

## **Factors Associated With Pre-Term Birth among Women Delivering At the Kakamega County Hospital and Birth Outcome**

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**Abstract:** Preterm birth is an important Peri-natal health problem globally. It is estimated that more than 1 in 10 or an estimated 15 million babies born in 2010 were preterm of which more than 1 million died as a result of preterm birth and related complications. The study aims to determine the factors associated with pre-term birth among mothers giving birth at the Kakamega County hospital and the birth outcome. Specifically the study is looking at the prevalence of preterm birth, the risk factors that contribute to the preterm birth and the birth outcomes of babies born preterm at the Kakamega county hospital. This was a cross sectional descriptive hospital based study of 285 systematically sampled mothers who gave birth at the facility between April and May 2015. Five nurse/midwife ward in-charges were purposively sampled and included in the study. Questionnaire and interview schedules were used as the main data collection tools. Statistical techniques including t-test, chi-square and logistic regression were employed in the analysis. All the analysis was done using Statistical package for social science (SPSS V.20). Qualitative data was analysed by developing themes, describing them and evaluating them according to how they supported the data. P-value less than 0.05 was considered significant.

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Date of Submission: 24-03-2019

Date of acceptance: 08-04-2019

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### **I. Introduction**

Preterm birth defined as births before 37 completed weeks (259 days) is an important perinatal health problem globally. Depending on their gestational age and maturity, preterm babies may experience a variety of health concerns. Globally it is estimated that 5 to 18% babies are born preterm and prematurity is said to be the leading cause of neonatal death (babies in the first four weeks of life) and the second leading cause of death after pneumonia in children under five years. It is among the major determinants of infant morbidity and mortality (Beck et al., 2013). Preterm births rates are seen to be increasing with 12% preterm babies born in the poorest countries and 9% of births in the higher income countries (Piso, Zechmeister-Koss & Wnkler, 2014).

Mortality in the first 4 weeks of life accounts for 24 to 50% of all death among children below 5 years of age and 75% of these occur in the first week of life (Broek, Jean-Baptiste & Neilson, (2014). Of the estimated 4 million neonatal deaths each year, 99% occur in low income countries and approximately 35% are attributed to preterm birth making prematurity the leading direct cause of neonatal death. Babies born prematurely but who survive the immediate postnatal period have an increasing risk of death and morbidity during childhood as well as delay in both growth and development compared to babies born at term (Broek et al., 2014). Majority of the preterm babies about 10% are born between 28 to <32 weeks gestation. These babies are prone to severe complications yet they are born in low income Countries and more than half of these will die due to lack of resources. Significant progress has been made in the care of premature infants, but not in reducing the prevalence of preterm birth (Goldenberg, Culhane, Iams, & Romero, 2008).

### **II. Material And Methods**

The study employed a cross sectional descriptive study design because it typically required less time and is better for analysing multiple outcomes. The design was used to collect data on individual characteristics including exposure to risk factors long side information about outcome (Sullivan & Dejong, 2002). Women who gave birth at the facility within the 2-month study period were involved as well as nurse in-charges working in the obstetric department. The later were interviewed to elicit their understanding of the burden resulting from preterm birth, their view on the risk factors for preterm birth and birth outcome.

**Study Design:** cross sectional descriptive study

**Study Location:** The study was carried out at the Kakamega county hospital which is located in the western part of Kenya, about 400 kilometres from Nairobi, the capital city of Kenya and 55 kilometres from Kisumu city. The hospital offers maternal and child health services, comprehensive care services where HIV/AIDS affected and infected patients/clients get care, treatment of medical, surgical patients and three theatres one of which attend to obstetric emergencies and is located next to labour ward. The hospital also offers laboratory and radiological services

**Study Duration:** two months

**Sample size:** 285 respondents

Sample size was determined using the Yamene formula for finite Population. The hospital registers an average of 500 births every month and so in two month the sample population was to be 1000. Given a margin of error set at 5%, 285 respondents were interviewed and in addition, five nurse ward in-charges from the maternity theatre, antenatal ward, postnatal ward, labour ward, and newborn unit were also included.

### **III. Subjects & Selection Method**

Systematic sampling and purposive sampling techniques were employed to select respondents to participate in the study. The obstetrics department has five wards and each ward headed by a nurse in-charge. The five nurse ward in-charges were purposively sampled from every ward in the department (labour ward, antenatal ward, postnatal ward, maternity theatre and the newborn unit). After purposively sampling the nurse ward in-charges, systematic sampling technique was used to sample 285 mothers to participate in the study. Since the study was undertaken in two months, and the expected study population was 1000, it was divided by the sample size (285) and the  $k^{\text{th}}$  in the systematic sampling was every 4<sup>th</sup> mother who gave birth in labour ward.

#### **Inclusion**

- All adult ( $\geq 18$ ) mothers who gave birth at the hospital within the study period

#### **Exclusion criteria**

- Mothers who did not consent to participate in the study were excluded. Mothers below 18 years old were excluded as they were mature minors who were likely unable to address the research topic without inhibitions. Mothers who developed complications after delivery, and were not stable to communicate because of their ill health were also excluded from the study.

#### **Actual Data Collection**

The study was carried out at the Kakamega county hospital and the process of data collection took a period of two months. After permission to carry out the study was granted by the Kakamega county hospital research committee, the principal researcher was introduced to the obstetrics unit nursing officer in-charge by the hospital nursing officer in-charge and the purpose of being in the facility explained. The nursing officer in-charge of the unit further introduced the principal researcher to the in-charges of different wards in the obstetrics department. Two-research assistant who had been trained just after pretesting the tools to participate in the study were introduced by the principal researcher to the labour ward and postnatal ward in-charges. The principal researcher together with the research assistants once again went through the questionnaire in both Kiswahili and English and words that sounded difficult clearly defined. On the first day of the study, the first mother who gave birth in the morning identified as participant number one and there after every  $K^{\text{th}}$  mother was included in the study. After giving birth, the mothers took a warm bath, were served with tea as per the hospital arrangements. Majority of the preterm babies were admitted in the newborn unit immediately while the mothers were left in the labour ward. Relevant documentation was entered both in the mothers file and the labour ward register and the mother wheeled to the postnatal ward. At the postnatal ward, the mothers participating in the study were taken in a side room. The purpose of the study explained to them and consent sort. Anonymity and confidentiality maintained and privacy provided. They were informed that notes will be taken during the session and the session will last for not more than 30 minutes. Data was collected from them as per the questionnaire and at the end they were thanked for participating in the study. The questionnaires were checked for completeness and kept under key and lock. For the mothers who gave birth at night, the labour ward register was used to identify the  $k^{\text{th}}$  and they were followed up in the postnatal ward, talked to about the study, offered privacy by taking them to a side room and data collection done.

The principal researcher through an interview guide collected data for the nurse ward in-charges. The purpose of the study was explained to them, they were allowed to go through the consent form, clarifications were made and those in agreement were requested to sign the consent. The signed consent form was collected by the researcher and kept in a folder. Each session of the interview lasted approximately 30 minutes, during the session, the researcher took extensive field notes.

**Data management and analysis**

Collected data was entered and analysed using the statistical package for social science (SPSS V 20). Descriptive statistics (frequencies, means (SD)) was conducted to summarize the data (e.g. age, marital status, religion, occupation, educational attainment, and husband’s/partner’s educational attainment and occupation). The chi-square test was used to assess relationship between categorical independent variables and preterm birth. Independent samples t-test was used to compare mean differences for continuous variables. Multiple binary logistic regressions was done to identify significant predictors of preterm birth controlling for confounders. P<0.05 was considered statistically significant. Qualitative data from the interview schedule were analyzed thematically, where reading and re-reading of the collected data was done. Codes were developed by collapsing data to create categories that were informed by study objectives and the interview schedule. This allowed for efficient analysis. Themes were then developed, described, and evaluated according to how they supported data (Clarke and Braun, 2013). The results are presented in form of tables, bar graphs and pie charts.

**IV. Results**

A total of 285 mothers participated in the study out of which, 266(93.3%) delivered at term and 19(6.7%) had preterm births. Their median age (IQR) in years was 25(21, 28). Hundred and thirty-eight (48.4%) had attained primary level of education and 226(79.3%) were married. Ninety-nine (34.7%) reported their husband level of education as primary and 130(45.6%) were unemployed. Majority 279(97.9%) were Christians as indicated in table 4.1. Following these results, there was no statistical significance in demographic factors and preterm birth.

**Table 4.1 Demographic characteristics of respondents**

Characteristic	Preterm	Term	$\chi^2$	P-Value
Education level (mother)				
primary	8(5.8%)	130(94.2%)	1.413	0.493
secondary	6(6.1%)	93(93.9%)		
Tertiary	5(10.6%)	42(89.4%)		
Level of education (husband)				
Primary	4(4.0%)	95(96.0%)	3.106	0.212
Secondary	3(4.7%)	61(95.3%)		
Tertiary	6(10.7%)	50(95.3%)		
Religion				
Catholic	7(7.1%)	91(92.9%)	6.485	0.090
Protestants	12(6.1%)	169(93.9%)		
Muslims	0(0)	5(100%)		
Marital status				
Single	5(8.6%)	53(91.4%)	0.508	0.776
Married	14(6.2%)	212(93.8%)		
Widowed/separated/divorced	0(0)	1(100%)		
Occupation				
Employed	4(9.8%)	37(90.2%)	1.159	0.763
Self-employed	4(5.3%)	72(94.7%)		
Un-employed	8(6.2%)	122(93.8%)		
Student	3(8.8%)	31(91.2%)		

The median (IQR) parity was 2(1, 3) and mean gestation period was 38.3(SD3.3) weeks  
The mean gestation age for the babies born preterm was 33.7±1.9

**Table 4.2. Gestational age of the preterm**

Gestational age	Frequency	Percentage
28-32	7	36.8
33-37	12	63.2

Majority of the mothers 211(74%) delivered through spontaneous vertex delivery while 72(25.3%) had caesarean, section and 3 (0.7%) had assisted vaginal deliveries. (Table 4.3 below)

**Table 4.3. Mode of delivery**

Mode of delivery	Term	Preterm	Total
Spontaneous vertex delivery	200(75.2%)	11(57.9%)	211(74%)
Assisted vaginal delivery	2(0.8%)	0(0)	2(0.7)
Caesarean section	64(24.1%)	8(42.1)	72(25.3)

Two hundred and seventy two (95.4%) of the mothers had a single baby and only 13(4.6%) had twins. None of those mothers who delivered twins had a preterm birth.

**Prenatal risk factors**

Only 24(8.9%) mothers had history of previous preterm deliveries and the median (IQR) number of previous preterm deliveries were 1 (1, 2). One out of the 24 who had history of previous birth had a preterm delivery. The mean antenatal visits were 3.8 (SD1.7)

Majority of the mothers 279(97.9%) and 223(78.2%) were tested for HIV and VDRL respectively during ANC. Only 87(31.5%) had RDTs for malaria done and 56(19.6%) had a urine analysis. Among the tested, 15(5.3%), 1(0.4%), 16(5.6%) and 35(12.3%) were positive for HIV, VDRL, RDTs for malaria and Urinalysis respectively (fig 4.2).

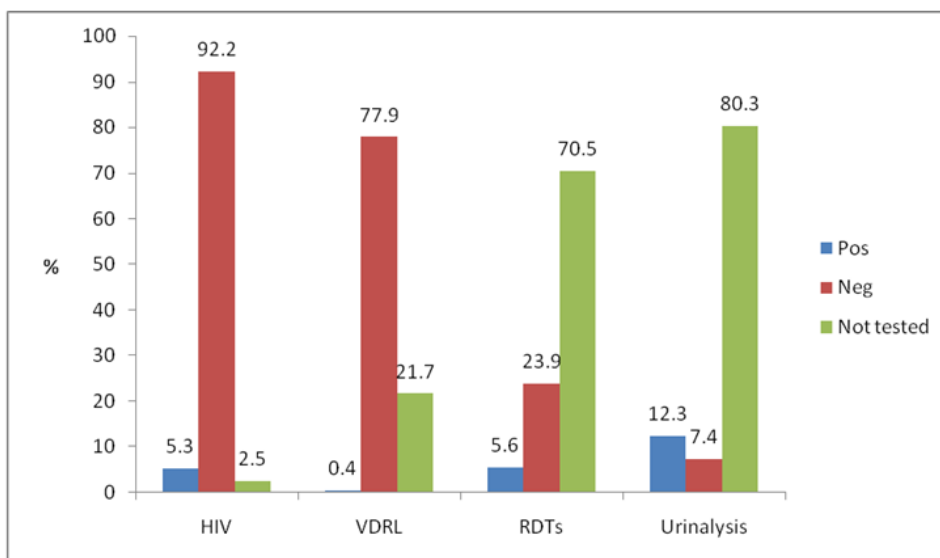


Fig 4.2: Antenatal profile test results

Hundred and fifty (52.8%) of the mothers had malaria during pregnancy, 42(14.9%) urinary tract infection and 18(6.4%) had severe pre-eclampsia/eclampsia (table 4.2)

Table 4.2 History of infections/ diseases during pregnancy

Condition	Term deliveries	Preterm	$\chi^2$	P-Value
Hypertension in pregnancy	10(100%)	0(0)	0.743	1.000*
Diabetes	1(100%)	0(0)	0.072	1.000*
Severe pre-eclampsia/eclampsia	14(77.9%)	4(22.2%)	7.382	0.024*
Urinary tract infection				
Periodontal infections	37(88.1%)	5(11.9%)	2.097	0.176*
Malaria	7(100%)	0(0)	0.519	1.000*
HIV	139(92.7%)	11(7.3%)	0.211	0.813*
STI	14(100%)	0(0)	1.069	0.609*
	2(100%)	0(0)	0.134	1.000*

\*--Fishers exact

Table 4.3: possible risk factors to preterm births

Factor	term	Preterm	statistic	P-Value
Use of illicit drugs/alcohol				
Yes	6(75)	2(25)	$\chi^2=4.446$	0.093
No	260(93.9)	17(6.1)		
Incidences of physical abuse/trauma/accident	24(100)	0(0)	$\chi^2=01.802$	0.381
Membrane rupture before onset of labour	58(95.1)	3(4.9)	$\chi^2=0.381$	0.773
Vaginal bleeding before onset of labour/delivery	11(73.3)	4(26.7)	$\chi^2=10.124$	0.012
History of cervical incompetence	2(100)	0(0)	0.146	1.000*

As in table 4.3, 24(8.4%) of the mothers had Incidences of physical abuse/trauma/accident during pregnancy of which 12(50%) reported accident. Sixty-two (21.8%) had Membrane rapture before onset of labour, 15(5.3%) vaginal bleeding before onset of labour/delivery, 2(0.7%) treated with history of cervical incompetence.

As indicated in table 4.4, severe pre-eclampsia/eclampsia and Vaginal bleeding before onset of labour/delivery were significantly associated with preterm birth (p=0.024 and p=0.012) respectively. Higher proportion of those who had severe pre-eclampsia/eclampsia had preterm birth compared to those who did not have (22.2% vs 5.7%). Similarly, higher proportion of those who had vaginal bleeding before onset of labour/delivery had preterm birth compared to those without (26.7% vs 7.4%).

**Table 4.4: Risk factors associated with pre-term**

Factor	Preterm birth		Statistic	p-value
	Term	Preterm		
Age (in years)	25(21, 28)	27(21, 29)	Z=1.080	0.280
Parity	2(1,3)	2(1, 3)	Z=0.351	0.725
Level of education (Mother)				
Primary	127(92)	11(8)	$\chi^2=1.416$	0.493
Secondary	92(92.9)	7(7.1)		
Tertiary	41(87.2)	6(12.6)		
Level of education (Husband)				
Primary	94(94.9)	5(5.1)	$\chi^2=3.773$	0.152
Secondary	61(95.3)	3(4.7)		
Tertiary	49(87.5)	7(12.5)		
Occupation				
Employed	35(85.4)	6(14.6)	$\chi^2=2.447$	0.485
Self employed	71(93.4)	5(6.6)		
Unemployed	120(92.3)	10(7.7)		
Student	31(91.2)	3(8.8)		
History of previous preterm				
Yes	22(91.7)	2(8.3)	$\chi^2=0.001$	1.000*
No	225(91.5)	21(8.5)		
Antenatal visits	3.8(sd 1.6)	3.4(sd 2.2)	t =0.973	0.332
History of infections/disease				
Yes	164(91.1)	16(8.9)	$\chi^2=0.139$	0.710
No	97(92.4)	8(7.6)		
Hypertension in pregnancy	10(100)	0(0)	$\chi^2=0.743$	1.000*
Diabetes	1(100)	0(0)	$\chi^2=0.072$	1.000*
Severe pre-eclampsia/eclampsia	14(77.8)	4(22.2)	$\chi^2=7.382$	0.024*
Urinary tract infection	37(88.1)	5(11.9)	$\chi^2=2.097$	0.176*
Periodontal infection	7(100)	0(0)	$\chi^2=0.519$	1.000*
Malaria	139(92.7)	11(7.3)	$\chi^2=0.211$	0.813*
HIV	14(100)	0(0)	$\chi^2=1.069$	0.609*
Sexually transmitted infections	2(100)	0(0)	$\chi^2=0.134$	1.000*
Use of illicit drugs/alcohol				
Yes	6(75)	2(25)	$\chi^2=4.446$	0.093
No	260(93.9)	17(6.1)		
Incidences of physical abuse/trauma/accident	23(100)	0(0)	$\chi^2=1.802$	0.381
Membrane rapture before onset of labour	58(95.1)	3(4.9)	$\chi^2=0.381$	0.773
Vaginal bleeding before onset of labour/delivery	11(73.3)	4(26.7)	$\chi^2=10.124$	0.012
History of cervical incompetence	2(100)	0(0)	0.146	1.000*

Provider initiated interventions to deliver mothers before term was reported in 8 (42.1%), among which 5(62.5%) underwent caesarean section and 3(37.5%) were induced. The reasons for provider initiated preterm birth were APH 3(37.5%), severe pre-eclampsia/eclampsia 3 (37.5%), foetal distress 1(12.5%) and preterm premature rupture of membranes 1(12.5%) as shown in the fig 4.3 below.

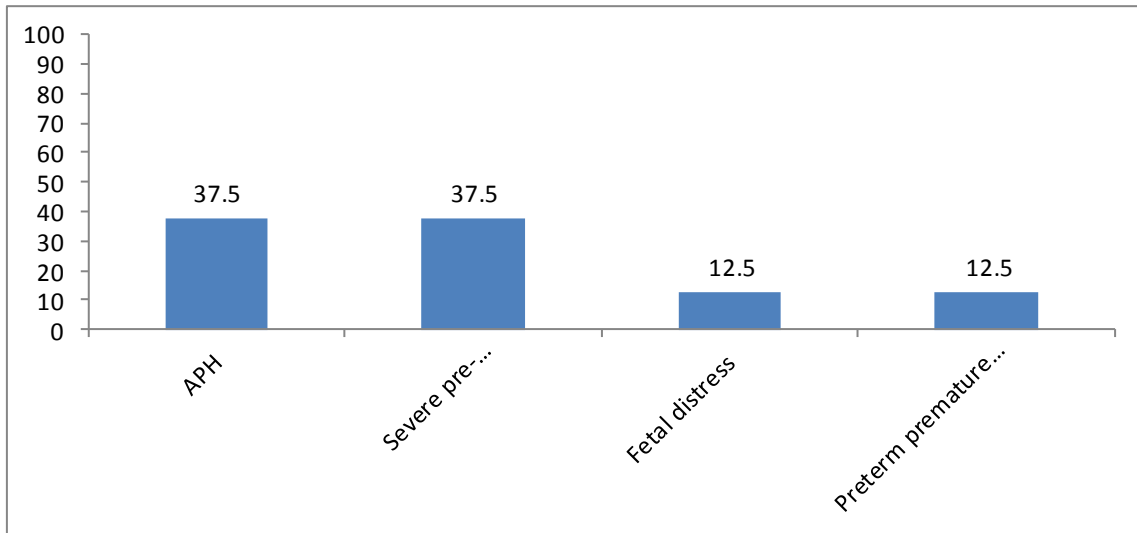


Fig 4.3 Reasons for provider initiated interventions for preterm birth

Table 4.5: Multiple binary logistic regression analysis of risk factors of preterm birth

Variable	Regression coefficient (β)	OR(95%CI)	p-value
Severe pre-eclampsia/eclampsia	1.470	4.351(1.218-15.542)	0.024
Vaginal bleeding before onset of labour/delivery	1.730	5.642(1.545-20.604)	0.009

As in table 4.5, those with severe pre-eclampsia/eclampsia were 4 times more likely to have preterm birth compared to those without (OR; 95%CI: 4.351;1.218-15.542). Similarly, those who had vaginal bleeding before onset of labour/delivery were almost 6 times more likely to have preterm birth compared to those without (OR;95%CI: 5.642; 1.545-20.604)

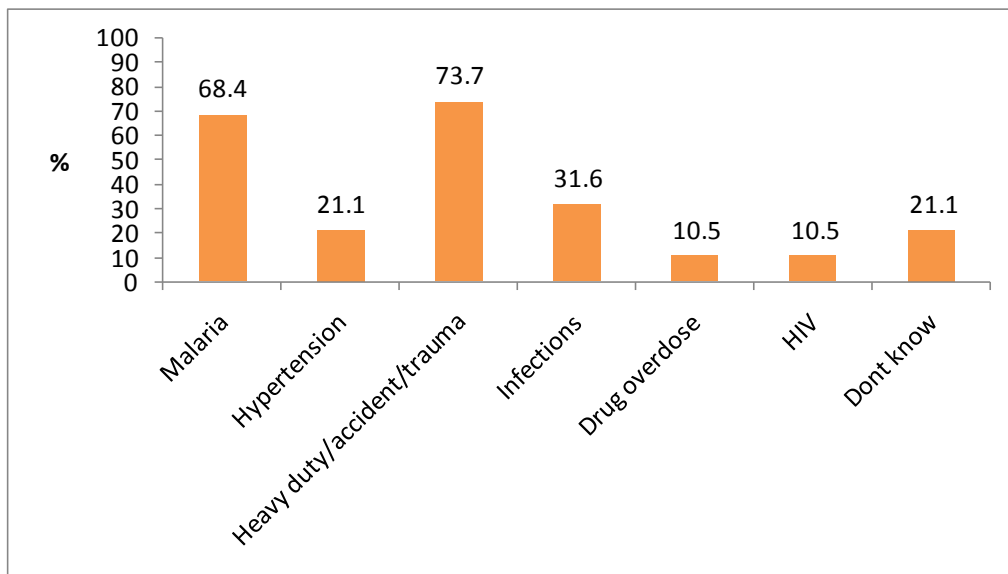
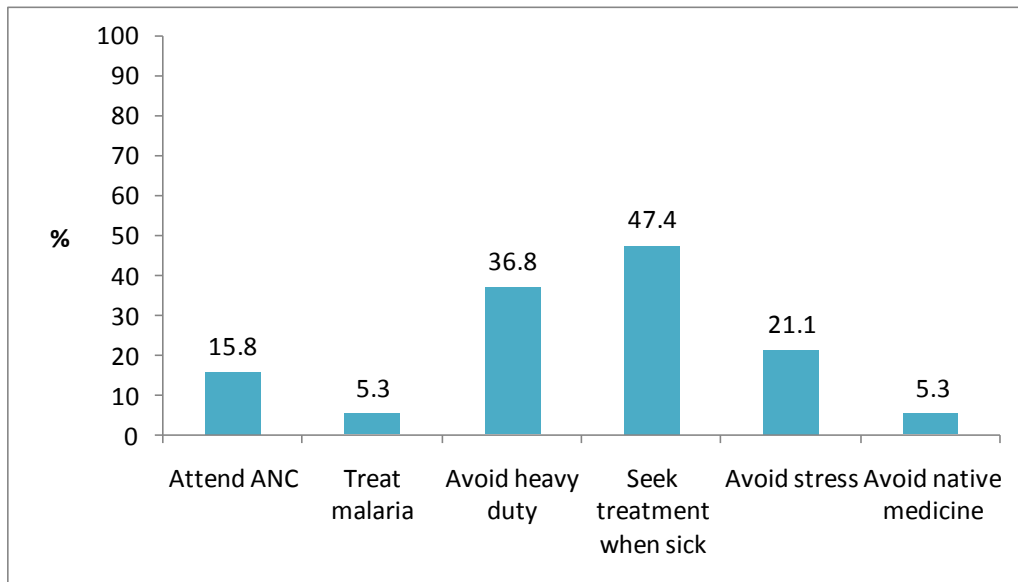


Fig 4.4. Mother's knowledge on the contributing factors to preterm birth (mothers with preterm only)

Majority of the mothers who had preterm births mentioned heavy duty/accidents /trauma and malaria as the causes of preterm birth. They also had knowledge on hypertension, infections, drug overdose and HIV as causes of prematurity, however, 21.1% of the mothers with preterm birth had no knowledge on the causes. Asked on the preventive measures of preterm birth, they said seeking early treatment when having any

infections, prevention and treatment of malaria, avoiding stress, attending antenatal clinic and the health information at the clinic and avoiding native medicine.

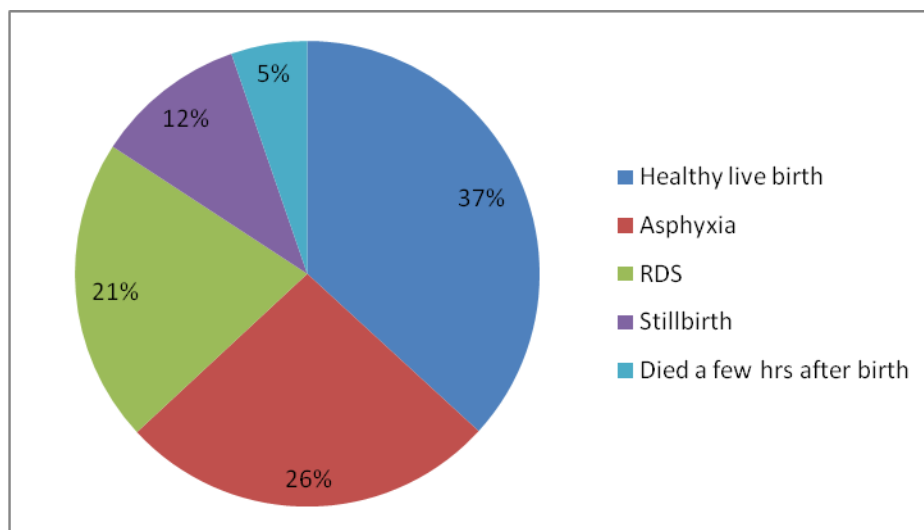


**Fig 4.5 Mothers Knowledge on prevention of preterm birth**

**Birth outcomes**

Majority of the babies 280(97.2%) were alive after birth and 5(1.8%) of the babies were stillbirths. Out of the 5 babies born stillbirth, 1 (20%) was a preterm and 4(80%) were term babies. Of the 285 babies born from mothers who participated in the study, forty (14%) had complications at birth, among which 10(25%) were preterm’s out of which one died few hours after birth.

Out of the 285 respondents, 19 mothers had preterm births among which, 7 (36.8%) were live healthy babies and were admitted in the newborn unit for specialised care, nine (47.4%) of the preterm’s developed complications after birth, 2 (10.5%) were stillbirths and 1 (5.3%) died few hours after birth. Of the preterm babies who developed complications, 5(26.3) had birth asphyxia, 4(21.1%) RDS.



**Fig 4.6: Birth outcomes of the babies born preterm**

**4.7.0 Key informants ---Nurse Ward in-charges**

Five nurse ward in-charges were interviewed to determine their awareness on the burden of preterm birth, their knowledge on the risk factors to preterm birth, perinatal outcome of babies born preterm and their views on how to prevent preterm birth and adequately manage babies born preterm for one reason or the other.

#### **4.7.1. Burden of preterm birth**

Concerning whether the nurse ward in-charges encounter preterm birth they all agreed to come across and manage them in the course of service delivery. One of the midwives said,

*“It is a common problem in this facility, many of the babies i nurse in the newborn unit are preterm, and admissions are like the order of the day, some are born in our maternity here and we also receive preterm babies from home and other facilities that lack incubators”*(Nurse ward in charge, 005).

#### **4.7.2. Risk factors for preterm birth**

The themes that strongly emerged under the risk factors for preterm birth include malaria, eclampsia, ant partum haemorrhage and preterm premature rupture of membranes. Urinary tract infection, foetal distress and trauma were also mentioned as risk factors.

##### **4.7.2 (a) Eclampsia**

Eclampsia was mentioned by all the nurse ward in-charges as a risk factor for preterm birth. One of the nurse ward in-charge admitted that:

*“You know when they come with eclampsia i cannot receive them in the ant natal ward even if the pregnancy is not term. The management of eclampsia is to deliver the baby because as long as the placenta is still in situ, the disease process cannot be reversed and the mother’s major organs can be damaged and lead to mortality”*(Nurse ward in charge, 001).

##### **4.7.2 (b) malaria**

Malaria was mentioned as a key risk factor for preterm birth and a major concern in the region. Majority stated that malaria was common despite the antenatal interventions and has been known to cause premature birth. One of the nurse ward in-charge stated that:

*“In fact malaria can actually cause preterm birth, i was nursing a mother with malaria in pregnancy at 32 weeks gestation, she had fever and rigors but never complained of labour pains and so we never bothered to perform a vaginal examination on admission. Just after i put her in bed and started her on treatment and was going back to the nursing desk, she pushed a preterm baby in the bed by herself”* (Nurse ward in charge, 001).

##### **4.7.2 (c) Preterm premature rupture of membranes**

Amniotic fluid is known to cushion the foetus and offer protection. Early rupture of membranes can encourage ascending infections to the uterus causing chorioamnionitis which is a severe infection that can lead to maternal or foetal mortality. Rupture of membranes before pregnancy is term was also mentioned by all the nurse ward in-charges as a cause of preterm birth. One of the in-charges said that:

*“When we receive the mothers with PPRM, we take them for ultra-sound, if the quantities of amniotic fluid can allow her to be given antibiotics and delay birth we admit in ante natal ward if not, we deliver by safest mode possible. ....In fact some when you do a speculum and the cervix is already open, we do not even go for ultra-sound, we just deliver them”*(Nurse ward in charge, 002).

##### **4.7.2 (d) Trauma**

Trauma also emerged as a risk factor for preterm birth. Most of the traumas cause early separation of the placenta leading to per vaginal bleeding. One of the nurse ward in-charges commented that:

*“.....there is one mother we received for caesarean section due to placenta abruption after a motorcycle accident.....”*(Nurse ward in charge, 003).

#### **4.7.3 Provider initiated factors to preterm birth**

The nurse ward in-charges when asked about provider initiated preterm birth admitted that at times the mothers labour may need to be induced or she may need to have a caesarean section before term. Among the reasons emerging for a decision to be made by the medical personnel to deliver the mother before term included ante partum haemorrhage, eclampsia, PPRM, foetal distress and cord prolapse.

##### **4.7.3 (a) Ante partum haemorrhage**

Ante partum haemorrhage is bleeding per vagina during pregnancy that occurs after 28 weeks gestation and before onset of labour for a variety of reasons. Placenta praevia and abruption were mentioned by the nurse ward in-charges as the major causes of ante partum haemorrhage at the county hospital. One of the nurse ward in-charge had this to say;

*“Of late ante partum haemorrhage is common and once there is massive bleeding, we prepare the mother for caesarean section because if we delay we may lose the mother, baby or both”* (Nurse ward in charge, 002).



#### **4.7.3 (b) Eclampsia**

Eclampsia equally emerged strong as a reason to initiate preterm birth. This is a condition characterised by fits reducing oxygen supply to the brain and risking cardiovascular accident apart from the other damage caused to other organs like the liver, kidneys, heart and lungs. All the nurse ward in-charges mentioned it as a reason to preterm birth. One of the midwives said:

*"We do our best to deliver the mothers who come in with eclampsia in 12 hours, if we induce and the cervix fails to dilate, we prepare and take them for caesarean section"*(Nurse ward in charge, 002).

#### **4.7.3 (c) Foetal distress**

Foetal distress emerged as a reason to initiate preterm birth. In foetal distress the foetus is not getting enough oxygen for one reason or the other. It is difficult to diagnose foetal distress during pregnancy unless a foetal heart is taken or ultra-sound done. Some mothers experience reduced foetal movements and if reported can help in follow up. One of the midwives stated that:

*"Majority of the mothers that we deliver preterm due to foetal distress usually have other reasons that brought them to the hospital like severe pre-eclampsia, per vaginal bleeding, malaria.....once we notice the foetus is getting distressed, we just prepare and section"* (Nurse ward in charge, 002).

#### **4.7.3 (d) Preterm premature rupture of membranes**

Preterm premature rupture of membranes was also identified as a risk factor to preterm birth by all the nurse ward in-charges. It is when the sack of membranes that protect the foetus rupture and amniotic fluid is drained. They all said that many at times what follows is either induction of labour or caesarean section.

#### **4.7.4 Birth outcomes**

When asked about the outcomes of the babies born preterm, the nurse ward in-charges stated that some of the babies are stillbirth, some have complications at birth or after birth and some are admitted in the new born unit just for specialised care. Concerning the outcomes, one nurse midwife said:

*"Some of the preterm's we section in theatre are stillbirth; we just do so to save the life of the mother like in most of the ante partum haemorrhage"* (Nurse ward in charge, 003).

Concerning the major complications experienced by preterm babies, the common complications mentioned were asphyxia, respiratory distress syndrome and hypothermia. One of the nurse ward in-charges also mentioned hypoglycaemia, sepsis and jaundice.

#### ***Respiratory distress syndrome***

The lungs of preterm babies are immature and lack surfactant factor. RDS is a serious complication in the newborns that may result in permanent disability. The nurse ward in-charges reported that it is very common among the preterms and one had this to say:

*"Majority of the preterm's that die in the newborn unit is as a result of RDS....."*(Nurse ward in charge, 005).

#### ***Asphyxia***

Asphyxia also came up strongly as a complication among the preterm babies, due to the immaturity of the lungs; gaseous exchange along the alveoli is inadequate causing tissue hypoxia. One nurse ward in-charge said that:

*"Asphyxia is common among the preterm, majority of those i have assisted at birth have had poor scores and needed resuscitation"* (Nurse ward in charge, 002).

#### ***Hypothermia, jaundice and sepsis***

One nurse ward in-charge mentioned hypothermia, jaundice and sepsis as some of the complications the preterm baby's experience. She stated that:

*"...of course the preterm babies are prone to many complications, among those we nurse here, we try to prevent sepsis, but we have had our preterm here develop sepsis. At times the incubators are full and we allow the babies to share, we were nursing one on the cot and despite the fact that we had covered him, he developed hypothermia although we noticed in good time. In this unit, we also notice jaundice among the preterm babies....."*(Nurse ward in charge, 005).

#### **4.7.5. Nurse wards in-charges views on the interventions towards prevention of preterm birth.**

Majority of the nurse ward in-charges believed that good antenatal monitoring could be key in prevention as well as early diagnosis and management of risk factors to preterm birth. Screening for infections,

early diagnosis and treatment of infections and preventing trauma were also said to be interventions that can help prevent preterm birth. One of the nurse ward in-charge said:

*“My feeling is antenatal monitoring can help pick up some of the predisposing factors to preterm and manage them in good time”*(Nurse ward in charge, 001).

Another nurse ward in-charge concurred with the above and said;

*“We need to intensify ANC, educate the community on the need for ANC, ensure proper monitoring of the mothers who come for the care and teach them on the prevention of preterm birth and early identification of danger signs to preterm birth”*(Nurse ward in charge, 003).

#### **4.7.6. Views on what can be done to improve the management of preterm babies**

Different views were given on how we can improve the management of babies born prematurely including;

- Improve on staffing
- Equip the facility to manage complications that preterm babies develop
- Have refresher courses among health workers on the management of preterm babies.

The following excerpts are illustrative:

*“If we can have the necessary equipments like piped wall oxygen, enough incubators and the staff trained in the care of the preterm my feeling is we can promote good management”*

*“.....sister i have 8 nursing staff in the unit, 2 are alternating night duty, two are students at Masinde Muliro and they are preparing for exams, one is on leave.....so at the moment i count three nurses, each entitled to 2 day offs in a week.....if we can improve on staffing we can offer quality care to the babies* (Nurse ward in charge, 005).

The community advocacy and education was also mentioned as a key intervention in improving the management of preterm babies. Some of the preterm babies were said to be admitted from home with severe complications like hypothermia and majority develop sepsis. One nurse ward in-charge said:

*“We need to start from the community, at times we receive preterm's born at home, they need to understand on how to diagnose preterm labour and the need to have hospital delivery, majority come with complications that maybe could have been prevented....managing this complications at times is difficult”*(Nurse ward in charge, 002).

## **V. Recommendations**

Preterm birth may result from associated factors of which if diagnosed early in the prenatal period, can be prevented. Therefore, comprehensive antenatal profile should be carried out even at the lower level facilities and mothers need to be monitored more closely in the antenatal clinic in order to diagnose and manage some of the risk factors on time. Close monitoring and control of blood pressure in pregnancy should be intensified to limit the chances of severe pre-eclampsia/eclampsia, which have significantly been seen to lead to preterm births. Systems should be put in place so that pregnant mothers are screened and an early diagnosis of placenta praevia done and interventions like bed rest to prevent preterm labour undertaken. Since some of the causes of preterm birth are unexplained or inevitable, health facilities should be equipped well enough to manage babies born preterm including training of health personnel. Studies on more aggressive treatment of ante partum haemorrhage and prevention of severe eclampsia/eclampsia should be done as they are significantly associated with preterm birth. Since this was a facility based study and cannot be generalized to other counties, similar studies to generate population-based evidence should also be undertaken mainly in low-income countries Kenya included

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Jacinta Angote Mbelesia. " Factors Associated With Pre-Term Birth among Women Delivering At The Kakamega County Hospital and Birth Outcome." *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, vol. 8, no.02 , 2019, pp. 16-27.