

## Health Facility Factors Influencing the Implementation of PTBI during the Provision of Intrapartum and Perinatal Care in Embu County

<sup>1</sup>Edith Wamuyu Ndwiga, <sup>2</sup>Professor Margaret Keraka, <sup>3</sup>Dr. Maurice Kodhiambo\*

<sup>1</sup>School of Public Health of Kenyatta University.

<sup>2</sup>Department of Population and Reproductive Health, Kenyatta University

<sup>3</sup>Department of Pharmacy, Kenyatta University

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### ABSTRACT

**Purpose:** The objective of the study was to establish the health facility factors (HFF) influencing the implementation of PTBI during the provision of intrapartum and perinatal care in Embu County

**Methodology:** The study used a cross-sectional design. Random sampling technique was used to determine the sample size of 94 HCP, while the Purposive sampling technique was used to sample 24 client files (a quarter of the sample size) and 5 Key informants. The study was conducted in three hospitals in Embu County, Kenya. Questionnaires and document review guides were used to collect quantitative data and Key informant interview (KII) guides were used to collect qualitative data. Data analysis was done using SPSS version 21, descriptive statistics; Chi squares, Fisher's test, and binary logistic model. Qualitative data were categorized into themes. Data findings were presented using tables and charts.

**Results:** The findings in this study revealed that the majority of HCP in the maternity unit who agreed with the statement that adequacy of HFF influences implementation of PTBI were associated with the low implementation of PTBI as compared to those who disagreed. On the other hand, those HCP who agreed that there was adequate HFF were also associated with the low implementation of PTBI as compared to those HCP who disagreed. The findings further revealed there were inadequate staff, transport, and finances while drugs and equipment were adequate. The former three are important aspects in the implementation of PTBI and their inadequacy may lead to the low implementation of PTBI. In addition, this study also revealed that the highest number of respondents reported HFF affects the implementation of PTBI to a large extent as compared to those who reported moderately and low extent respectively. Respondents' responses were echoed by the 5 KIIs of whom, four reported that the level of implementation is affected by HFF to a moderate and large extent respectively.

**Unique contribution to theory, policy and practice:** In addition, the study recommends the county government consider improving HFF by; providing facilities for KMC, improving transport facilities, recruiting more skilled staff, and increasing funding in the field of midwifery/reproductive health to enhance the implementation of PTBI. Adequate funding will enhance staff recruitment, maintenance of transport, and timely procurement of drugs and equipment. Consequently, promoting the implementation of PTBI.

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\*E-mail addresses: [wamuyuedith@yahoo.com](mailto:wamuyuedith@yahoo.com) (Wamuyu Ndwiga, E.), [margaretkeraka@ku.ac.ke](mailto:margaretkeraka@ku.ac.ke) (Keraka, M.), [mauricekodhiambo@ku.ac.ke](mailto:mauricekodhiambo@ku.ac.ke) (Kodhiambo, M.)

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## 1.0 INTRODUCTION

### 1.1 Background of the Study

Globally, PTB accounts for 35% of the world's NND and second leading cause of death among children under five years, after pneumonia (WHO, 2015). Implementation of PTBI would reduce over 1 million out of 6 million child deaths occurring globally, due to complications arising from PTBO (Yarney *et.al.*, 2016). According to WHO (2015), studies show that of the interventions, antenatal corticosteroids prevent 400,000 deaths, Kangaroo Mother Care prevents 450,000 deaths annually and antibiotic prophylaxis prevents PTBO following preterm premature rupture of membranes (PPROM.) while resuscitation saves 4 out of 5 babies who need basic resuscitation (WHO, 2014) Without an intense focus on reducing PTB and resulting deaths, the world would struggle to achieve the Every Newborn Action Plan goal of driving newborn deaths to 12 per 1,000 live births by 2030 (March of Dimes, 2015). Kenya may as well fail to achieve its target of decreasing the neonatal mortality rate to 18 per cent by 2020, the realization of vision 2030, the constitution of Kenya 2010, the Health Strategic Investment Plan 2014-18 and SDGs. 3 (RMNCAH, 2016).

World Health Organization (WHO) recommends 10 elements in PTBI namely; antenatal care (ANC) corticosteroids, Tocolytics, magnesium sulphate; Kangaroo mother care (KMC), and surfactant antibiotic prophylaxis, mode of preterm birth and, plastic wraps, continuous positive airway pressure therapy, and oxygen therapy for the newborn (USAID, 2014). However, the researcher intends to study the implementation of PTBI during intrapartum and perinatal care periods namely; ANC corticosteroids, tocolytics, resuscitation (oxygen therapy), provision of

warmth through Kangaroo mother care (KMC)/incubator and antibiotic prophylaxis. Despite the interventions put in place the implementation of PTBI is low in middle- and low-income countries (Yarney, 2016), this is reaffirmed in an evidence-based clinical uptake of PTBI during the intrapartum period in a multicounty study in 18 WHO priority countries with Kenya included (WHO, 2015).

Health care providers (HCP) play a key role in the implementation of PTBI since they are wholly involved in the provision of PTBI to women at the primary level (preconception period) secondary (antenatal period) and in tertiary (intrapartum and Perinatal periods). They are also key people in implementing policies, and protocols and following the set standards in the implementation of PTBI while the leadership/ management is involved in providing an enabling environment for the implementation of the same, monitoring and evaluation to ensure effective implementation of PTBI. Therefore, the study is worth undertaking. The study aimed to establish the health facility factors influencing the implementation of PTBI during the provision of intrapartum and perinatal care in Embu County.

The choice of the study hospitals in Embu County was guided by the rate of increase of PTB and neonatal deaths related to prematurity. Subsequently, preventing PTB and improving PTBO consequently, increase the chances of survival of premature babies' lies entirely on care provided by the HCP to women with imminent PTB during the intrapartum period and immediate care to premature babies. Intrapartum and perinatal periods are critical periods in which the HCP thinks critically through assessing the health

problem, makes a diagnosis, prioritizes the care needed, implements promptly and evaluates the progress to save a life. Despite various studies carried out on PTB worldwide, there are limited studies on the implementation of PTBI among HCP during the provision of intrapartum and perinatal care. Specifically, in Embu County, there are no studies on the implementation of PTBI among healthcare providers. Therefore, study findings will help bridge knowledge gaps in the implementation of PTBI and ease future programmes and policy formulation at national and county levels. The study will as well generate baseline data for future reference in the field of reproductive health specifically PTBI, thus enhancing the implementation of PTBI in Embu County.

### 1.2 Statement of the problem

Globally, neonatal deaths account for 45% of under-five deaths, with prematurity contributing 16% (WHO, 2015). According to WHO (2015), 70% of these deaths occur in Africa in South and East Africa. However, 80% of these deaths are preventable through scientifically proven low cost-effective methods (PTBI). But efforts to reduce these deaths remain futile since, the decline of childhood deaths related to prematurity remains low at 2.1% as compared to an overall childhood death reduction of 4.1% annually (WHO, 2015). Similarly, in Kenya despite the PTBI, strategies and policies put in place, the country continues to experience worrying figures on rising PTB (MOH, 2014). Specifically, Embu County PTB increased by (24.6%) in 2016 (CHIS, 2016) consequently, risking survivors to life-threatening health problems, social - economic implications and limiting chances of their survival. Study hospitals (ETRH, Ishiara Sub-County and Mbeere Sub-County hospitals) contributed (54.6%)

to neonatal deaths in the county of which 50% was attributed to prematurity. Similarly, in Kenya and specifically Embu County there is scanty information and literature on the implementation of PTBI among health care providers. Therefore, it is through this information that the study sought to establish the health facility factors influencing the implementation of PTBI during the provision of intrapartum and perinatal care in Embu County

### 1.3 Research Objective

To establish the health facility factors influencing the implementation of PTBI during the provision of intrapartum and perinatal care in Embu County.

### 1.4 Research questions

What are the health facility factors influencing the implementation of PTBI during the provision of intrapartum and perinatal care in Embu County?

## 2.0 LITERATURE REVIEW

### 2.1 Conceptual /Theoretical framework

Theoretical frameworks and conceptual models, define conceptual and operational definitions and discuss how theoretical frameworks and conceptual models guide research design (Graff et al., 2014). The theoretical framework provides the structure of the study, the theory describes, explains, and predicts phenomena of interest (Graff et al., 2014) while the Conceptual framework shows the variables in the study. Therefore, in this study, the researcher focuses on the health facility factors influencing the implementation of PTBI during the provision of intrapartum and perinatal care in Embu County. Intrapartum and perinatal care are critical in that it determines the outcome of PTB and subsequent survival of the premature baby. HCP thinks critically, prioritizes care, and acts promptly and consistently to save a

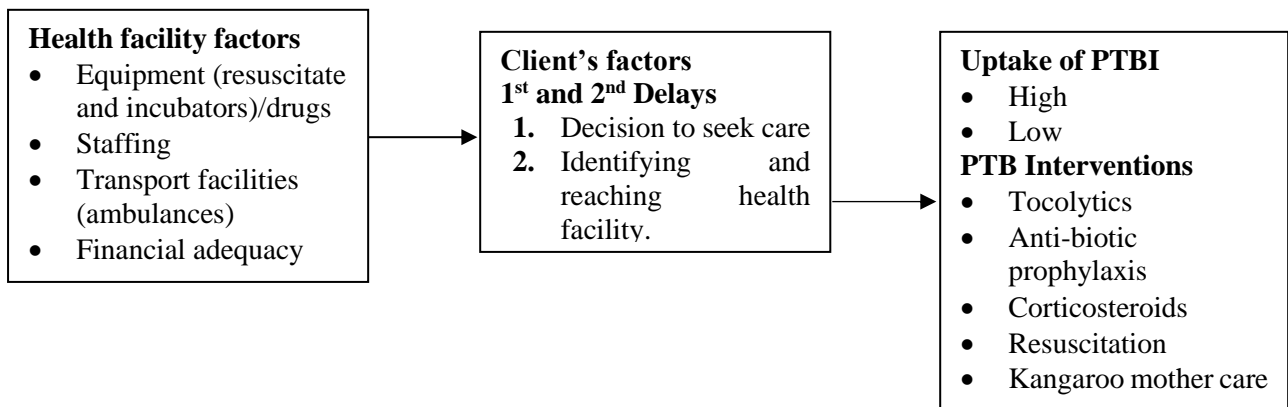
life. Study variables are independent and dependent. An independent variable is what is varied during the research; it is what the investigator predicts will affect the dependent variable (Harrison, 2005) namely; health facility factors influencing the implementation of PTBI. A dependent variable is what was measured; it was the outcome and it was what the investigator predicted would be affected during the research by the independent variable (Silverman, 2004). In this study implementation of PTBI was the dependent variable name; the implementation of PTBI among HCP was either high or low. The study adopted the health belief model (HBM) which was a psychological model first developed in 1950 by social psychologists Hochbaum, Rosenstock and Kegels in the US public health services.

The HBM was based on the understanding that a person will take a health-related action in this case ( the HCP enhanced implementation of PTBI to improve the PTBO to reduce complications arising from PTB and if that person: feels that a negative health condition (PTBO) can be avoided, has a positive expectation that by taking a recommended action (i.e. Tocolytics, corticosteroid, resuscitation and antibiotic prophylaxis), she/he avoided a negative health condition (PTBO) and that the action was effective at improving PTBO, and believes that she/he could successfully implement the recommended health action and use it comfortably and consistently to increase the survival rates of premature babies. The conceptual framework below illustrated the independent and dependent variables of the study.

**Independent variable**

**Intervening variables**

**Dependent variables**



**Figure 1: Conceptual Framework**

**2.4 Health Facility Factors that influence the implementation of PTBI**

Health Facility Factors (equipment, resuscitate and incubators)/drugs, staffing, transport facilities (ambulances) and financial adequacy) may hinder or promote the implementation of PTBI consequently, leading to the poor or good outcome of PTB. This is affirmed by USAID (2015) whose report stipulates that world health

systems including those lacking leadership or having inadequate staff and supplies, underlie poor health, and can also contribute to poor health outcomes. The report further indicated that inadequate financing and budgetary allocation as well as poor infrastructure, poor or disjointed information and lack of data for improved policy formulation and implementation, ensure weak systems remain weak. Weak

systems can be a great barrier to the implementation of preterm birth interventions among healthcare providers. This is affirmed in a study carried out in Uganda by Gertrude et.al. (2015). Gertrude stipulates that integration of the targeted interventions into a health system is difficult and complex, especially in a weak health system. Yet, strengthening health systems to deliver services equitably and efficiently is crucial for achieving improved maternal and newborn care. The study by Gertrude further stipulates that Ameh *et al.* (2016) further reported that despite the availability/adequacy of financing, procurement of equipment is a key challenge in health facilities, where senior HCP who are involved in budgeting and procurement procedures, may be unaware of what specifications to ordering in terms of a correctly-sized self-inflating bag, valve pressure, and mask size for neonatal resuscitation and other requirements. This may hinder effective implementation of PTBI. Furthermore, Ameh further stipulates that in all countries assessed, major deficiencies exist for essential newborn care, supplies and equipment's, as well as for health care provider's knowledge and performance of key routine newborn care practices, particularly for immediate skin-to-skin contact. This is affirmed in a study carried out in Uganda by Gertrude *et.al* (2015). Gertrude reported that most health facilities lacked infrastructure, equipment, drugs, supplies and protocols for newborn care, and the majority of health workers lacked knowledge and skills to care for vulnerable neonates. Gertrude reported that while equipment levels remained high after initial improvement efforts, maintaining supply of

even the most basic medications was a challenge since less than 40% of health facilities reported no stock outs.

### **3.0 RESEARCH METHODOLOGY**

#### **3.1 Study design**

The research adopted cross-sectional study design to investigate implementation of PTBI among health care providers in Embu County. The research design enabled the researcher to collect the required data within a short duration of time. The study was descriptive.

#### **3.2 Study Variables**

##### **3.2.1 Dependent variable**

Implementation of PTBI. This was the outcome of the study namely: the implementation of PTBI among HCP (high or low). Low implementation and high implementation were measured in terms of how many interventions were implemented. Healthcare providers who implemented 3 and above PTBI were associated with a high rate of implementation while those who had implemented below 3 were associated with low implementation.

##### **3.2.2 Independent variable**

The Independent variable was the health facility factors in Embu County.

##### **3.2.3 Location of the study**

The study was conducted in Embu County. Geographically the study is limited to Embu County hospitals (ERTH, Ishiara Sub-County and Mbeere Sub-County), hence only HCP working in a maternity unit in those facilities were recruited for the study.

### 3.3 Study population

**Table 1: Study Population and workload (CHIS 2015)**

Hospital	No of the Nurses and Midwives in the Maternity unit.	Number to be sampled	No of deliveries	No of PTB	Neonatal deaths
ETRH	90	78	5413	151	132
Ishiara Hospital	12	11	985	27	9
Mbeere Sub-County	6	5	780	15	12
<b>Total</b>	<b>108</b>	<b>94</b>	<b>7178</b>	<b>193</b>	<b>153</b>

Table 1 above, illustrates the study population and the workload. The study population are the health care providers (nurse midwives) working in the maternity unit. This is the department that provides intrapartum and perinatal care with a total population of 108 nurses. The findings demonstrated a critical nurse midwives' shortage since one nurse is serving more patients than the recommended ratio of 1:8. This compromised care due to burning outs and could be attributed to the low implementation of PTBI in Embu County and high levels of neonatal deaths

### 3.4 Sampling techniques and Sample size

The study used two types of sampling techniques namely: Purposive (Judgmental) and random sampling techniques. Purposive (Judgmental) sampling which is a non-probability technique was used to select hospitals since they are leading with PTB cases in the county and for the Key informants since they possess the desired characteristics of leadership (obstetrician/gynaecologist, paediatrician, MO and nurse in charge). According to Anjum *et al.* (2015),

Purposive sampling, also known as judgmental, selective or subjective sampling, reflects a group of sampling techniques that rely on the judgment of the researcher; when it comes to selecting the units that are to be studied. Simple random sampling which is a probability sampling technique was used to select study subjects. Thus, all the respondents had an equal opportunity of participating in the study. The desired sample size in hospitals was allocated proportionally as indicated in Table 2

**Table 2: Proportionate Allocation of sample size**

Hospital	No of Nurses Midwives in Maternity unit.	Number sampled	Percentage
ETRH	90	78	83
Ishiara Hospital	12	11	12
Mbeere Sub-County	6	5	5
<b>Total</b>	<b>108</b>	<b>94</b>	<b>100</b>

### 3.5 Construction of research instruments

Data was collected using self-administered structured questionnaires; Key informant interview guides (KIIs) and a document review guide. KIIs collected data from 5 health workers (nurse in charge of a study maternity unit, M.O /CO, obstetrician/gynaecologist, paediatrician). The questionnaires collected data on the implementation of PTBI, and the health facility factors in Embu County. According to (Mugenda, 2011), a structured questionnaire provides comparability of responses and facilitates analysis. A document review guide was used to collect data from client files. Research instruments were constructed based on the study subjects, literature review contents and the study variables as indicated in the conceptual framework.

### 3.6 Data collection technique

Quantitative and qualitative data were collected using a self-administered questionnaire and the KIIs. Three assistants knowledgeable in midwifery participated in the training to equip them with the knowledge and skills necessary for data collection. The training covered the purpose of the research, its objectives and the process of administering the study instruments. They were also involved in a pre-test to familiarize themselves with the study instruments. During the pre-test, the

researchers assessed their effectiveness and help in solving problems that may arise.

### 3.7 Data Management and Analysis

This is the separation and categorisation of data into groups to understand its meaning. Before categorisation, the data collected was subjected to cleaning, entering and coding in excel and then analyzed using Statistical Package for Social Sciences (SPSS) version 21. The analysis was done using descriptive statistics namely; frequency distribution, percentages distribution, measures of central tendency and measures of dispersion. Chi-square and logistic analysis were conducted to find the relationship between variables hence concluding the hypothesis. The following models were used to test the hypotheses based on the relationship between variables:

$$\text{Prob} (Y = 1/ X_1, X_2, X_3 \dots X_n) = \beta_0 + \beta_1 X_1 + \varepsilon$$

$$\text{Loggitz} = \ln \frac{P}{1-P} \text{ where } z = \beta_0 + \beta_1 X_1 + \varepsilon$$

and  $\beta_1$  are, respectively, the dimension of variables influencing the health care provider, that is hypothesis to the uptake of PTB interventions and the associated coefficient, while  $p$  is the probability of uptake of PTB interventions associated with  $x_i$ ;  $\varepsilon$ ' is the error term.



$\alpha_0 = \text{Constant}$

Y= 1 or 0 (1= High Uptake of PTB interventions and 0 is low uptake of interventions). Whereby, less than 3 interventions represented low uptake while 3 or more

interventions represented high uptake of interventions.

X = Health facility factors in Embu County

$\varepsilon$  = error term

Data presentation was in tables and charts for easy interpretation.

(nurses) in the maternity unit was 94. A total of 93 questionnaires were properly filled and returned. This represented an overall successful response rate of 98.99% as shown in Table 3.

## 4.0 FINDINGS AND PRESENTATIONS

### 4.1 Response Rate

The number of questionnaires that were administered to the health care providers

**Table 3: Response Rate**

Response	Frequency	Percentage
Returned	93	98.99%
Unreturned	1	1.01%
<b>Total</b>	<b>94</b>	<b>100%</b>

### 4.2 Health Facility Factors influencing Implementation of PTBI among Health Care Providers during provision of Intrapartum and Perinatal care in Embu County

#### 4.2.1 Health Care Provider's opinion on (HFF) influencing implementation of PTBI

The results in Table 4 revealed that on the average highest number of the respondents (69.6%) agreed with the statement that HFF influences the implementation of PTBI as compared to those who disagreed and those who remained neutral (30.2 %). On a five-point scale, the average mean of the responses was 3.94 which means that the majority of the respondents agreed with the statements; however, the answers varied from the mean as shown by a standard deviation of 1.24.

**Table 4: Health Care Provider’s opinion on (HFF) that influence the implementation of PTBI (n=93)**

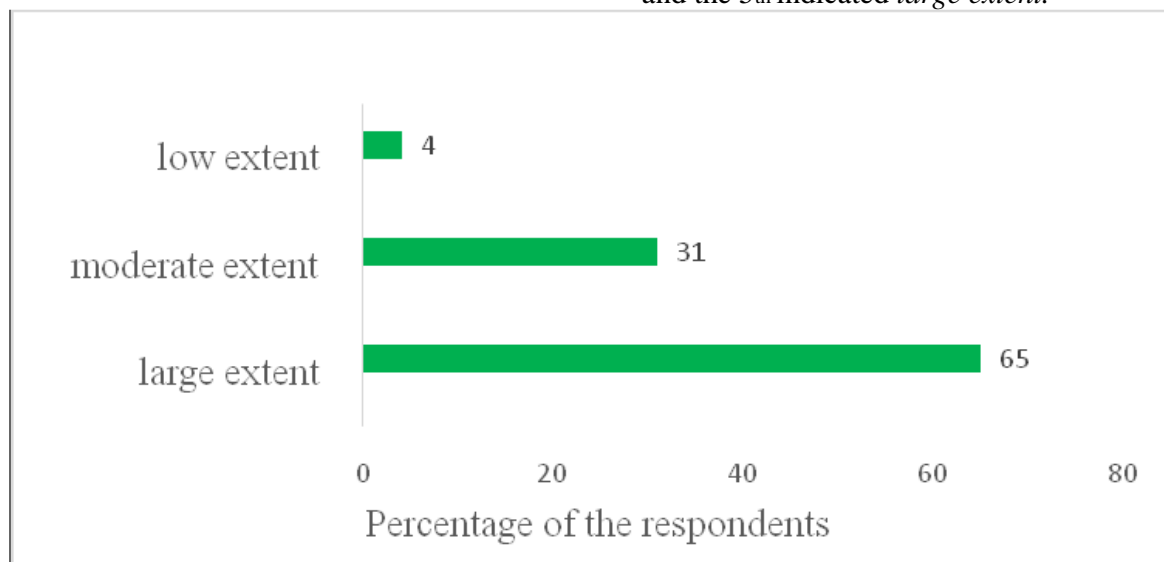
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std Dev
Equipment (resuscitate and incubators)	2.15	5.38	17.2	25.81	49.46	4.15	1.03
Drugs							
Staffing	7.53	6.45	16.13	22.58	47.31	3.96	1.26
Transport facilities (ambulances)	4.3	13.98	12.9	21.51	47.31	3.94	1.25
Financial adequacy	12.9	9.68	12.9	21.51	43.01	3.72	1.43
<b>Aggregate</b>					<b>3.94</b>		<b>1.24</b>

**4.2.3 Extent at which Health Facility Factors Affect the implementation of PTBI**

The results in Figure 1 revealed that the highest n=60 (65%) of the respondents, revealed that HFF affects the level of implementation of PTBI to a large extent

while the least n=4 (4%) revealed a low extent. 52

The KIIs gave varied responses on how HFF affect the level of implementation of PTBI whether to a large extent, moderate or to a low extent. The KIIs 1 and 2 indicated moderate extent, 3rd low extent while the 4th and the 5th indicated large extent.



**Figure 1: Extent at which Health Facility Factors affect the implementation of PTBI (n=93)**

#### 4.2.4 Relationship between Health Facility Factors and Implementation of PTBI

The first categories of each variable were used as a reference point as shown in the results in Table 5. The results revealed a statistically significant association between the influence of HFF {FET= 3.077, df = 92,

OR= 0.947: 95% CI: 2.538-0.532, P= 0.009< 0.05}}, adequacy of HFF (FET = 2.372, p= 0.007) and implementation of PTBI. However, a statistically insignificant association was found in all the categories of the extent to which HFF affects the implementation of PTBI (FET=1.597, p= 0.468>0.05) and implementation of PTBI. 53.

**Table 5: Relationship between Health Facility Factors and Implementation of PTBI (n=93)**

Health Facility Factors		Rate of Implementation of PTBI		P value	OR	CI (Lower)	CI (Upper)	Statistical Significance
		Low	High					
Influence of HFF on implementation of PTBI	Disagree	4(8.2%)	9(20.9%)	0.000	1	1	1	FET=3.077, p= 0.009
	Agree	45(91.8%)	34(79.1%)	0.043	2.538	0.532	12.102	
Adequacy	Disagree	9(18.4%)	12(27.9%)	0.000	1	1	1	FET=2.372, p= 0.007
	Agree	40(81.6%)	31(72.1%)	0.006	1.003	0.289	3.478	
Extent into which HFF affect implementation.	Large Extent	31(63.3%)	29(65.9%)	0.632	1	1	1	FET=1.597, p= 0.468
	Moderate Extent	17(34.7%)	12(27.3%)	0.457	0.405	0.037	4.389	
	Low Extent	1(2%)	3(6.8%)	0.359	0.315	0.027	3.729	

The variable in this model (HFF) shows a 15.8% of the variation in the dependent variable (implementation of preterm birth

interventions) which is represented by a Nagelkerke R Square of 0.158.

**Table 6: Model summary of Bivariate Logistic Regression Analysis**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	123.041a	0.044	0.158

## 5.0 SUMMARY, CONCLUSION AND RECOMMENDATION

This section presents the discussion and the recommendations on the research findings done in line with the study objectives. The discussion was done to answer the research questions of the study.

## 5.1 Summary of the findings

This section provides a summary of the findings, which were done in line with the objectives of the study.

#### **5.1.4 Health Facility Factors influencing implementation of PTBI during provision of intrapartum and perinatal care in Embu County**

The findings in this study revealed that the majority of HCP in the maternity unit who agreed with the statement that adequacy of HFF influences implementation of PTBI were associated with the low implementation of PTBI as compared to those who disagreed. On the other hand, those HCP who agreed that there was adequate HFF were also associated with the low implementation of PTBI as compared to those HCP who disagreed. The findings further revealed there was inadequate staff, transport and finances while drugs and equipment were adequate. The former three are important aspects in the implementation of PTBI and their inadequacy may lead to the low implementation of PTBI. In addition, this study also revealed that the highest number of respondents reported HFF affects the implementation of PTBI to a large extent as compared to those who reported moderate and low extent respectively. respondents' responses were echoed by the 5 KIIs of whom, four reported that the level of implementation is affected by HFF to a moderate and large extent respectively. In establishing the relationship between HFF and the implementation of PTBI, the results reviewed a statistically significant association between HFF and the implementation of PTBI. In a logistic analysis as reported in Nagelkerke R Square, HFF were second to social-demographic characteristics in influencing the implementation of PTBI. This implies that HFF is an important aspect in influencing the implementation of PTBI. These results were consistent with those affirmed by USAID (2015) whose report stipulates that world health systems including those lacking leadership or

having inadequate staff and supplies, underlie poor health care and contribute to poor health outcomes. The study by USAID (2015) further reports that inadequate financing and budgetary allocation as well as poor infrastructure, poor or disjointed information and lack of data for improved policy formulation and implementation, ensure weak systems remain weak. Weak systems can be a great barrier to the implementation of PTBI among the HCP. This study is also consistent with Gertrude *et.al* (2015) and Ameh *et al.* (2016). While Ameh reported that major deficiencies of supplies and equipment exist in all the health facilities assessed in Kenya included, Gertrude reported that health facilities in Uganda lacked infrastructure, equipment, drugs, supplies and protocols for newborn care.

#### **5.2 Conclusions**

The findings concluded that health facility factors influence the implementation of PTBI among HCP during the provision of intrapartum and perinatal care. However, the results revealed inadequate staffing, finance and transport while drugs and equipment were found to be adequate. The former three are very essential in the implementation of PTBI and their inadequacy could have led to the low implementation of PTBI. The results also revealed a statistically significant association between HFF and the implementation of PTBI.

#### **5.3 Recommendations**

The study recommends the county government consider improving HFF by; providing facilities for KMC, improving transport facilities, recruiting more skilled staff and increasing funding in the field of midwifery/reproductive health to enhance the implementation of PTBI. Adequate funding will enhance staff recruitment,

maintenance of transport, and timely procurement of drugs and equipment. Consequently, promoting the implementation of PTBI.

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