PREVALENCE AND RISK FACTORS FOR PREMATURE RUPTURE OF MEMBRANES AMONG PREGNANT WOMEN AT KAMPALA INTERNATIONAL UNIVERSITY TEACHING HOSPITAL

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APRIL, 2019

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DECLARATION

I do hereby declare that this research dissertation is the product of my own efforts and to the best of my knowledge and conviction, has never been presented to any institution for any award or qualification whatsoever. Where the works of other people have been included, due acknowledgement to this has been made in accordance with the appropriate referencing and citations.
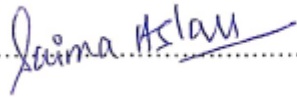
Researcher: **THUPARAMBIL M. RAVI ANISH, BMS/0003/142/DU**

Signature ....

Dare... 25 /April/ Thursday /2019 ....

APPROVAL

This research dissertation has been produced under my close supervision and guidance and I therefore recommend that the student should go ahead and hand in a copy for further consideration.

Supervisor: **Dr. SAIMA ASLAM, GYNECOLOGY & OBSTERTICS SPECIALIST**

Signed.....Saima Aslam.................Date.....22|4|19...................................

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I would like to thank The Almighty God for the gift of life. I would also like to thank my parents and siblings for always being there and constantly challenging me and encouraging me through all that I do. To my teachers and mentors, I say a huge thank you. Last but not least my peers and colleagues through whom I have learnt a lot. Let me not also not forget the contribution and guidance of my supervisor, **Dr. Saima Aslam.**

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LIST OF ABBREVIATIONS

BV	:	Bacterial vaginosis
IVH	:	Intra-Ventricular Haemorrhage
KIUTH	:	Kampala International University Teaching Hospital
PROM	:	Premature Rupture of Membrane
PPROM	:	Premature Preterm Rupture of Membrane
PV	:	Per vagina
RDS	:	Respiratory Distress Syndrome
STIs	:	Sexually transmitted infections

OPERATIONAL DEFINITIONS

Chorioamnionitis: inflammation of the foetal membranes (amnion and chorion) due to a bacterial infection. It typically results from bacteria ascending into the uterus from the vagina.

Foetus : Unborn baby

Oligohydramnios : a condition in pregnancy characterized by a deficiency of amniotic fluid.

Placenta Abruption: occurs when the placenta partially or completely separates from the inner wall of the uterus before delivery. This can decrease or block to supply of oxygen and nutrients and cause heavy bleeding in the mother.

Preterm delivery : Delivery before 37 complete weeks of gestation

Premature rupture of membranes: Amniotic sac breaks open, causing amniotic fluid to gush out.

Preterm Premature rupture of membrane: Amniotic sac breaks open, causing amniotic fluid to gush out before 34 weeks of pregnancy.

ABSTRACT

Introduction: Premature rupture of membranes (PROM) may lead to complications that contribute to increase in mortality risks in both the mother and her child (Shah M, 2011). Premature rupture of membranes (PROM), also known as pre-labour rupture of membranes, occurs when the foetal membranes rupture accompanied by amniotic fluid leaking or even gushing out before the onset of labour (American College of Obstetricians and Gynaecologist, 2014). Eighty-five percentages of neonatal morbidity and mortality is a result of prematurity. PPROM is associated with 30-40% of preterm deliveries and is the leading identifiable cause of preterm delivery. PPROM complicates 3% of all pregnancies and occurs in approximately 150,000 pregnancies yearly in the United States (Jazayeri & Smith, 2013). When PPROM occurs remote from term, significant risks of morbidity and mortality are present for both the foetus and the mother (Msomi, Naidoo, & Hira, 2017). In East Africa, leave alone in Uganda, not much has been done on the prevalence and risk factors of PROM despite it being a key contributor to maternal and child morbidity and mortality. Some little data obtained from a study in Mulago Hospital reported 12 % of the admissions in the high risk labour ward had PROM in 2012 (Nakubulwa, Kaye, Bwanga, Tumwesigye, & Mirembe, 2015). Given the importance of the subject matter, and the information gap that exists on it, the researcher proposes to conduct a study on the risk factors for premature rupture of membranes among pregnant mothers at KIU-TH in 2018.

Objective: To assess the prevalence and risk factors for premature rupture of membranes among pregnant women at KIU-TH.

Method: A cross-sectional, descriptive, retrospective study which involved patients' records review was used. A total of 1994 patient records were reviewed out of which 53 with the diagnosis of PROM/PPROM were used.

Results: The prevalence was 2.66%, 0.99% being PROM and 1.76% being PPROM. The factors found significant in this study were low socioeconomic status, previous history of an STI, PV bleeding, abortion, PROM/PPROM, low maternal age, smoking and carrying a multifetal gestation pregnancy. It was evident, though, the strongest predictors were low socioeconomic status, history of an STI, PV bleeding and PROM/PPROM. Foetal distress (62.26%), Prematurity (66.04%) and Foetal infection (67.93%) were the chief foetal complications encountered while abruptio placentae (11.32%) and maternal infections (28.3%) were encountered in the mother. Foetal/neonatal death was encountered in 5 (9.43%) of the cases whereas 1 (1.89%) mother died.

Conclusion: The prevalence of PROM/PPROM was 2.66%, a value lower than estimates from studies conducted previously elsewhere. Factors found significant for PROM/PPROM included low socioeconomic status, previous history of PROM/PPROM, PV bleeding, STIs, abortion, low maternal age and multifetal gestation. The outcomes post PROM/PPROM included maternal and foetal infections, abruptio placentae, foetal distress, prematurity, foetal/neonatal death and maternal death.

CHAPTER ONE: INTRODUCTION

1.0. BACKGROUND

Maternal and child health (MCH) are among the key components of the Millennium Development Goals (MDGs) of 2015 and Sustainable Development Goals (SDGs) of 2030. The fourth Millennium Development Goal (MDG$_4$) aimed at reducing child mortality while the fifth Millennium Development Goal (MDG$_5$) aimed to improve maternal health and reduce maternal morbidity and mortality (United Nations, 2015a). The third Sustainable Development Goal (SDG$_3$) aims to ensure good health and wellbeing for all – this includes pregnant mothers and children (United Nations, 2015b). This is because maternal and child mortality are a global reproductive health problem that need tackling if these goals are to be achieved come the year 2030.

The top 5 direct causes of maternal mortality are haemorrhage, sepsis, unsafe abortion, obstructed labour and hypertensive disease of pregnancy (AbouZahr, 2013) while the top 5 leading causes of child mortality are preterm birth complications, pneumonia, intra-partum related events, neonatal sepsis and diarrhoea (Munthali, Jacobs, Sitali, Dambe, & Michelo, 2015).

Premature rupture of membranes (PROM) may lead to complications that contribute to increase in mortality risks in both the mother and her child (Shah M, 2011). Premature rupture of membranes (PROM), also known as pre-labour rupture of membranes, occurs when the foetal membranes rupture accompanied by amniotic fluid leaking or even gushing out before the onset of labour (American College of Obstetricians and Gynaecologistd, 2014). If PROM occurs before the baby is at full term (37 weeks of gestation) then it is referred to as pre-term premature rupture of membranes (PPROM) (NC Smith, D Roberts, 2010). In PPROM, the mother and the foetus are at a greater risk of complications. PPROM causes one third of all preterm births and babies born preterm (before 37 weeks), are at an increased risk of complications of prematurity including death (Okeke, Enwereji, Adiri, Onwuka, & Iferikigwe, 2016).

PROM provides a path for bacteria to enter the womb and puts both the mother and foetus at risk of life-threatening infections. The mother can develop severe infection and sepsis (rated second among the top five direct causes of maternal mortality) whereas the baby can be born prematurely and suffer preterm birth complications (ranked first among the top child mortality causes) and neonatal sepsis (ranked fourth among the top child mortality causes) (Ehsanipoor, 2016).

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The major risk to the mother is infection of the foetal membranes known as chorioamnionitis, which occurs in about 35%. Other risks include placenta abruption (19%) and sepsis which though, may occur nonetheless (1%) (Shah M, 2011). PPROM may occur mid-trimester and can lead to major morbidity. Among the complications that may arise include: lethal pulmonary hypoplasia from prolonged, severe, early oligohydramnios, which occurs in about 20% of cases. Other morbidities such as Respiratory Distress Syndrome (RDS) (66%), sepsis (19%), grade III-IV Intra-Ventricular Haemorrhage (IVH) (5%), and contractures (3%) also occur with high frequency, resulting in intact survival rates of more than 67%. Fetal death is common and occurs in more than 30% (Allahyar Jazayeri, 2016).

Eighty-five percentages of neonatal morbidity and mortality is a result of prematurity. PPROM is associated with 30-40% of preterm deliveries and is the leading identifiable cause of preterm delivery. PPROM complicates 3% of all pregnancies and occurs in approximately 150,000 pregnancies yearly in the United States (Jazayeri & Smith, 2013). When PPROM occurs remote from term, significant risks of morbidity and mortality are present for both the foetus and the mother (Msomi, Naidoo, & Hira, 2017).

In most cases, the cause of PROM is unknown. Some risk factors may be: low socio-economic status, low body mass index (BMI), tobacco use, preterm labour history or previous history of PROM or PPROM, urinary tract infection, vaginal bleeding at any time in pregnancy, cerclage and amniocentesis (Nazneen, Begum, & Nargis, 2013).

In East Africa, leave alone in Uganda, not much has been done on the prevalence and risk factors of PROM despite it being a key contributor to maternal and child morbidity and mortality. Some little data obtained from a study in Mulago Hospital reported 12 % of the admissions in the high risk labour ward had PROM in 2012 (Nakubulwa, Kaye, Bwanga, Tumwesigye, & Mirembe, 2015). Given the importance of the subject matter, and the information gap that exists on it, the researcher proposes to conduct a study on the risk factors for premature rupture of membranes among pregnant mothers at KIU-TH in 2018.

1.1. PROBLEM STATEMENT

Maternal and child mortality are a global reproductive health problem. The worst hit are countries south of the Sahara where famine, disease and pestilence plague the people. Despite global targets geared to reduce maternal and child mortality through MDGs and SDGs, African countries, Uganda inclusive, are still lagging behind on this. Still high numbers of Africa's pregnant mothers and children are dying every year (Ministry of finance, 2010).

Maternal sepsis is ranked 2nd among direct killers of pregnant mothers (Chebbo, Tan, Kassis, Tamura, & Carlson, 2016) while preterm birth complications and neonatal sepsis are ranked

1st and 4th respectively among top child killers (Miller, Morgan, & Vyankandondera, 2013). Premature rupture of membranes, be it at term (PROM) or before term (PPROM) can cause all the above complications to the mother and her child and thus contribute greatly to maternal and child mortality (Shah M, 2011). Eighty-five percent of neonatal morbidity and mortality is a result of prematurity (EveryPreemie, 2014). PPROM is associated with 30-40% of preterm deliveries and is the leading identifiable cause of preterm delivery. PPROM complicates 3% of all pregnancies and occurs in approximately 150,000 pregnancies yearly in the United States. When PPROM occurs remote from term, significant risks of morbidity and mortality are present for both the foetus and the mother (Jazayeri & Smith, 2013). Still, a lot of babies born to patients with PPROM have low birth weight (62.3%), and 30.5% babies require neonatal intensive care. Perinatal mortality rate is usually around 129.9/1000 (13%) of total births (Okeke et al., 2016).

Despite Premature rupture of membranes being a significant contributor to maternal and child morbidity and mortality, not enough studies have been done and thus the information gap that does exist is humongous! Very few studies, if any, have been done in Uganda, Western Uganda and KIU-TH. It is for this reason that the researcher proposed to conduct this study on the prevalence and risk factors of premature rupture of membranes among pregnant women at KIU-TH in 2018.

1.2. STUDY OBJECTIVES

1.2.1. MAIN OBJECTIVE

To assess the prevalence and risk factors for premature rupture of membranes among pregnant women at KIU-TH.

1.2.2. SPECIFIC OBJECTIVES

1. To determine the prevalence of PROM among pregnant women at KIUTH.
2. To identify the risk factors for PROM among pregnant women at KIUTH.
3. To identify the various outcomes of PROM among pregnant women at KIUTH.

1.3. RESEARCH QUESTIONS

1. What is the prevalence of PROM among pregnant women at KIUTH?
2. What are the risk factors for PROM among pregnant women at KIUTH?
3. What are the various outcomes of PROM among pregnant women at KIUTH?

1.4. SIGNIFICANCE OF THE STUDY

The study is of significance in that it will not only partially fulfil the award of bachelor of medicine and surgery at Kampala International University but also try and fill the existing information gap that will enable policy makers develop effective policies geared towards

improving awareness and promoting practices that safeguard the community from PROM and its complications. Data obtained may also be used to inform proper practice in intervening and managing cases of PROM at KIU-TH and its catchment area. Of even more importance is data obtained from this study and pumped into the information pool pertaining PROM may be used by other researchers to conduct same or similar studies, in the same study population, area or elsewhere and thus important information on PROM will build-up and be available for future reference.

1.5. STUDY SCOPE

1.5.1. GEOGRAPHICAL SCOPE

Kampala International University Teaching & Research Hospital is located in the town of Ishaka, in Bushenyi District, Western Uganda, approximately 330 kilometres (210 mi), by road, southwest of Kampala, Uganda's largest city and capital. The coordinates are: 0°32'19.0"S, 30°08'40.0"E (Latitude: -0.538611; Longitude:30.144444). It runs under a private/public partnership, but is government aided because it is a training facility. It has about 700 beds.

Ishaka is a town in the Western Region of Uganda. It is one of the municipalities in Bushenyi District. Ishaka is located in Igara County, in Bushenyi District, approximately 62 kilometres (39 mi), by road, west of Mbarara, the largest city in the sub-region. This is about 6 kilometres (4 mi), west of Bushenyi, the location of the district headquarters. The coordinates of Ishaka are 0°32'42.0"S, 30°08'18.0"E (Latitude: -0.545006; Longitude:30.138343). In 2014, the national population census put the population of Bushenyi, including Ishaka, at 41,063.

1.5.2. CONTENT SCOPE

The study focused on the prevalence, risk factors, and outcomes of PROM within the population under study.

1.5.3. TIME SCOPE

This research was carried out between the months of January 2018 and December 2018.

1.6. CONCEPTUAL FRAMEWORK

A conceptual framework is an illustration that identifies or shows the relationship between all relevant systems, components, and any salient factors that may affect or influence an event or programme. To understand an event or a disease a framework can be applied. Conceptual frameworks were initially developed and used in fertility studies; later models were developed for child survival and have also been applied to HIV studies. The independent variables in this study include the risk factors such as age, parity, previous history of PROM,

PPROM or preterm labour, socioeconomic status, low BMI, tobacco use, urinary tract infections, vaginal bleeding during pregnancy, history of cervical procedures such as cerclage, and amniocentesis. The study also seeks to determine the prevalence of PROM; this prevalence leads to a given outcome depending on the prevalence level. Though outcome may also be influenced by the management options available and performed in this case which is our extraneous variable because this study will not be able to manipulate the management given to these patients. However, the risk factors can also directly influence the outcome regardless of the prevalence level.

Independent Variables

RISK FACTORS

BIODATA
AGE, BMI,

SOCIO-ECONOMIC
RESIDENCE,
EDUCATION,
OCCUPATION,
INCOME, MARITAL
STATUS, TOBACCO
USE

OBSTETRIC
PARITY, HISTORY
OF CERVICAL
CIRCLAGE, PROM,
PPROM, PRETERM
LABOUR, PV
BLEEDING,
AMNIOCENTESIS

**MEDICAL
HISTORY**
URINARY TRACT
INFECTIONS

Dependent variable

PREVALENCE OF
PRE MATURE
RUPTURE OF

Extraneous

Management

OUT COME
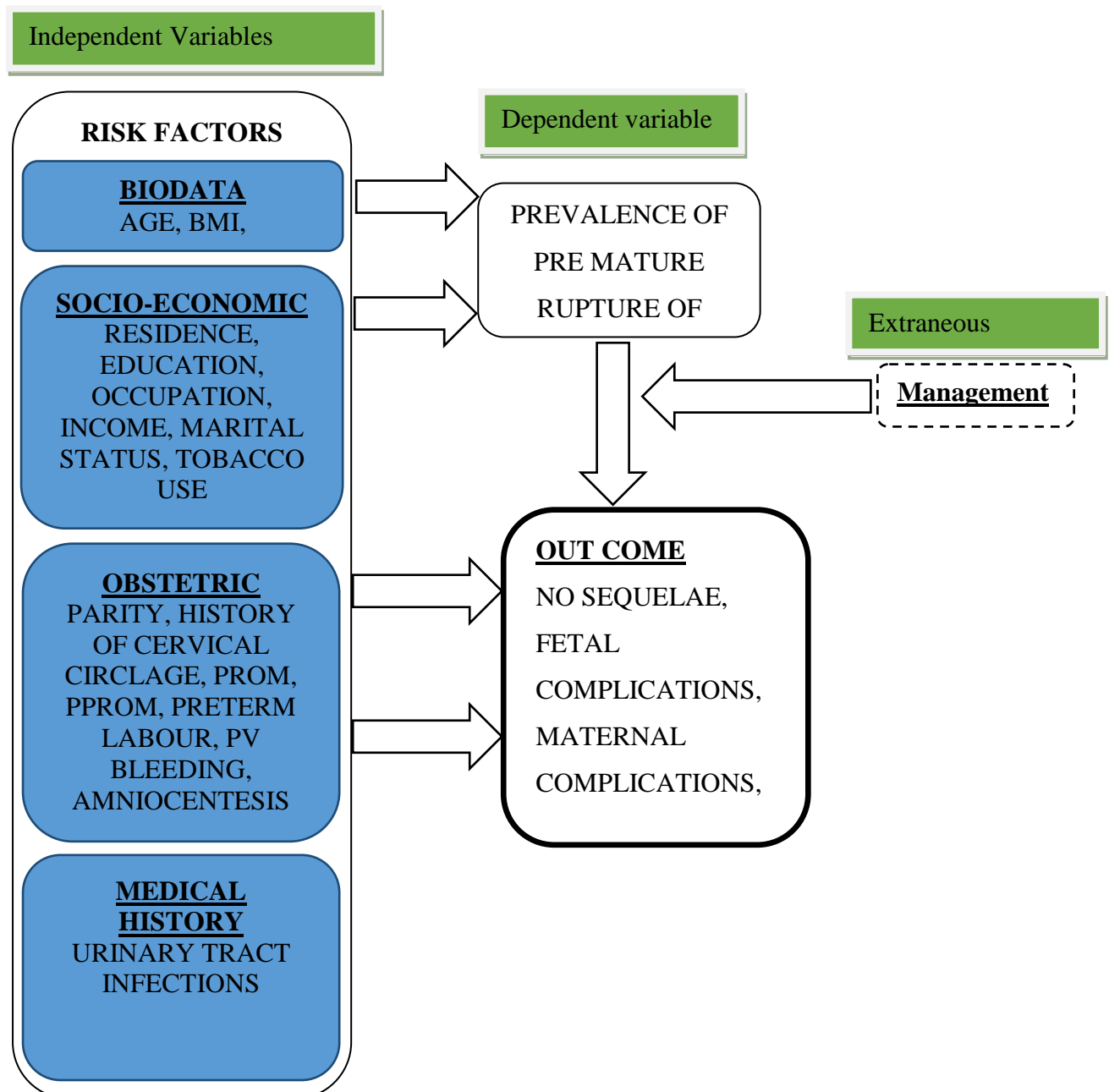NO SEQUELAE,
FETAL
COMPLICATIONS,
MATERNAL
COMPLICATIONS,

Figure 1: Conceptual Framework on the Prevalence, Risk Factors and Outcomes for PROM (Researcher's Own Opinion)

CHAPTER TWO: LITERATURE REVIEW

2.0. INTRODUCTION

This chapter presents the literature reviewed on the prevalence, risk factors and outcomes of premature rupture of membranes.

2.1. PREVALENCE OF PREMATURE RUPTURE OF MEMBRANES (PROM)

Eighty-five percentages of neonatal morbidity and mortality is a result of prematurity. PPROM is associated with 30-40% of preterm deliveries and is the leading identifiable cause of preterm delivery (Allahyar Jazayeri, 2016). PPROM complicates 3% of all pregnancies and occurs in approximately 150,000 pregnancies yearly in the United States (Jazayeri & Smith, 2013).

PROM occurs in about 8% of pregnant women worldwide. A report from Mainland China found that the incidence of PROM was significantly higher at 19.5%; PROM presents in 30–40% of preterm births, and is the most common cause of deliveries occurring between 20 weeks and 37 weeks of gestation. In addition, prematurity and low birth weights are leading causes of neonatal death (31%) in the world (Zeng et al., 2014).

In a hospital clinic in Barcelona Spain, the prevalence was found to be 1.2% (Dadvand et al., 2014). In Comilla Medical College Hospital in 2009, the hospital incidence of PROM was found to be 6.3% among whom 57.6% were admitted at term and 42.4% came before 37 completed weeks of gestation (Nazneen et al., 2013).

A perinatal mortality rate of 52% as a result of PPROM has been reported in Nigeria. An incidence of 2.5% of PROM was reported in southern Nigeria (Osaikhuwuomwan JA, 2010).

A retrospective study was conducted on cases of PROM managed at UCTH over a 4-year period (January 2010 to December 2013). During the study period, there were 11,241 deliveries and 218 cases of PROM giving a prevalence of 1.94%. The mean age of the study population was 26.2 ± 6.7 years while the mean parity was 2.4 ± 1.9. Majority (49%) of the study population had PROM between 37 to 39 weeks (TC et al., 2014). In a tertiary health facility in Nigeria in 2014, the frequency of PPROM was 3.3% for and it was the greater contributor to the 7% perinatal deaths documented there (TC et al., 2014).

In Uganda; Mulago Hospital reports indicated that 12 % of the admissions in the high risk labour ward in 2012 had PROM (Nakubulwa et al., 2015).

2.2. RISK FACTORS FOR PREMATURE RUPTURE OF MEMBRANES

According to Shehla Noor et al, the Prevalence of PPROM in a study done in Europe was 16%. It was seen to be common among patients who were young (15–25 years) 58.8%, with low socioeconomic status (68.2%), and with an educational status of primary to middle

(71.7%). Risk of PPROM was seen to be highest among patients giving birth to their first child (42.2%), with gestational age between 30–35 weeks (43.5% cases) and 35–37 weeks (35.2%). In 69.4% cases there was no previous history of preterm deliveries while in 30.6% cases, there were one, two, or more previous preterm deliveries (Noor, Fawwad, Shahzad, Sultana, & Bashir, 2010).

A study carried out by Saira Dars in 2014 also revealed that out of 100 patients included in the study, Primigravida were 17% and multigravida 83%. There was wide variation of age ranging from a minimum of 20 to >40 years. However, she reports that the mean age was 27 - 33 years. She also found out that, most patients belonged to the poor class in 72% cases followed by middle class in 21% and upper class 7% (Dars, Malik, Samreen, & Kazi, 2014).

2.3. OUTCOMES (COMPLICATIONS) OF PREMATURE RUPTURE OF MEMBRANES

Infection, abruptio placentae, and umbilical cord prolapse are some of the documented complications of PROM (American College of Obstetricians and Gynaecologistd, 2014).

In the Comilla study 15.7% patients had oligohydramnios, 8.5% patients presented with chorioamnionitis suggested by culture report of high vaginal swab. Urine for culture and sensitivity was also done. About five (5.2%) developed premature labour before 37th week of gestation. About 10% women developed obstetric complications (failed trial) associated with medical diseases. Seventy-seven patients were delivered by caesarean section, 16.2% vaginally, 4.04% patients responded to conservative management and 2.5% patients were referred to tertiary centre for extreme prematurity with associated complicating factors. Most of the babies (38.4%) were born with birth weight between 2.1- 2.5kg and 10.3% babies were less than 1.5kg (Nazneen et al., 2013).

Analysis by saira Dars et al showed that out of 100 mothers 26% had PROM of <24 hrs duration and 74% had >24 hrs of duration. Maternal outcome in 16 cases of Preterm Premature Rupture of Membrane findings revealed septicaemia in 12% cases and Chorioamnionitis in 12% cases. Foetal outcome in 27 cases of preterm premature rupture of membrane revealed prematurity in 5% cases, foetal distress in 4% cases, cord compression in 5% cases, necrotizing enterocolitis in 2% cases, hypoxia in 9% cases and pulmonary hypoplasia in 2% cases (Dars et al., 2014).

According to Caughey A.B and colleagues, early delivery is the most common complication of PROM. 95% of women with PROM at term will go into labour within 24 hours. He reports that, Other studies have demonstrated that 57% of patients with mid trimester PPROM (between 16 and 24 weeks) deliver within a week (Caughey, 2012). They went ahead to

recommend that patients with PROM should be monitored for the following potential complications: Infection, Placental abruption, Umbilical prolapse, Respiratory distress syndrome (Caughey, 2012).

In the study carried out by Allahyar Jazayeri, it was showed that at term, infection remains the most serious complication associated with PROM for the mother and the neonate. The risk of chorioamnionitis with term PROM has been reported to be less than 10% and to increase to 40% after 24 hours of PROM (Allahyar Jazayeri, 2016).

Shehla Noor etal also reported that, Post-natally 16.47% of pregnant women develop infection while 24 (28.2%) of babies develop infection and require antibiotics. Majority of babies born to patients with PPROM were low birth weight (62.3%), and 30.5% babies required neonatal intensive care. Perinatal mortality rate was 129.9/1000 (13%) of total births. He therefore concluded that PPROM is an important cause of preterm birth, resulting in large number of babies with low birth weight, requiring neonatal intensive care. It is associated with increased foetal morbidity and mortality (Noor et al., 2010). In the study, normal vaginal delivery occurred in (65.86%), while instrumental delivery rate in PPROM was 20% and caesarean section rate was 14% (Noor et al., 2010).

Sarah's study also revealed that, PROM predisposes pregnant women and their unborn children to adverse outcomes such as maternal infection, foetal infection, umbilical cord compression and prolapse, foetal demise, low Apgar score, pulmonary hypoplasia, preterm delivery, low birth weights and foetal deformation (Nakubulwa et al., 2015).

PROM results in increased risk of prematurity and leads to perinatal and neonatal complications with risk of foetal death. Currently, there is no effective way of preventing spontaneous rupture of foetal membranes due to ignorance of its aetiology, with consequent inability to control its incidence. However, it is important that women be well informed regarding maternal, foetal and neonatal complications regardless of controversies of its management (TC et al., 2014).

CHAPTER THREE: METHODOLOGY

3.0. INTRODUCTION

This chapter presents the study area, study population, research design, sampling procedure and sample size, research instrument, methods of data collection, limitations of the study and solution, ethical considerations, study variables, data processing and analysis.

3.1. STUDY DESIGN

A cross-sectional, descriptive, retrospective study which involved patients' records review was used.

3.2. STUDY AREA

The study was carried out at the Obstetrics and Gynaecology wards of KIU-TH.

3.3. STUDY POPULATION

The population for this study comprised of women who attended obstetric ward at KIU teaching hospital from January to December 2018.

3.3.1. INCLUSION CRITERIA

All files of pregnant women who attended KIUTH and were diagnosed of PROM between January and December 2018 were used for the study.

3.3.2. EXCLUSION CRITERIA

All files of pregnant women who attended KIUTH and were diagnosed of PROM between January and December 2018 whose files were missing or were having missing information that could not be clarified or verified were excluded.

3.4. SAMPLE SIZE DETERMINATION

Being a retrospective study, all legible candidates meeting the inclusion criteria were included in the study.

3.5. SAMPLING PROCEDURES

Convenient consecutive sampling technique was used whereby all patient records that met the inclusion criteria were used for the study.

3.6. DATA COLLECTION METHODS AND MANAGEMENT

Data collection comprised of reviewing the patient's files and recording the data into a checklist by the researcher.

3.7. DATA ANALYSIS

Data was entered into Microsoft excel 2016 professional spreadsheets and analysed using SPSS version 25.0. Data analysis was done as per objective; descriptive statistics in form of percentages, charts, tables and graphs with univariate, bivariate and multivariate analytical

methods being employed. Data was presented in form of tables, descriptive statistics calculated in percentages for each response and conclusion drawn from the analysed data.

3.8. QUALITY CONTROL

The quality of data was assured by using check lists and use of trained research assistants who were adequately trained as per the requirements of the study and objectives to be met. Data obtained was scrutinized for consistence and where any uncertainties arose clarifications were sought.

3.9. ETHICAL CONSIDERTIONS

Clearance was obtained from Kampala International University-Western Campus faculty of clinical medicine & dentistry through IREC. The researcher used the information obtained for purposes meant only for the research and did not disclose or divulge the said information to parties not involved in the research process. The researcher assured no conflict of interests while carrying out the study.

3.10. LIMITATIONS / DE-LIMITATIONS OF THE STUDY

The researcher anticipated to encounter missing information on the patients' files and even missing patients' files. To tackle this the researcher liaised with the registry department to ensure tracing of records. In anticipation of financial constraints to be faced in the study, the researcher outsourced for extra funding from family and close relatives and budgeting the funds diligently with allocation of a 15% contingency on the total proposed budget. With proper time management and period given for the study, the researcher did not anticipate, and did not meet any problems with achieving the objectives of the study within the timeframe allocated.

CHAPTER FOUR: STUDY FINDINGS

4.0. INTRODUCTION

This chapter presents the findings of the study in the form of tables, graphs, charts and statements presented as per the objectives set for the study.

4.1. PREVALENCE OF PREMATURE RUPTURE OF MEMBRANES

There were a total of 1994 deliveries conducted over the study period with a total of 53 cases reported. This gave a global PROM prevalence of 2.66%, 18 (0.90%) being PROM cases and 35 (1.76%) being PPROM.

4.2. RISK FACTORS FOR PREMATURE RUPTURE OF MEMBRANES

The possible risk factors for PROM/PPROM among these 53 cases were then analysed and tabulated as shown below.

RISK FACTOR	FREQUENCY (N)	PERCENTAGE (%)
Previous history of		
1. Abortion	2	3.77
2. PROM / PPROM	8	15.09
3. Abnormal PV bleeding	19	35.85
4. Multifetal gestation	4	7.55
Low maternal age	3	5.66
STIs (BV, gonorrhoea, chlamydia)	23	43.40
Smoking while pregnant	1	1.89
Low socioeconomic status	49	92.45

Table 1: Assessment of possible risk factors for PROM (N=53)

Low socioeconomic status was a factor common to almost all PROM cases. 49 (92.45%) of the cases were categorized as falling within the low socio-economic group based on type and ownership of house, occupation, monthly income and daily expenditure. Previous history of an STI (chlamydia, gonorrhoea or bacterial vaginosis) was the other factor found significant. 43.40% of the cases had a previous history of an STI. 35.85% of them reported having experienced bleeding per vagina during the course of their pregnancy, 15.09% had a previous history of PROM while 7.55% were carrying a multifetal pregnancy and 3.77% had previously had an abortion. Only 3 (5.66%) had a low maternal age while 1 (1.89%) reported a history of smoking while pregnant. This is shown in table 1 above.

4.3. OUTCOMES/COMPLICATIONS OF PREMATURE RUPTURE OF MEMBRANES

A number of outcomes are possible following PPROM/PROM the key ones among them being premature labour and delivery (with consequent prematurity) and its complications such as cord prolapse, foetal distress, foetal and maternal infection, placenta abruption and its complications. Foetal survivals with complete recovery or foetal or neonatal demise are the ultimate outcomes. Figure 2 below portrays the different outcomes encountered post PPROM/PROM among the study cohort.
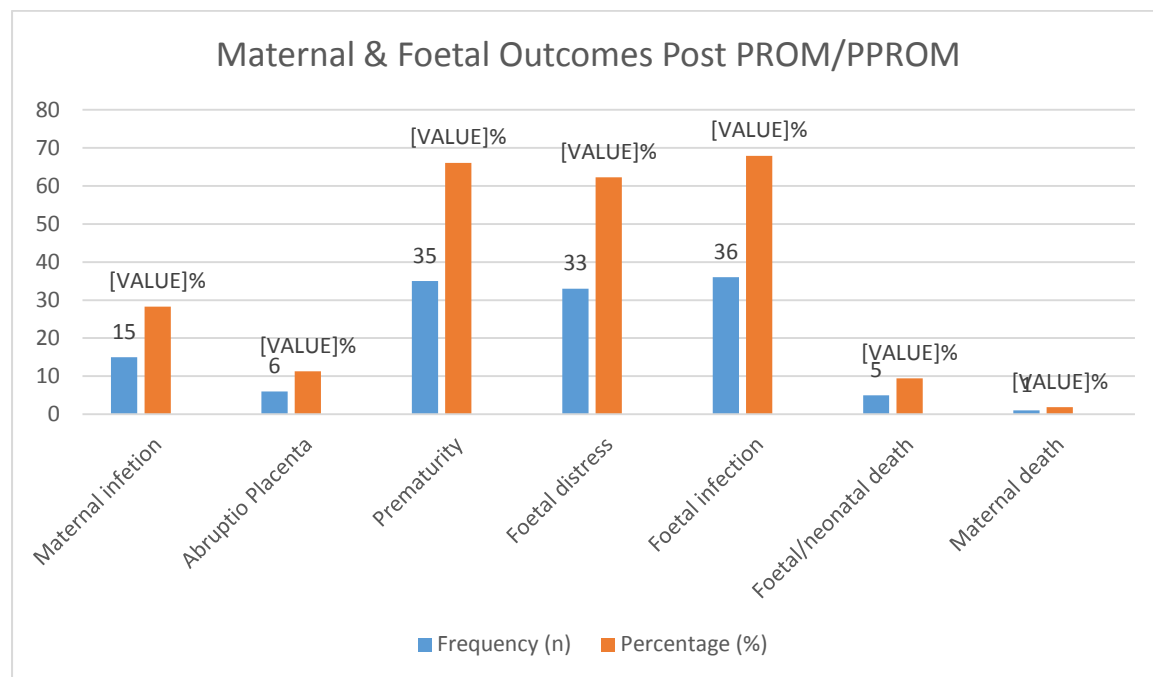

Figure 2: Outcomes of PROM/PPROM (N=53)

Foetal distress (62.26%), Prematurity (66.04%) and Foetal infection (67.93%) were the chief foetal complications encountered while abruptio placentae (11.32%) and maternal infections (28.3%) were encountered in the mother. Foetal/neonatal death was encountered in 5 (9.43%) of the cases whereas 1 (1.89%) mother died.

CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

5.0. INTRODUCTION

This chapter presents the discussion of the study results, the conclusions arrived at and the recommendations made to various concerned parties.

5.1. DISCUSSION

5.1.1. Prevalence of PROM and PPROM

The global prevalence was 2.66%, 0.99% being PROM and 1.76% being PPROM. This value is way below the global estimate of 8% reported by (Sirak & Mesfin, 2014), the 2.5% reported in southern Nigeria by (Osaikhuwuomwan JA, 2010) or even the 12% recorded in Mulago back in 2015 by (Nakimuli et al., 2015). It, however, was slightly higher than the 1.2% recorded in Barcelona, Spain may be due to population and racial differences (Dadvand et al., 2014).

The differences observed from the southern Nigerian and Mulago studies may be attributable to study population size and lifestyle variations such as cigarette smoking. For instance, a study conducted in Nigeria reported an overall prevalence of regular smoking as 22.6%, proportions of regular cigar/pipe tobacco and snuff users being 17.9% and 9.6% respectively and among cigarette smokers, 60.6% smoked at least half a pack a day, 11.2% at least one pack a day with a significant population of its women smoking. Among the gender-specific studies, the prevalence of smoking among females ranged between 2.2% to 10% while that of males ranged from 1% to 32.5% (Oyewole, Animasahun, & Chapman, 2018).

5.1.2. Risk Factors for PROM/PPROM

The factors found significant in this study were low socioeconomic status, previous history of an STI, PV bleeding, abortion, PROM/PPROM, low maternal age, smoking and carrying a multifetal gestation pregnancy. It was evident, though, the strongest predictors were low socioeconomic status, history of an STI, PV bleeding and PROM/PPROM. These findings agree with reports from previous studies such as those by (Noor et al., 2010) in Europe and (Dars et al., 2014).

5.1.3. Outcomes of PROM/PPROM

As reported earlier, Foetal distress (62.26%), Prematurity (66.04%) and Foetal infection (67.93%) were the chief foetal complications encountered while abruptio placentae (11.32%) and maternal infections (28.3%) were encountered in the mother. Foetal/neonatal death was encountered in 5 (9.43%) of the cases whereas 1 (1.89%) mother died. These results agree with those of many studies conducted previously but differ only in one way – foetal/neonatal

mortality attributable to PROM/PPROM. Studies by (Nazneen et al., 2013), and (Nakimuli et al., 2015) all had similar PROM/PPROM outcomes.

5.2. CONCLUSION

The prevalence of PROM/PPROM was 2.66%, a value lower than estimates from studies conducted previously elsewhere. Factors found significant for PROM/PPROM included low socioeconomic status, previous history of PROM/PPROM, PV bleeding, STIs, abortion, low maternal age and multifetal gestation. The outcomes post PROM/PPROM included maternal and foetal infections, abruptio placentae, foetal distress, prematurity, foetal/neonatal death and maternal death.

5.3. RECOMMENDATIONS

5.3.1. To the pregnant mothers

Early visit to the health facility for diagnosis and treatment of STIs. Refrain from cigarette smoke both primary and secondary. Whenever they experience premature rupture of membranes to visit the nearest health facility as soon as possible to reduce chances of complications such as cord prolapse and infections.

5.3.2. To Health Staff at KIUTH

Aggressive combating of infections both prophylactically and in treatment to reduce maternal and foetal infections post PROM/PPROM.

5.3.3. To Fellow Researchers

This study dealt with the prevalence of PROM/PPROM, the possible risk factors and the various outcomes/complications. Further studies can be conducted on interventions to reduce the prevalence of PROM/PPROM even further and ways of bettering the outcomes.

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APPENDICES

Appendix I: Consent Form

<u>CONSENT FORM</u>

STUDY TITLE: PREVALENCE AND RISK FACTORS FOR PREMATURE RUPTURE OF MEMBRANES AMONG PREGNANT WOMEN AT KAMPALA INTERNATIONAL UNIVERSITY TEACHING HOSPITAL.

I have read and understood the research topic above on the planned study and the explanations given to me. I understand what I have been requested to do in respect to this study. I have asked questions and gotten clarifications about the study and I am satisfied. I have, after due consideration, willingly consented to take part in this study as explained.

Participant's signature ………………………… Date …………………………………….

Investigators name .THUPARAMBIL. M. RAVI. ANISH Signature ……………………………………

Date ……………………………………

Appendix II: Data collection instrument

A. Prevalence of PROM in pregnant women

Month /2018	Number of pregnant women under study	Number of pregnant women with PROM	Number of pregnant women who have *NO* PROM
Jan			
Feb			
March			
April			
May			
June			
July			
August			
Sept			
Oct			
Nov			
Dec			

Table 2: Prevalence of PROM Data Sheet

B. Risk Factors

Occupation ……………………… monthly income ………………………………………

Daily expenditure ……………….. Type & ownership of house …………………………

Socioeconomic status: Low ☐   Middle ☐   Upper ☐

Previous history	Number
Abortion	
PROM	
CS	
Abnormal PV bleeding	

Social Status	Number
Low socioeconomics	

Fetal complication	Number

3. Out come

Parity	Number

Age	Number
Young age	

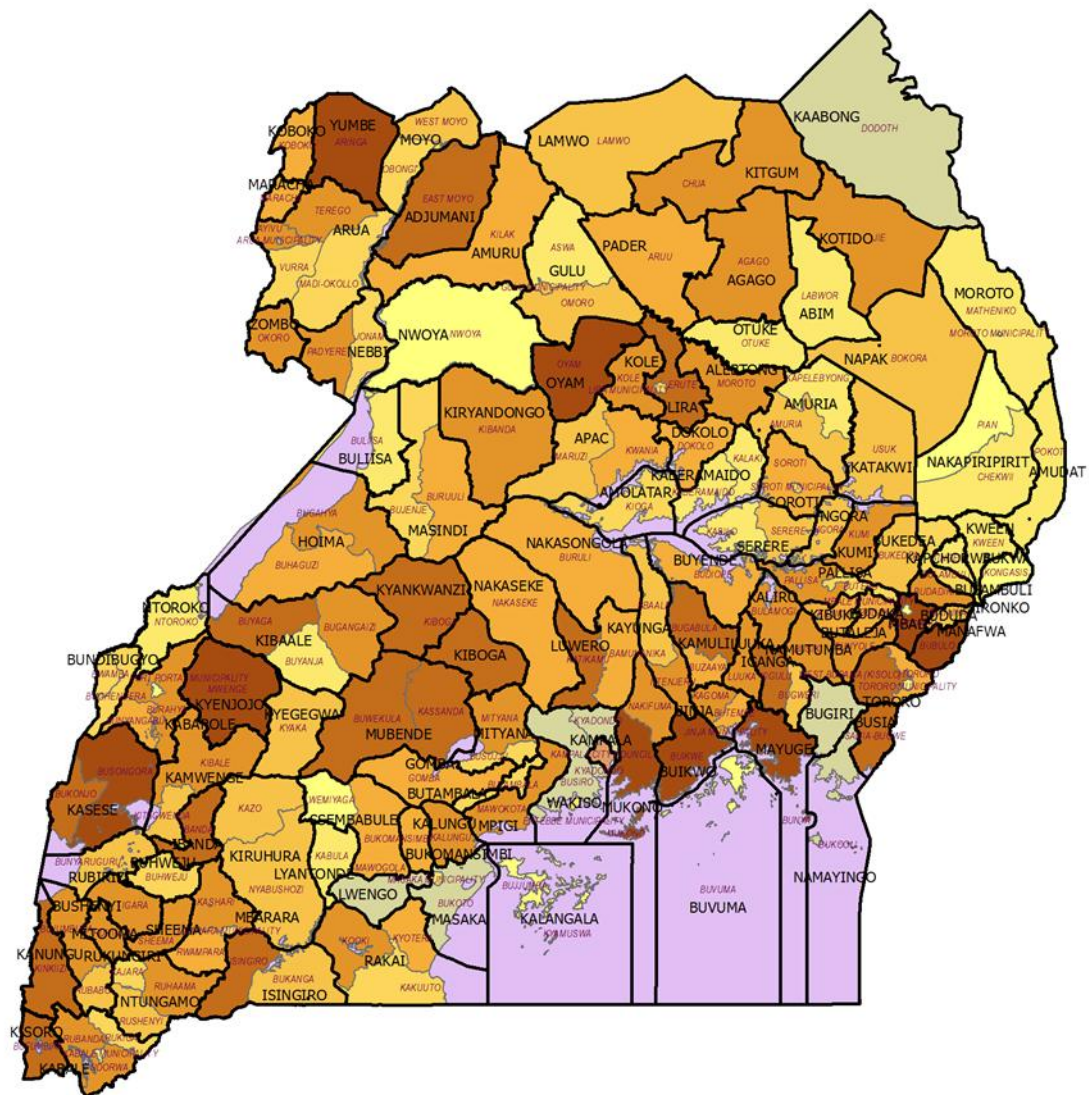| Maternal complication	Number

Appendix III: Map of Uganda

Figure 3: Map of Uganda
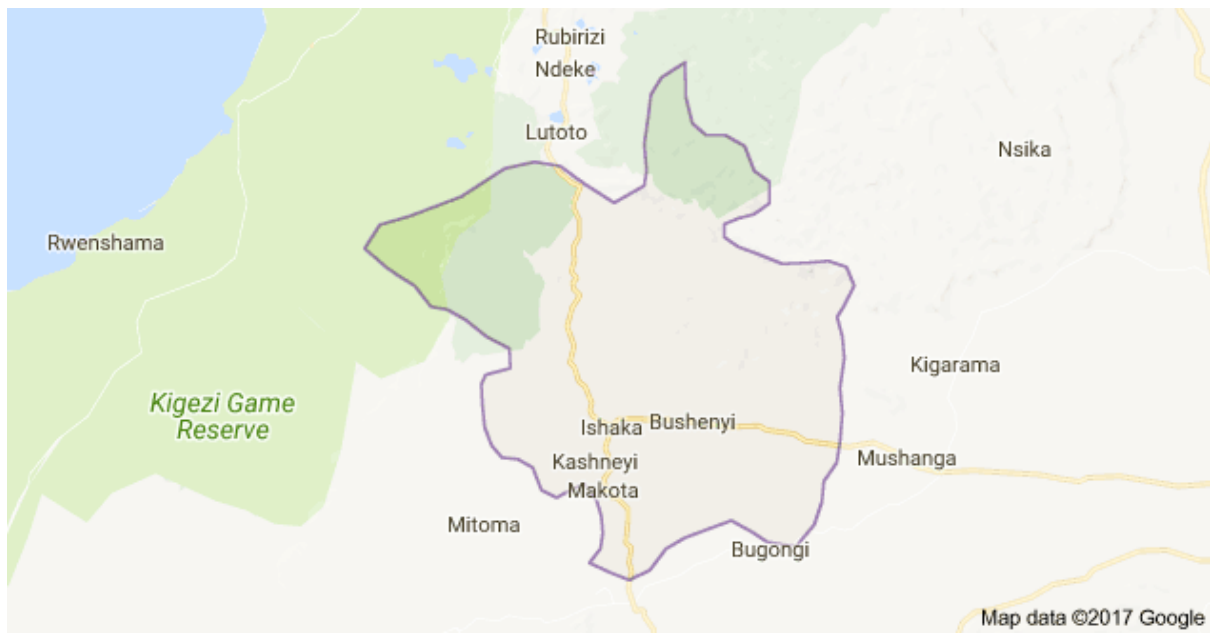
Appendix IV: Map of Bushenyi

Figure 4: Map of Bushenyi

Appendix V: Approval Letter

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EXPLORING THE HEIGHTS

OFFICE OF THE DEAN
FACULTY OF CLINICAL MEDICINE & DENTISTRY

01/08/2018

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: THUPARAMBIL M RAVI ANISH (BMS/0003/142/DU)

The above named person is a fifth year student at Kampala International University pursuing a Bachelor of Medicine, Bachelor of Surgery (MBChB) Programme.

He wishes to conduct his student research in your hospital

Topic: Prevalence and risk factors of premature rapture of membranes among pregnant women attending KIU-Teaching Hospital

Supervisor: Dr. Salima

Any assistance given will be appreciated.

Yours Sincerely,

01 AUG 2018

Prof. SSebuufu Robinson
Dean Faculty of Clinical Medicine and Dentistry