unknown. However symptoms of imminence of eclampsia could be a reliable way for prediction and prevention of most cases. Headache, visual disturbance, abdominal pain, nausea, and vomiting have been reported by previous studies to be consistent with imminence of eclampsia [5,16,17,18,19]. This study was designed to uncover the characteristics of these symptoms that are pertinent with imminent eclampsia and contrast them with those that commonly occur in otherwise normal pregnant and post delivery mothers.

Headache was common among both eclamptic and non eclamptic mothers in this study; however the proportion was statistically significantly higher in the former than the later. In eclamptic women the headache was characteristically frontal, less generalized, and mostly severe and the seizures occurred within one week of the onset of headache, whereas in non eclamptic mothers, headache was more generalized than in eclamptics and mild in severity. These finding are concurring with the previous finding by Kartz and colleagues in USA who found out that headaches were noted before a seizure in 34 of 53 cases (64%) and that several women said that it was the worst headache of their lives, [12] though, the frequency was noted to be higher in this study probably because the sample size in the previous study was smaller. However the characteristic of headache in eclamptics found in this study are contrary to the former statement by Ian Donald, that in impending eclampsia headache is usually generalized but may be localized to the occipital or occasionally to the frontal region.[16] What causes the

localization of headache to one site of the head more than the other is not yet understood, and therefore it is not clear whether this could vary due to geographical area, race or ethnicity and thus explain the difference with the previous studies.

In the current study, the frequency of visual problems among eclamptic mothers was 39%. Of these, blurring of vision was most common, followed by blind spots, photophobia and total blindness. In almost all eclamptic mothers, seizures developed within 12hours of the onset of visual problems. This is probably because the changes like brain oedema and microvascular thrombosis and necrosis that commonly cause visual symptoms would immediately lead to convulsions[2]. In referent women however visual problems were rare, only 4 women presented with variable visual complaints. Our findings are not markedly different from a previous study by Kartz and colleagues in USA that found visual disturbances in 32% of cases, and that these visual changes varied from blurred vision, scotoma, to bright flashing lights[12], however in that study the duration from the onset of visual problems to development of seizures was not determined. With the current findings it is obvious that, unlike other symptoms, visual disturbance is the most ominous symptom due to its distinctiveness and the short interval from the first experience to development of seizures.

The frequency of abdominal pain was not statistically significantly different between eclamptic and referent women; this is probably because of excessive Braxton Hicks and labour contractions that tend to be present at or near term in most pregnant mothers, and the after pains in post delivery mothers[2,5,21]. The presentation with upper quadrant abdominal pain however, was statistically significantly higher in eclamptics than in referent women, and in eclamptics, seizures occurred within one week of the onset of abdominal pain. Most eclamptic mothers described the abdominal pain as colicky and dull aching, but there was no statistically

significant difference on the type of pain presented by both groups. Though mentioned severally in most literature, few or none of the previous studies had determined the frequency of abdominal pain in imminent eclampsia[12,16]. In a study by Kartz, epigastric pain was only queried irregularly, and therefore was not quantified, [12] thus further studies on this subject would be helpful if this symptom is to be reliably utilized for the prediction of eclampsia.

Nausea was common in both eclamptics and referent women in our study, but it tended to be very severe in the former than the later, though the difference was not statistically significant. There was no difference on presentation with vomiting among eclamptic and referent women; and in both groups the type of vomiting was commonly non projectile except in 4 eclamptic mothers, who presented with projectile vomiting. In some previous literature both nausea and vomiting have been mentioned to precede eclampsia[16] though they were not quantified, but with these findings in our study, both nausea and vomiting do not seem to be reliable predictors of eclampsia as they occur commonly, probably as a result of physiological changes of pregnancy notwithstanding eclampsia.

In the present study, we found that in almost all of eclamptic mothers, seizures were preceded by one or more of the 3 symptoms; headache, visual disturbance and abdominal pain, unlike in referent group of women were one or more of the similar symptoms were found in 54%. Our findings concurs with that by Venkat and colleagues who found that in about 85% of women with eclampsia, the first fit was preceded by one or more of these sypmtoms.[18] Albeit, these findings differ with that by Douglas and Redman in the UK who stated that only 59% of these women had antecedent symptoms[19] and Hadassah and colleagues who reported that up to 38% of eclamptic seizures can occur without previous signs and symptoms.[17] These noticeable difference could be attributed partly to the methodological difference, but also to

the difference in the study settings as the presentation of severity of preeclampsia could be modified by geographical area , ethnicity and race[20].

Our findings could be somehow limited by a recall bias especially among the eclamptics who were interviewed beyond 24hours after the seizures. This would lead to some exaggeration or underreporting of these symptoms; however this was minimized by excluding from the study all those who seemed to have unsound memory.

## CONCLUSION

Headache, abdominal pain, nausea and vomiting are common to pregnancy whether or not complicated by PE/eclampsia. The characteristics of headache, visual disturbances and abdominal pain somehow differ between eclamptics and otherwise normal mothers. This can be utilized to predict the imminence of eclampsia in mothers with preeclampsia, such that in a pre eclamptic woman, an onset of a severe frontal headache or upper quadrant abdominal pain suggests the occurrence of seizure within one week. However visual disturbance is the most ominous sign as seizures ensue within 12 hours of its onset. Conversely nausea and vomiting though sometimes associated with the imminence of eclampsia, they are too common in pregnancy regardless of eclampsia and their presentation is similar in both eclamptic and normal mothers that they cannot be reliably used to predict eclampsia.

## RECOMMENDATIONS

Every patient with preeclampsia regardless of the severity of hypertension who presents with a severe frontal headache, visual disturbance or upper quadrant abdominal pain should be given magnesium sulphate to prevent occurrence of fits.

Further studies are needed on these symptoms, and laboratory markers that together can be used to better predict eclampsia.

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APPENDIX I

**SUMMARY TABLE OF STUDIES AND THEIR FINDINGS REGARDING SYMPTOMS OF IMMINENT ECLAMPSIA**

| **STUDY AUTHOR AND YEAR** | **FINDING** |
|---|---|
| Douglas et al(1992) | 59% o eclamptic mothers had antecedent symptoms |
| Venkat et al ( 1995 ) | 85% of eclamptic mothers had antecedent symptoms |
| Hadassah et al(2003) | 38% of eclamptic seizures can occur without prior symptoms |
| Katz et al (2000) | 64% of eclamptic mothers had headache preceding seizures. |
| Katz et al (2000) | 32% of eclamptic mothers had visual problems preceding seizures. |
| Cunningham et al(2005) | 10% of eclamptic mothers had total blindness |

APPENDIX II

**CONSENT FORM**

SYMPTOMS OF IMMINENT ECLAMPSIA AMONG WOMEN ATTENDING CARE AT MUHIMBILI NATIONAL HOSPITAL.

**Introduction**

My name is Dr John France. I am a researcher from Muhimbili University of Health and Allied Sciences. I am conducting a research on one of the common and life threatening-diseases that affect pregnant women. The purpose of the study is to determine the characteristic symptoms of severe preeclampsia and the proportion of women with this condition who will present with these symptoms. The findings will help to put recommendations in order to improve care of the pregnant mothers with preeclampsia and therefore manage them better and prevent eclampsia which is a life threatening condition to both mother and child.

**How to participate in this study**

You are asked to participate in this study because you are one among many women who are pregnant or delivered and you are at risk of suffering preeclampsia and eclampsia. If you are willing to participate in this study, you will be interviewed for 10 minutes. The interview will be conducted only once. I do not expect to cause you any discomfort.

**Confidentiality**

Everything will remain confidential and will be used only for research purposes. The research team will compile a report that will contain information about all other mothers with or without a problem like yours, without mentioning names.

**Risks**

I do not expect that any harm will happen to you as a result of participating in the study.

**Right to participate in the study**

Taking part in this study is completely of your choice. You have the right to participate or decide otherwise without giving any reason for your decision. Once you have decided to participate you are also free to terminate your participation at any time.

**Benefits of participating in this study**

If you agree to participate in this study you will help us find the magnitude of this problem in our community, and enable the hospital and the country at large to establish proper management plans for this condition.

**Who to Contact**

If you have any questions about this study you are free to contact, the principal investigator, Dr. John France (0784 846942).

If you ever have questions about your rights as a participant, you may call the Chairman of the college Research and Publications Committee, Box 65001, Dar es Salaam. Tell 2150302-6.

If you agree to this interview, please sign this consent form.

I …… have read and understood the contents of this consent form and my questions have been sufficiently answered. I therefore consent for the interview for this study.

**Signature of the interviewee** ……..... **Date** ……

**Signature of the interviewer** ……..…… **Date** ……

APPENDIX III

**SWAHILI VERSION OF THE CONSENT FORM**

DALILI ZA KUPATA KIFAFA CHA MIMBA KWA AKINA MAMA WANAOPATA HUDUMA ZA UZAZI KATIKA HOSPITALI YA TAIFA MUHIMBILI.

**Utangulizi**

Jina langu ni Dk. John France. Mimi ni mtafiti kutoka chuo cha mafunzo ya afya cha Muhimbili. Ninafanya utafiti kuhusu dalili za kupata kifafa cha mimba kwa wakina mama walio na shinikizo la damu linalosababishwa na mimba ikilinganishwa na akina mama waliojifungua ambao hawana tatizo hili.Utafiti huu utatusaidia kutambua dalili hizi ,zinatokeaje na zinatokea kwa kiwango gani kwa akina mama wanaopata kifafa cha mimba. Hii itawawezesha madaktari na wauguzi kutambua mapema wagonjwa wenye uwezekano wa kupata kifafa cha mimba na hivyo kuweza kuzuia tatizo hili ambalo ni hatari kwa mama na mtoto.

**Jinsi ya kushiriki katika utafiti huu**

Unaombwa kushiriki katika utafiti huu kwa sababu wewe ni mmoja kati ya wanawake wenye/walio na uwezekano wa kupata shinikizo la damu linalo sababishwa na mimba. Ukikubali kushiriki, utahojiwa kwa dakika10, mara moja tu.

**Usiri**

Kila kitu kitabakia kuwa siri na kitatumika kwa ajili ya utafiti tu. Timu inayohusika na utafiti itatumia majibu yote kuandaa ripoti itakayokuwa na habari za wanawake wengine pia, bila kuandika jina mahali popote.

**Madhara**

Sitegemei kutakuwa na kitu chochote kitakachotokea kwako kwa kushiriki katika utafiti huu,

**Haki ya kushiriki**

Ushiriki wako katika utafiti huu si lazima. Una uwezo wa kukubali au kukataa bila kutoa sababu zozote za kufanya hivyo. Na ukikubali, unaweza kubadili uamuzi wako ukijisikia kufanya hivyo.

**Faida za kushiriki**

Ukikubali kushiriki, utatusaidia kujua vizuri dalili hizi za kifafa cha mimba hapa kwetu, na kusaidia hospitali na taifa na chuo kikuu cha afya Muhimbili kwa ujumla kuweza kuwafundisha madaktarti na wauguzi juu ya dalili hizi na kwa hiyo kuwawezesha kuzuia kifafa cha mimba.

Ukiwa na maswali yoyote kuhusu utafiti huu, uwe huru kuwasiliana nami, mtafiti mkuu, Dr John France(0784 846942)

Kama utakuwa na maswali kuhusu haki zako kama mshiriki, unaweza kumpigia mwenyekiti wa kamati ya maadili ya utafiti, S. L. P. 65001, Dar es Salaam. Simu 2150302-6.

Kama umekubali kuhojiwa, tafadhali saini hapa:

Mimi……., nimesoma na kuelewa kilichoelezwa kwenye fomu hii na maswali yangu yamejibiwa kiufasaha. Hivyo ninakubali kuhojiwa kwa ajili ya utafiti huu.

**Sahihi ya mhojiwa ……..** Tarehe ……..

**Sahihi ya mhoji**…… Tarehe……

APPENDIX IV

**QUESTIONNAIRE**

1. Participant's registration numb
2. Age ……..
3. Residential area……
4. Parity …….Gestation age……
5. If this is not your first pregnancy, does this pregnancy belong to the same father as the immediately previous one?
    1. Yes
    2. No
    3. Don't know
6. Is she eclamptic patient Yes/No

**HEADACHE**

7. Have you ever experienced headache since age of 15 years?
    1. Yes
    2. No
    3. Don't remember

8. Have you ever experienced headache at any time during this pregnancy?
    1. Yes
    2. No
    3. Dont remember

9. How frequently have you been experiencing headache during the index pregnancy?
    1. Very occasionally,
    2. Occasionally,
    3. Frequently,
    4. Very frequently
10. How do you rate the occurrence of headache during this pregnancy when compared to the time when you were not pregnant?

1. Occurring less frequently
2. Indifferent,
3. More frequently

11. Now consider the most severe episode of headache since the age of 15 years. Was it during pregnancy or sometime when you were not pregnant?
    1. During pregnancy
    2. not during pregnancy
12. If the most severe headache was during pregnancy, was it during the current pregnancy?
    1. Yes,
    2. No,
    3. Don't remember.

13. Now consider all the headache episodes you experienced during this pregnancy. How do you rank the most severe episode?

    1. Mild headache
    2. Moderate headache
    3. Severe headache

14. What was the site of the headache that you experienced during this pregnancy?

    1. Frontal headache
    2. Occipital headache
    3. Right parietal headache
    4. Left parietal headache
    5. Vertical headache
    6. Generalized headache

15. Now consider the fits you encountered. What was the approximate time that elapsed between the experience of headache of the severity you mentioned and the occurrence of the first fit?
    1. 0-12 hours
    2. 12-24 hours
    3. Two days- One week
    4. 2-4 weeks
    5. >4 weeks

**VISUAL DISTURBANCE**

16. Have you ever experienced visual disturbance since age of 15 years?
    1. Yes
    2. No
    3. Don't remember

17. Have you ever experienced at any visual disturbance during this pregnancy?
    1. Yes
    2. No
    3. Dont remember

18. How frequently have you been experiencing visual disturbance during the index pregnancy?
    1. Very occasionally,
    2. Occasionally,
    3. Frequently,
    4. Very frequently

19. How do you rate the occurrence of visual disturbance during this pregnancy when compared to the time when you were not pregnant?
    1. Occurring less frequently
    2. Indifferent,
    3. More frequently

20. Now consider the most severe episode of visual disturbance since the age of 15 years. Was it during pregnancy or sometime when you were not pregnant?
    1. During pregnancy
    2. not during pregnancy

21. If the most severe episode of visual disturbance was during pregnancy, was it during the current pregnancy?
    1. Yes,
    2. No,
    3. Don't remember.

22. Did you experience any of these problems at any time during this pregnancy?

    1. Blurring of vision (Yes/No)
    2. Blind sports (Yes/No)
    3. Total blindness (Yes/No)
    4. Photophobia (Yes/No)
    5. Flushing lights ( Yes/No)
    6. Others (Y/N)…specify…….

23. What was the approximate time that elapsed between the experience of visual disturbance and occurrence of the first fit?

    1. 0-12 hours
    2. 12-24 hours
    3. Two days- One week
    4. 2-4 weeks
    5. >4 weeks

**ABDOMINAL PAIN**

24. Have you ever experienced abdominal pain since age of 15 years?

    1. Yes
    2. No
    3. Don't remember

25. Have you ever experienced abdominal pain at any time during this pregnancy?

    1. Yes
    2. No
    3. Dont remember

26. How frequently have you been experiencing abdominal pain during the index pregnancy?

    1. Very occasionally,
    2. Occasionally,
    3. Frequently,
    4. Very frequently

27. How do you rate the occurrence of abdominal pain during this pregnancy when compared to the time when you were not pregnant?

    1. Occurring less frequently

2. Indifferent,
3. More frequently

28. When you consider the most severe episode of abdominal pain since the age of 15 years. Was it during pregnancy or sometime when you were not pregnant?
    1. During pregnancy
    2. Not during pregnancy
29. If the most severe abdominal pain was during pregnancy, was it during the current pregnancy?
    1. Yes,
    2. No,
    3. Don't remember.

30. What was the site of the abdominal pain that you experienced during this pregnancy

    1. Left upper abdomen
    2. Right upper abdomen
    3. Generalized upper half of abdomen
    4. Left lower abdomen
    5. Right lower abdomen
    6. Generalized lower half of abdomen
    7. Generalized abdominal pain
31. What was the type of abdominal pain?
    1. Dull aching
    2. Colicky
    3. Cramping
    4. Burning
    5. Others specify
32. What was the approximate time that elapsed between the experience of abdominal pain you have mentioned and the occurrence of the first fit?
    1. 0-12 hours
    2. 12-24 hours
    3. Two days- One week
    4. 2-4 weeks

5. >4 weeks

33. Have you ever experienced nausea since age of 15 years?
    1. Yes
    2. No
    3. Don't remember

**NAUSEA**

34. Have you ever experienced nausea at any time during this pregnancy?
    1. Yes
    2. No
    3. Dont remember

35. How frequently have you been experiencing nausea during the index pregnancy?
    1. Very occasionally,
    2. Occasionally,
    3. Frequently,
    4. Very frequently

36. How do you rate the occurrence of nausea during this pregnancy when compared to the time when you were not pregnant?
    1. Occurring less frequently
    2. Indifferent,
    3. More frequently

37. When you consider the most severe episode of nausea since the age of 15 years. Was it during pregnancy or sometime when you were not pregnant?
    1. During pregnancy
    2. not during pregnancy

38. If the most severe nausea was during pregnancy, was it during the current pregnancy?
    1. Yes,
    2. No,
    3. Don't remember.

39. How severe was the nausea during this pregnancy?
    1. Not severe
    2. Severe
    3. Very severe
40. What was the approximate time that elapsed between the experience of nausea you have mentioned and the occurrence of the first fit?
    1. 0-12 hours
    2. 12-24 hours
    3. Two days- One week
    4. 2-4 weeks
    5. >4 weeks

**VOMITING**

41. Have you ever experienced vomiting since age of 15 years?
    1. Yes
    2. No
    3. Don't remember

42. Have you ever experienced vomiting at any time during this pregnancy?
    1. Yes
    2. No
    3. Dont remember

43. How frequently have you been experiencing vomiting during the index pregnancy?
    1. Very occasionally,
    2. Occasionally,
    3. Frequently,
    4. Very frequently

44. How do you rate the occurrence of vomiting during this pregnancy when compared to the time when you were not pregnant?
    1. Occurring less frequently
    2. Indifferent,

3. More frequently

45. When you consider the most severe episode of vomiting since the age of 15 years. Was it during pregnancy or sometime when you were not pregnant?

    1. During pregnancy
    2. Not during pregnancy

46. If the most severe episode of vomiting was during pregnancy, was it during the current pregnancy?

    1. Yes,
    2. No,
    3. Don't remember.

47. What was the nature of vomiting during this pregnancy?

    1. Projectile
    2. Non projectile
    **3.** Don't remember

48. What was the approximate time that elapsed between the experience of vomiting and the occurrence of the first fit?

    1. 0-12 hours
    2. 12-24 hours
    3. Two days- One week
    4. 2-4 weeks
    5. >4 weeks

APPENDIX V

**SWAHILI VERSION OF THE QUESTIONNAIRE**

(DODOSO)

1. Namba ya mshiriki……..
2. Umri ……..
3. Mahari unapoishi……
4. Hii ilikuwa/ni mimba yako ya ngapi? _____Umri wa mimba_____
5. Kama mimba hii siyo ya kwanza, Je ni ya baba yuleyule mwenye ile iliyopita ya mwisho?
    1. Ndiyo
    2. Hapana
    3. Sijui
6. Amepata kifafa cha mimba? Ndiyo/Hapana

**KUUMWA NA KICHWA**

7. Uliwahi kuumwa na kichwa tangu ukiwa na umri wa miaka 15?
    1. Ndiyo
    2. Hapana
    3. Sikumbuki
8. Uliwahi kuumwa na kichwa wakati wowote ukiwa mjamzito wa mimba hii?
    1. Ndiyo
    2. Hapana
    3. Sikumbuki
9. Je, umekuwa ukiumwa na kichwa mara nyingi kiasi gani wakati ukiwa na mimba hii?. Unaweza kusema ni;
    1. Mara chache sana
    2. Mara chache
    3. Mara nyingi
    4. Mara nyingi sana

10. Unalinganishaje idadi ya kuumwa na kichwa wakati wa mimba hii na wakati ambao haukuwa mjamzito

    1. Mara chache zaidi
    2. Hakuna tofauti
    3. Mara nyingi zaidi

11. Ukifikiria maumivu ya kichwa makali kuliko yote ambayo uliwahi kuyapata tangu ukiwa na umri wa miaka 15, Je yalikuwa wakati ukiwa mjamzito au wakati mwingine ambapo haukuwa mjamzito?

    1. Wakati nikiwa mjamzito
    2. Siyo wakati nikiwa mjamzito

12. Kama maimivu ya kichwa makali kuliko yote uliyapata wakati ukiwa mjamzito, Je, ilikuwa wakati ukiwa mjamzito wa mimba hii?

    1. Ndiyo
    2. Hapana
    3. Sikumbuki

13. Ukifikiri kuhusu maumivu ya kichwa makali zaidi uliyowahi kuyapata wakati wa mimba hii, unaweza kusema yalikuwa makali kiasi gani?

    1. Maumivu kidogo
    2. Maumivu makali kiasi
    3. Maumivu makali sana

14. Hayo maumivu uliyoyapata kwenye mimba hii uliyasikia sehemu gani ya kichwa?

    1. Sehemu ya mbele
    2. Sehemu ya nyuma
    3. Upande wa kulia wa kichwa
    4. Upande wa kushoto wa kichwa
    5. Utosini
    6. Kichwa kiliuma chote

15. Kuhusu kifafa cha mimba ulichopata, unaweza kukadiria ni muda gani ulipita tangu ulipoanza kuumwa kichwa mpaka ulipopata kifafa cha mimba kwa mara ya kwanza?
    1. Masaa 0-12
    2. Masaa 12-24
    3. Siku mbili mpaka wiki moja
    4. Wiki 2 hadi 4
    5. Zaidi ya wiki 4

**MATATIZO YA KUONA**

16. Uliwahi kuwa na matatizo ya kuona tangu ukiwa na umri wa miaka 15?
    1. Ndiyo
    2. Hapana
    3. Sikumbuki
17. Uliwahi kuwa na matatizo ya kuona wakati wowote ukiwa mjamzito wa mimba hii?
    1. Ndiyo
    2. Hapana
    3. Sikumbuki

18. Je, umekuwa na matatizo ya kuona mara nyingi kiasi gani wakati ukiwa na mimba hii?. Unaweza kusema ni;
    1. Mara chache sana
    2. Mara chache
    3. Mara nyingi
    4. Mara nyingi sana

19. Unalinganishaje idadi ya matatizo ya kuona wakati wa mimba hii na wakati ambao haukuwa mjamzito
    1. Mara chache zaidi
    2. Hakuna tofauti
    3. Mara nyingi zaidi

20. Ukifikiria matatizo ya kuona makali kuliko yote ambayo uliwahi kuyapata tangu ukiwa na umri wa miaka 15, Je yalikuwa wakati ukiwa mjamzito au wakati mwingine ambapo haukuwa mjamzito?

    1. Wakati nikiwa mjamzito
    2. Siyo wakati nikiwa mjamzito

21. Kama matatizo ya kuona makali kuliko yote uliyapata wakati ukiwa mjamzito, Je, ilikuwa wakati ukiwa mjamzito wa mimba hii?

    1. Ndiyo
    2. Hapana
    3. Sikumbuki

22. Je uliwahi kupata tatizo lolote la kuona mojawapo kati ya haya wakati wowote katika mimba hii?

    1. Kuona ukungu (Ndiyo/ Hapana)
    3. Kutoona baadhi ya vitu (Ndiyo/Hapana)
    4. Kutoona kabisa (Ndiyo/Hapana)
    5. Kuumizwa na mwanga wa jua (Ndiyo/Hapana)
    6. Mengineyo (Ndiyo/Hapana)…. taja

23. Ukikadiria ni muda gani ulipita tangu ulipoanza kupata matatizo ya kuona mpaka ulipopata kifafa cha mimba kwa mara ya kwanza?

    1. Masaa 0-12
    2. Masaa 12-24
    3. Siku mbili mpaka wiki moja
    4. Wiki 2 hadi 4
    5. Zaidi ya wiki 4

**MATATIZO YA TUMBO**

24. Uliwahi kuumwa na tumbo tangu ukiwa na umri wa miaka 15?

    1. Ndiyo
    2. Hapana
    3. Sikumbuki

25. Uliwahi kuumwa na tumbo wakati wowote ukiwa mjamzito wa mimba hii?

    1. Ndiyo
    2. Hapana
    3. Sikumbuki

26. Je, umekuwa ukiumwa na tumbo mara nyingi kiasi gani wakati ukiwa na mimba hii?. Unaweza kusema ni;

    1. Mara chache sana
    2. Mara chache
    3. Mara nyingi
    4. Mara nyingi sana

27. Unalinganishaje idadi ya kuumwa na tumbo wakati wa mimba hii na wakati ambao haukuwa mjamzito

    1. Mara chache zaidi
    2. Hakuna tofauti
    3. Mara nyingi zaidi

28. Ukifikiria maumivu ya tumbo makali kuliko yote ambayo uliwahi kuyapata tangu ukiwa na umri wa miaka 15,Je yalikuwa wakati ukiwa mjamzito au wakati mwingine ambapo haukuwa mjamzito?

    1. Wakati nikiwa mjamzito
    2. Siyo wakati nikiwa mjamzito

29. Kama maumivu ya tumbo makali kuliko yote uliyapata wakati ukiwa mjamzito, Je, ilikuwa wakati ukiwa mjamzito wa mimba hii?

    1. Ndiyo
    2. Hapana
    3. Sikumbuki

30. Maumivu ya tumbo uliyopata katika mimba hii yalikuwa upande gani?

    1. Upande wa juu kushoto
    2. Upande wa juu kulia

3. Upande wa juu wote
4. Upande wa chini kushoto
5. Upande wa chini kulia
6. Upande wa chini wote
7. Tumbo lote

31. Ni aina gani ya maumivu uliyoyapata
    1. Yanauma ndani kwa mbali
    2. Yanabana na kuacha
    3. Yananyonga
    4. Kama yanaunguza
    5. Yanachoma
32. Kuhusu kifafa cha mimba ulichopata, unaweza kukadiria ni muda gani ulipita tangu ulipoanza kuumwa tumbo mpaka ulipopata kifafa cha mimba kwa mara ya kwanza?
    1. masaa 0-12
    2. Masaa 12-24
    3. Siku mbili mpaka wiki moja
    4. Wiki 2 hadi 4
    5. Zaidi ya wiki 4

**KICHEFUCHEFU**

33. Uliwahi kupata kichefuchefu tangu ukiwa na umri wa miaka 15?
    1. Ndiyo
    2. Hapana
    3. Sikumbuki
34. Uliwahi kupata kichefuchefu wakati wowote ukiwa mjamzito wa mimba hii?
    1. Ndiyo
    2. Hapana
    3. Sikumbuki

35. Je, umepata kichefuchefu mara nyingi kiasi gani wakati ukiwa na mimba hii?. Unaweza kusema ni;

    1. Mara chache sana

2. Mara chache
3. Mara nyingi
4. Mara nyingi sana

36. Unalinganishaje idadi ya kupata kichefuchefu wakati wa mimba hii na wakati ambao haukuwa mjamzito

    1. Mara chache zaidi
    2. Hakuna tofauti
    3. Mara nyingi zaidi

37. Ukifikiria kichefuchefu kikali ambacho uliwahi kupata tangu ukiwa na umri wa miaka 15, Je ilikuwa wakati ukiwa mjamzito au wakati mwingine ambapo haukuwa mjamzito?

    1. Wakati nikiwa mjamzito
    2. Siyo wakati nikiwa mjamzito

38. Kama kichefuchefu kikali ulikipata wakati ukiwa mjamzito, Je, ilikuwa wakati ukiwa mjamzito wa mimba hii?

    1. Ndiyo
    2. Hapana
    3. Sikumbuki

39. Kichefuchefu ulichokipata katika mimba hii kilikuwa kikali kiasi gani?
    1. Siyo kikali
    2. Kikali
    3. Kikali sana
40. Unaweza kukadiria ni muda gani ulipita tangu ulipoanza kuona kichefuchefu mpaka ulipopata kifafa cha mimba kwa mara ya kwanza?
    1. masaa 0-12
    2. Masaa 12-24
    3. Siku mbili mpaka wiki moja

4. Wiki 2 hadi 4
5. Zaidi ya wiki 4

41. Uliwahi kupata tatizo la kutapika tangu ukiwa na umri wa miaka 15?
    1. Ndiyo
    2. Hapana
    3. Sikumbuki

**KUTAPIKA**

42. Uliwahi kupata tatizo la kutapika wakati wowote ukiwa mjamzito wa mimba hii?
    1. Ndiyo
    2. Hapana
    3. Sikumbuki

43. Je, umekuwa ukitapika mara nyingi kiasi gani wakati ukiwa na mimba hii?. Unaweza kusema ni;
    1. Mara chache sana
    2. Mara chache
    3. Mara nyingi
    4. Mara nyingi sana

44. Unalinganishaje idadi ya kutapika wakati wa mimba hii na wakati ambao haukuwa mjamzito
    1. Mara chache zaidi
    2. Hakuna tofauti
    3. Mara nyingi zaidi

45. Ukifikiria tatizo la kutapika baya kuliko yote ambayo uliwahi kuyapata tangu ukiwa na umri wa miaka 15, Je lilikuwa wakati ukiwa mjamzito au wakati mwingine ambapo haukuwa mjamzito?
    1. Wakati nikiwa mjamzito
    2. Siyo wakati nikiwa mjamzito

46. Kama matatizo ya kutapika  makali kuliko yote uliyapata wakati ukiwa mjamzito, Je, ilikuwa wakati ukiwa mjamzito wa mimba hii?

    1. Ndiyo
    2. Hapana
    3. Sikumbuki

47. Kutapika katika mimba hii kulikuwa kwa aina gani
    1. Matapishi yalikuwa yanaruka mbali
    2. Matapishi yalikuwa hayaruki mbali
    3. Sikumbuki
48. Unaweza kukadiria ni  muda gani ulipita tangu ulipoanza kutapika mpaka ulipopata kifafa cha mimba kwa mara ya kwanza?
    1. masaa 0-12
    2. Masaa 12-24
    3. Siku mbili mpaka wiki moja
    4. Wiki 2 hadi 4
    5. Zaidi ya wiki 4