

KIBOGORA POLYTECHNIC

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF GENERAL NURSING

ASSESSMENT OF PREVALENCE AND RISK FACTORS CONTRIBUTING TO NEONATAL SEPSIS

Case study: Kibogora District Hospital,

Period: January to December, 2021

A research paper submitted in partial fulfillment of the requirements for the award of Bachelor's Degree with honor in Health Sciences with General Nursing

PREPARED BY:

Vestine UWINGABIRE REG N^o:1800489

Jeannette NIYITANGA REG N^o:2000481

SUPERVISOR:

MUVANDIMWE Jean de la Croix

Kibogora, September 2022

DECLARATION

Declaration by the candidates

We Vestine UWINGABIRE and Jeannette NIYITANGA hereby declare that this is our own original work and not a duplication of any similar academic work. It has therefore not been submitted to any other institution of higher learning. All materials cited in this paper which are not our own have been duly acknowledged.

Vestine UWINGABIRE

Signed..... Date.....

Jeannette NIYITANGA

Signed..... Date.....

Declaration by the supervisor

I declare that this work has been submitted for examination with my approval as KP supervisor

MUVANDIMWE Jean de la Croix

Signed..... Date.....

ABSTRACT

Introduction: Neonatal sepsis (NS) is a worldwide problem that poses a management challenge to neonatal and infant care groups. According to the Global Burden of Disease (GBD), neonatal sepsis and associated infections will cause 1.3 million incident cases per year and 203000 sepsis-related neonatal deaths (James et al. 2018).

Objectives: of the present study was to: (1) To identify prevalence of neonatal sepsis at Kibogora district hospital from January to December 2021. (2) To identify associated factors that contributed to the neonate sepsis at Kibogora district hospital from January to December 2021.

Methodology: A retrospective descriptive study was conducted at Kibogora District Hospital to determine the factors associated with the prevalence of neonatal sepsis. A quantitative approach was used, with a focus on objective measurements and statistical analysis of data collected via checklists.

Findings: In our study, 187 neonates and their mothers participated. 80 (42.8%) were male and 107 (57.2%) were female. 42.2% (79) of neonates fell into the 0-10 day category, which was followed by the 11-20 day category, which had 34.8% (65), and the 21-28 day category, which had 23%. (43). 46% of their mothers, or the majority, were between the ages of 20 and 35.

Results: Overall of study found that the total prevalence of neonatal sepsis among neonates admitted was 23% (43), which is a high rate. The study found that place of delivery, type of delivery, history of UTI/STI during pregnancy, history of PROM during pregnancy, gestational age, and placing neonates on ventilation were all associated with sepsis.

Conclusion and Recommendation: As a result, it is important to train health professionals, provide health care services in accordance with standards, and monitor and assess obstetrical/neonatal care during labor and delivery. It is therefore recommended that when providing maternal and newborn health care services, more skilled health personnel and advanced equipment must be used.

DEDICATION

Thanks to the almighty God who did all for us in our studies until now. This work is dedicated to our beloved family members for their care and love, lectures and our lovely friends who kept giving us all kinds of support that lead us to accomplishment of this research project. May God bless everyone who has provided his or her efforts to help for the accomplishment of this research project.

ACKNOWLEDGEMENTS

Our most honest gratefulness and thanks go to our Lord and Savior Jesus Christ, the Almighty God, for His grace is sufficient. We cannot forget our University KIBOGORA POLYTECHNIC for their powerful assistance and guidance during our daily education activities.

We are especially thankful to our supervisor MUVANDIMWE Jean de la Croix for his helpful encouragement, guidance and consistent advice throughout this research proposal.

We express our special, appreciation, and fantastic thanks to all our classmates for their full cooperation, supplement and encouragement during the course, sharing experience, skills and knowledge guiding to the completion of this project.

We precise our thanks to everyone who helped in anymore for the achievement of this research proposal.

TABLE OF CONTENTS

DECLARATION	i
ABSTRACT	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	v
LIST OF TABLES	viii
LIST OF APPENDICES	ix
LIST OF ABBREVIATIONS AND ACRONYMS	x
CHAPTER ONE: GENERAL INTRODUCTION	1
1.0 INTRODUCTION.....	1
1.1. BACKGROUND OF THE STUDY	1
1.2 PROBLEM STATEMENT	3
1.3 PURPOSE OF THE STUDY.....	3
1.4 RESEARCH QUESTIONS	4
1.5 OBJECTIVES OF STUDY	4
1.6 SIGNIFICANCE OF THE STUDY.....	4
1.7 LIMITATIONS OF STUDY	5
1.8 SCOPE OF THE STUDY	5
CHAPTER TWO: LITERATURE REVIEW	6
2.0 INTRODUCTION.....	6
2.1 DEFINITIONS OF KEY CONCEPTS/TERMS	6
2.2 THEORETICAL LITERATURE REVIEW ON NEONATAL SEPSIS.....	7
2.3 Contributing Risk Factors	7

2.4 Diagnosis.....	7
2.5 EMPIRICAL LITERATURE ON NEONATAL SEPSIS.....	7
2.6 Conceptual framework	8
2.6 SUMMARY.....	10
3.0 INTRODUCTION.....	11
3.1 RESEARCH APPROACH.....	11
3.3 TARGET POPULATION	11
3.4 SAMPLING PROCEDURES.....	11
3.3.1 Inclusion criteria.....	12
3.3.2 Exclusion criteria	12
3.4 SAMPLE SIZE	12
Sample size was 187, the simplified formula proposed by Taro Yamane (1967) was used.	12
3.5 RESEARCH INSTRUMENTS FOR DATA COLLECTION	12
3.6 DATA COLLECTION PROCEDURES.....	12
3.7 ETHICAL CONSIDERATION	13
3.8 DATA ANALYSIS	13
3.9 RELIABILITY AND VALIDITY MEASURES	13
CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION	14
4.0. INTRODUCTION.....	14
4.1. PRESENTATION OF FINDINGS AND INTERPRETATIONS.....	14
4.1 Demographic Characteristics of Respondents	14
4.1.2 Prevalence of sepsis among neonates	15
4.1.3 Factors Associated with Sepsis Among Neonates	15
4.2. DISCUSSION OF FINDINGS	19

4.3 SUMMARY OF FINDINGS	20
CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS	21
5.0 INTRODUCTION.....	21
5.1 CONCLUSION.....	22
5.2 RECOMMENDATIONS.....	22
REFERENCE.....	22
APPENDICES	a
APPENDIX 1: CHECK LIST FOR DATA COLLECTION	b
APPENDIX 2: LETTER GRANTING COLLECTION OF DATA.....	f

LIST OF TABLES

Table 1: Demographic characteristics of participants.....	12
Table 2: Prevalence of sepsis infections among children identified.....	13
Table 3: Maternal Health Related Factors to neonatal sepsis	14
Table 4: Neonatal Health Related Factors to neonatal sepsis	15
Table 5: Medical related factors to the Neonatal sepsis	16

LIST OF APPENDICES

APPENDIX 1: DATA COLLECTION WORK SHEET	b
APPENDIX 2: LETTER GRANTING COLLECTION OF DATA.....	f

LIST OF ABBREVIATIONS AND ACRONYMS

ANC: Antenatal care

APGAR: Appearance, pulse, grimace, activity, and respiration

CHW: Community Health Workers

CNS: Central nervous system

CRP: C Reactive Protein

EOS: Early onset sepsis

GBD: Global Burden of Disease

GBS: Group B Streptococcus

LOS: Late onset sepsis

NEC: Necrotizing enterocolitis

NICU: Neonatal Intensive care unit

PIH: Pregnant Induced Hypertension

PROM: Premature Rapture of Membrane

RECS: Research Ethical Committees

SPSS: Statistical Package for Social Science

STI: Sexual Transmitted Infection

TBA: Traditional birth attendant

UNICEF: United Nations International Children's Emergency fund

KP: KIBOGORA POLYTECHNIC

UTI: Urinary Tract Infection

CHAPTER ONE: GENERAL INTRODUCTION

1.0 INTRODUCTION

Sepsis is a dysregulated host response to infection that results in organ failure that poses a serious risk to life (Singer et al. 2016). Neonatal sepsis and associated infections were projected to cause 1.3 million incident cases annually (about 937 instances per 100,000 live births) and 203000 sepsis-related neonatal deaths by the Global Burden of Disease (GBD) (James et al. 2018) (James et al. 2018). This chapter discusses the study's background, problem statement, purpose of the study, and research objectives. It also introduces the research questions, significance of the study, limitations of the study, and scope of the study.

1.1. BACKGROUND OF THE STUDY

Neonatal sepsis (NS) is a worldwide problem that presents challenge in a management to care groups for neonates. Existing published data have suggested that sepsis causes about 10% of all maternal, and 26% of all neonatal deaths (Afsharpaiman et al. 2012). Mortality due to sepsis has increased by approximately 13.7% each year over the past 2 decades. Furthermore, the prevalence of sepsis in the developing countries is much higher than in the developed world, and in some of these countries, sepsis-related mortality rate was estimated as high as 50% for those neonates who are not treated (Afsharpaiman et al. 2012) may be it was due to poor access to adequately equipped and staffed healthcare facilities (Afsharpaiman et al. 2012)

According to Ranjeva, and her colleagues, Sub-Saharan Africa (SSA) Neonatal sepsis causes an estimated 750 000 annual deaths worldwide with mortality highest in sub-Saharan Africa. bears a burden of neonatal mortality, contributing an estimated 49.6% of under-5 deaths in 2013. Neonatal sepsis is responsible for 1.6 times the global number of childhood deaths as malaria, and over four times the number of childhood deaths caused by HIV. Despite its disproportionate burden on childhood mortality, neonatal sepsis receives substantially less investment internationally as a public health priority compared with other major conditions (Ranjeva, Warf, and Schiff 2018).

Neonatal sepsis is one of the major cause of neonatal death in Rwanda (Khurmi, 2017). It was reported that 63% of neonatal deaths audited took place in the district/provincial hospitals, 24% at health centers and 4.5% at home. Furthermore, 58% of deaths took place in the first 48 hours after birth and 89% within the first week. The major causes of neonatal deaths include birth

asphyxia (39%), prematurity (32%) and sepsis/infection (10%). In addition, the audit identified that 71% of neonatal deaths were preventable, 49% of mortality was associated with delay in care seeking, 27% due to late decision during labor and 24% due to insufficient neonatal case management (Khurmi, 2017)

Neonatal sepsis is also a problem at Rwamagana provincial hospital because according to the research done by A. M. Kayinamura, Y. Serubibi and J. B. Kakoma in 2009, this is the only neonatal health related research done at RPH, it showed that the specific early neonatal mortality rate was 12.3 %, neonatal sepsis was third most diagnosis with 30% and the neonatal sepsis was the one of most cause of neonatal death (Kayinamura et al., 2010).

In Ethiopia, according to Getabelew and his colleague (2018), Neonatal sepsis was the major newborn killer in Ethiopia where it accounted for more than one-third (33%) of neonatal deaths in 2016(Getabelew et al., 2018). According to the 2016 Ethiopia Demographic and Health Surveys, neonatal mortality rate was 29 deaths per 1000 births in 2016. In addition, according to the research done in selected hospitals in Hashemene Town, Oromia Regional state in 2017, shows that among 244 neonates who were admitted in NICU, 190(77.9%) had neonatal sepsis (Getabelew et al., 2018).

Normally neonatal sepsis is associated with the variety of risk factors, and the risk factors of neonatal sepsis are classified based on the onset of sepsis (Gollehon, 2019). The risk factors for early onset of sepsis are prolonged ruptured membranes (> 18 hours), fetal distress, maternal pyrexia (> 38 C) or overt infection such as a UTI, gastroenteritis/gonorrhoeal illness, multiple vaginal examination, preterm delivery, history of GBS infection in previous infant, GBS bacteria in this pregnancy (Aseffa & Abathun, 2020). And the factors late onset sepsis is prolonged hospitalization such as a preterm infant in a NICU, presence of foreign bodies such as intravenous catheters, endotracheal tubes, cross-infection by staff and parents (Gollehon, 2019).

1.2 PROBLEM STATEMENT

Worldwide, neonatal sepsis is one of the most cause of neonate death in the world (Odejimi et al. 2022). Neonatal sepsis accounts for an estimated 26% of under-five deaths (Nimukuze et al. 2021) with sub-Saharan Africa having the highest mortality rates, sub-Saharan Africa has an uneven burden of neonatal mortality, leading to an estimated 49.6% of all under-five deaths in 2013 and estimated 5.3-8.7 million disability-adjusted life-years have been lost in 2014 due to neonatal sepsis and consecutive long-term morbidity. In sub-Saharan Africa neonatal sepsis is the main newborn killer where more than one third of neonatal deaths (Nimukuze et al. 2021).

According to WHO, the global burden of sepsis is difficult to ascertain, in 2017, almost half of all global sepsis cases occurred among children, with an estimated 20 million cases and 2.9 million global deaths in children under five years of age, sepsis incidence and mortality exist; approximately 85.0% of sepsis cases and sepsis-related deaths worldwide occurred in low- and middle-income countries (WHO 2020). In developing countries research shows that neonatal sepsis receives less substantial international investment as a public health priority compared with other major conditions (Adatara et al. 2019). In east Africa, a research done on neonatal sepsis found that the prevalence of neonatal sepsis in 2019 was 29.6% (Odejimi et al. 2022).

Area of study, there was a research done by , (kagaba, 2018) about neonatal mortality in Kibogora District Hospital he found that neonatal sepsis is one of the most causes of neonatal mortality, there was no research done about its prevalence and associated risk factors of neonatal sepsis that is why we were encouraged to do research about it and during our clinical placement, we found that there were neonates who were admitted in neonatology at Kibogora District Hospital with neonatal sepsis and it became also our motivation to do our research on its prevalence and its associated risk factors.

1.3 PURPOSE OF THE STUDY

The purpose of this study was to assess prevalence and risk factors contributing to neonatal sepsis at Kibogora District Hospital

1.4 RESEARCH QUESTIONS

1. what are the prevalence of neonatal sepsis at Kibogora district hospital from January to December 2021?

2. what are the risk factors contributing to neonatal sepsis at Kibogora district hospital from January to December 2021?

1.5 OBJECTIVES OF STUDY

this study was guided by the following specific objectives:

1. To identify prevalence of neonatal sepsis at Kibogora district hospital from January to December 2021

2. To identify risk factors contributed to the neonate sepsis at Kibogora district hospital from January to December 2021

1.6 SIGNIFICANCE OF THE STUDY

This research helped us to get better understanding about prevalence and risk factors contributed to neonatal sepsis at Kibogora district hospital. Helped us to know how to conduct research

The result of the present study will help the researchers who want to conduct research at Kibogora district hospital

This will help to identify and discover the gaps related to risk factors of neonatal sepsis

It will help other students as reference and motivate them when they are doing their research

Our research will help the staffs of Kibogora hospital to know the current result about the prevalence and risk factors associated neonatal sepsis and what measures to be undertaken.

This research provided the information which will be used by policy makers to set different policies which will be help to detect risk factors of neonatal sepsis and to prevent them early.

The study was clear defined the issue of neonatal sepsis and increase public awareness about neonatal sepsis by exploring the risk factors that contributed to the neonatal sepsis and its prevalence at Kibogora district hospital. not only exploration of risk factors and prevalence of neonatal sepsis but also contributed to the management of neonatal sepsis through clear identification of factors contributed to neonatal sepsis.

1.7 LIMITATIONS OF STUDY

Financial limitations, transportation costs, and the need for materials to undertake good research all placed restrictions on the study. Only neonates and their mothers who visited Kibogora District Hospital were included in the study. Another drawback was that it was challenging for the researchers to obtain data from numerous hospital books. There were some findings that were overlooked or hard to find.

1.8 SCOPE OF THE STUDY

In space

It is limited at Kibogora district hospital

In domain

The study is limited in medical domain especially in neonatology department

In time

The study has conducted in period of twelve months from January to December 2021

CHAPTER TWO: LITERATURE REVIEW

2.0 INTRODUCTION

This chapter presents with review of existing theoretical literatures and framework about risk factors of neonatal sepsis and diagnosis of neonatal sepsis.

2.1 DEFINITIONS OF KEY CONCEPTS/TERMS

Neonate: A newborn baby, specifically a baby in the first 4 weeks after birth and less than 28 days old (Medicine Net, 2018)

Sepsis: Is a serious medical condition caused by an overwhelming immune response to infection where a body release the immune chemicals into a blood to combat the infection, and those chemicals trigger widespread inflammation which leads to blood clots and leaky blood vessels, as result blood flow is impaired, and that deprives organs to nutrients and oxygen and leads to organ damage (Pendleton, 2018).

Neonatal sepsis: is a clinical syndrome consisting of nonspecific symptoms and signs of infection accompanied by infection in blood which is shown by CRP positive for the first 28 days of life (Coetzee, Mbowane, and de Witt 2017).

Early neonatal sepsis: refers to sepsis presenting in the first 7 days of life (although some refer to EOS as within the first 72 hours of life) (Sankar et al., 2018).

Late neonatal sepsis: referring to presentation of sepsis after 7 days (or 72 hours, depending on the system used) (Sankar et al., 2018)

Prevalence: This is the ratio (for a given time period) of the number of occurrences of a disease or event to the number of units at risk in the population (Mohamud, 2018).

Risk factors: Something that increases a person's chances of developing a disease. For example, cigarette smoking is a risk factor lung cancer, and obesity is a risk factor for heart disease

2.2 THEORETICAL LITERATURE REVIEW ON NEONATAL SEPSIS

According to (Singh, 2021), Neonatal sepsis refers to an infection involving the bloodstream in newborn infants less than 28 days old. It remains a leading cause of morbidity and mortality among neonates, especially in middle and lower-income countries, Neonatal sepsis is divided into two groups based on the time of presentation after birth: early-onset sepsis (EOS) and late-onset sepsis (LOS). EOS refers to sepsis in neonates at or before 72 hours of life and LOS is defined as sepsis occurring at or after 72 hours of life.

2.3 Contributing Risk Factors

The risk factors for neonatal sepsis can be divided into three categories: maternal factors, neonatal factors and factors associated with the NICU. Thus, the identified maternal risk factors were premature rupture of membranes and maternal infection. In terms of neonatal risk factors, prematurity, low birth weight, low Apgar score, meconium-stained amniotic fluid, birth asphyxia, not crying immediately after birth and need for resuscitation were the primary risk factors identified. Regarding the NICU, the central venous catheter was the most isolated risk factor, both its use and duration, followed by mechanical ventilation and parenteral nutrition (Araújo and Guimarães 2020).

2.4 Diagnosis

Laboratory studies used to evaluate for early-onset and late-onset sepsis include a full blood count(FBC), measurement of levels of C-reactive protein (CRP) and other infection markers

2.5 EMPERICAL LETURETURE ON NEONATAL SEPSIS

According to the study conducted on prevalence of neonatal sepsis and associated risk factors among neonates in neonatal intensive care unit at selected governmental hospitals in Shashemene town, Oromia regional state, Ethiopia, 2017 state that among 244 neonates who were admitted in NICU 190(77.9%) had neonatal sepsis, and from those neonates 123 (64.7%) had early onset neonatal sepsis and 67 (35.3%) had late onset neonatal sepsis (Getabelew et al. 2018). This study also showed that among 244 sampled neonates 22 (9%) of their mothers had history of UTI and among them, 14 (5.7%) neonates had developed neonatal sepsis, and 17 (7%) of their mothers had history of meconium stained amniotic fluid out of them 10 (4%) developed neonatal sepsis (Getabelew et al. 2018). Concerning place of delivery 181 (75%) of neonates were delivered in

hospital and, out of them 144 (79.6%) neonates developed neonatal sepsis, furthermore 36 (14.6%) were delivered in health center; from this 27 (11%) of neonates had neonatal sepsis (Getabelew et al. 2018).

According to the study conducted on prevalence of neonatal sepsis and associated factors among neonates in Temeke and Mwananyamala Hospitals in Dar as Salaam, Tanzania a total of 220 neonates were recruited, 69 (31.4%) had sepsis. The risk factors associated with neonatal sepsis were maternal age of >35 years and resuscitation at birth (Jabiri et al. 2016)

According to the study conducted on prevalence of neonatal sepsis and associated factors among neonates in a Tertiary Hospital, North West Nigeria The prevalence of neonatal sepsis was 37.6%. *Escherichia coli* was the most commonly isolated organism (Abdulhakeem et al. 2020). Babies born with an Apgar score of <6 within the 1st min were 2.4 times more likely to develop neonatal sepsis than those whose Apgar score was higher. Neonates of mothers who had urinary tract infection during pregnancy were 2.3 times more likely to have had sepsis and those whose mothers had premature rupture of membranes were 4.6 times more likely (Abdulhakeem et al. 2020).

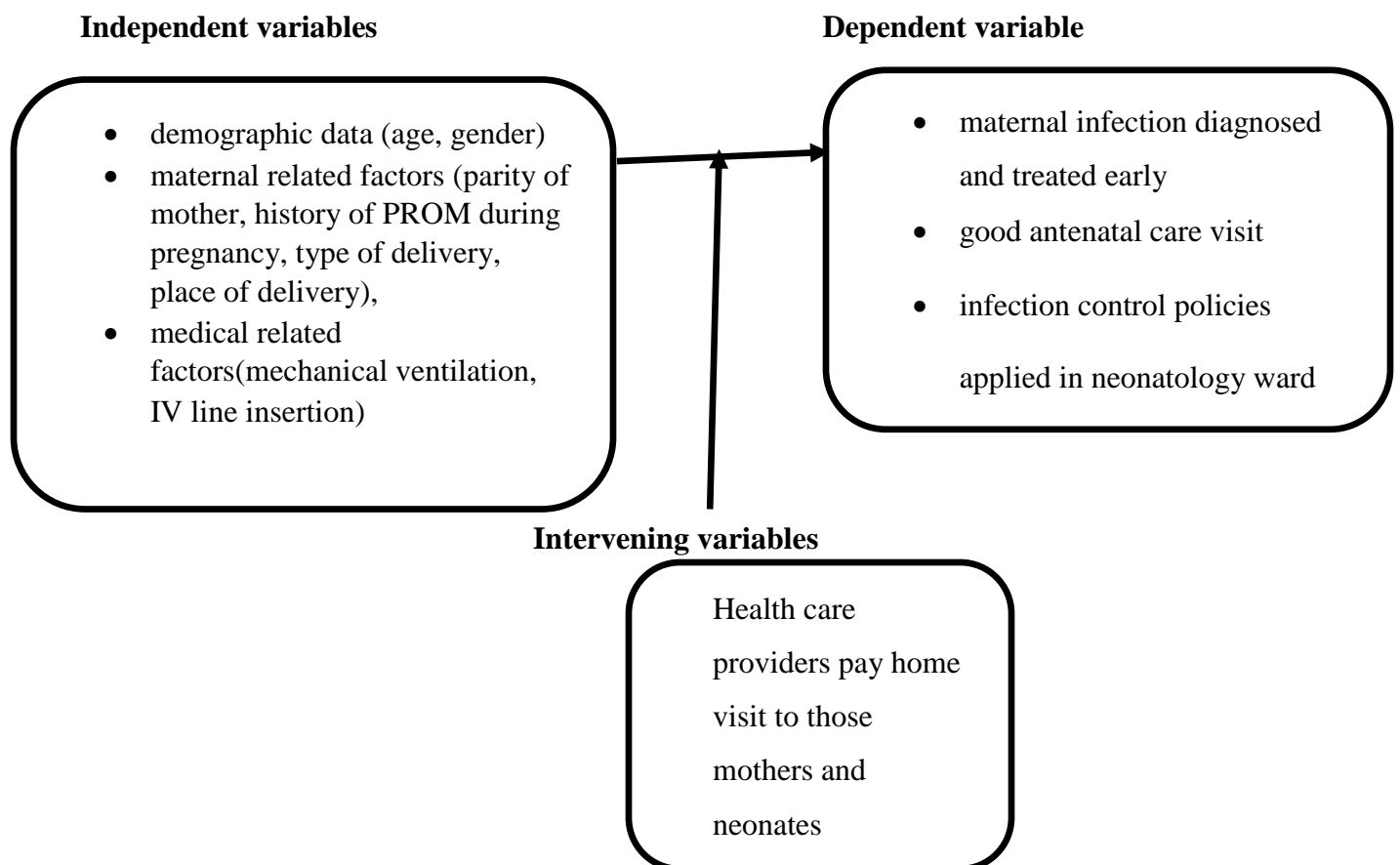
The study conducted in Kenya revealed that among 1262 admissions to the newborn unit during 4 years, 23.9% were diagnosed with neonatal sepsis and overall mortality rate of admissions was 24.7%, whereas mortality attributed to sepsis was 18.2% in addition the research showed that there is strong biannual peak in sepsis cases with peaks in July 2012 and July 2014 (J Le Geyt, 2016). Study done by Beletew & Kassie in 2019 in East Africa which revealed that the prevalence of neonate sepsis was 29.65 % (Abate et al. 2020).

A study conducted in Ethiopia revealed that the prevalence of neonatal sepsis was 49.98%. Newborns with a birth weight of less than 2.5 kg were 1.42 times more likely to develop neonatal sepsis infection compared to normal babies. The odds ratios of preterm babies were 3.36 to develop neonatal sepsis compared to term infants (Amare et all, 2020)

2.6 CONCEPTUAL FRAMEWORK

A conceptual framework is a written or visual representation of an expected relationship between independent variable, dependent variable and intervening variable the conceptual framework is generally developed based on literature review of existing studies about the assessment of prevalence and risk factors contributed to neonatal sepsis (Swaen, 2021) . First of all, an independent variable is the variable you manipulate, control, or vary in an experimental study to explore its effects. In other words, independent variables are like causes. Whereas, dependent variables are expected to change as a result of an experimental manipulation of the independent variable or variables i.e. dependent variables are like the effects. Intermediate or intervening variables are part of the effects that the exposure has on the outcome. Intermediate variables lie in the causal pathway of interest, meaning that the exposure affects the outcome through affecting the intermediate variable, i.e. the exposure has an indirect effect on the outcome. In this Figure the dependent variable (neonatal sepsis prevention and control) depend on independent variables including: factors like demographic data (age, gender), maternal related factors (parity of mother, history of PROM during pregnancy, type of delivery, place of delivery), medical related factors(mechanical ventilation, IV line insertion) intervening variables is age, gender.

Figure 1: Conceptual framework



2.6 SUMMARY

According to reviewed literatures neonatal sepsis is one of the most common reasons for admission to neonatal intensive care unit. It can be categorized as early or late neonatal sepsis, according to its onset. The early onset of this infection is within 72 hours of birth, and a late onset sepsis occurs within 72 and 28 days after birth of the infant and also worldwide neonatal sepsis is counts about 26% of under-five death

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.0 INTRODUCTION

This chapter describes the methodology used to conduct this research. It includes the following sections: research approach and design, target population, sample design, data collection, data analysis, and ethical consideration.

3.1 RESEARCH APPROACH

A quantitative approach was used where emphasizing objective measurements and statistical analysis of data gathered through checklists. The study involved the statistical measurement (numbers) or numerical analysis of data.

3.2 RESEARCH DESIGN

A retrospective study was conducted at Kibogora District Hospital to determine prevalence and the risk factors contributing to neonatal sepsis where we used secondary data.

3.3 TARGET POPULATION

The study population was neonates and their mothers from day 0 to day 28 of life who was admitted in neonatology service at Kibogora district hospital. Neonatology service have admitted 352 neonates from January to December 2021. Only 187 neonates were enough to represent the whole population studied

3.4 SAMPLING PROCEDURES

A Simple random sampling strategy was used, firstly to assess prevalence of neonatal sepsis, we used simple random sampling by putting all the files of neonates who were admitted from January to December 2021 together and we wrote the file number on papers, then after we put the papers in the boxes then we picked papers one by one randomly till we reached to our sample size. In assessing risk factors, we took that files that we used for assessing prevalence and we used them also to find risk factors. Here each neonate admitted in neonatal service at Kibogora district hospital from January to December 2021 had equal chances of being selected and intervene in our study this is of good important because it is useful in decrease of confounding variables.

3.3.1 Inclusion criteria

All neonates who were admitted to the neonatology unit at Kibogora District Hospital between January and December 2021 with 0-28 days.

3.3.2 Exclusion criteria

Neonates files with incomplete patient information

3.4 SAMPLE SIZE

Sample size means the number of subjects that is selected from the general population and is considered as representative of the true population for that specific study . A sample size should be adequate population so that the findings can be generalized to the population. Sample for this study was obtained using formula given by Taro Yamane 1967

Sample size was 187, the simplified formula proposed by Taro Yamane (1967) was used.

$$n = \frac{N}{1+N(e)^2} = \frac{352}{1+352(0.05)^2} = 187.2 \sim 187$$

Where:

N: represent target population which is equal to 352 Neonates

n: represent sample size

e: represent stands for level of precision which is equal to 5% or 0.05

3.5 RESEARCH INSTRUMENTS FOR DATA COLLECTION

Data was collected using a checklist that was structured to obtain the data able to fulfil the study objectives. A sample of the checklist is included in the appendix of the dissertation.

3.6 DATA COLLECTION PROCEDURES

Using a checklist, records department was approached and the files for neonates treated for neonatal sepsis were be requested, sorted, organized and only those that met the criteria were used to obtain data.

3.7 ETHICAL CONSIDERATION

For carrying out the study, written permission was granted by Kibogora Polytechnic department of General nursing and the authorities of Kibogora District Hospital. To protect the privacy and confidentiality of the neonates' patient data, initials was used. The study's objectives were fully explained to the Director of Nursing and the Chief of the Neonatology Department prior to data collection, and their permission was granted.

3.8 DATA ANALYSIS

In this study, the percentage, ratio calculations, tables, and charts presentation of results was analysed using Microsoft Office Excel, Descriptive statistics were used to explain our study sample. Cross tabulation method (Statistical Package for Social Sciences (SPSS) was used.

3.9 RELIABILITY AND VALIDITY MEASURES

Validity, is defined as the extent to which a concept accurately that instrument is measuring what it supposed to measure, while a reliability relates to the consistency of a measure. To guarantee the validity of the instrument, the checklist was given to the supervisor and in charge of neonatal services and find out if the checklist measure what intended to measure moreover, in order to check reliability of our instrument we have conducted pilot study.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4. 0. INTRODUCTION

This chapter analyses the data collected, interprets it, and presents various findings from the research to relate it with the study objectives and study questions. In the presentation statistical, tables, and percentages are used to summarize the data.

4.1. PRESENTATION OF FINDINGS AND INTERPRETATIONS

4.1 Demographic Characteristics of Respondents

Table 1 presents the demographic details of the 187 neonates and their mothers who took part in the study. Out of 187 newborns, 80 (42.8%) of them were male and 107 (57.2%) were female. According to neonates' age, the majority of newborns belonged into the 0–10 days category with 42.2% (79), followed by the 11–20 days category with 34.8% (65), and the 21–28 days category with 23%. (43). The majority of their mothers were in the 20-35 age group, which accounted for 46% (86), followed by the over-35 age group with 32.6% (61), and the under-20 age group with 21.4%. (40).

Table 1: Demographic characteristics of participants (N=187)

Characteristic	Frequency	Percentage (%)
Mothers Age		
Under 20 years	40	21.4
20-35 years	86	46
Above 35 years	61	32.6
Neonate's age		
0-10 days	79	42.2
11-20 days	65	34.8
21- 28 days	43	23
Neonate's sex:		
Male	80	42.8
Female	107	57.2

4.1.2 Prevalence of sepsis among neonates

In this study, 23% of the research subjects had neonatal sepsis. Among 187 neonates, 23% (43) had sepsis, while 77% (144) did not had sepsis.

Table 2: Prevalence of sepsis infections among children identified

Parameter	Frequency	Percentage
Neonates with sepsis	43	23
Neonates without sepsis	144	77
Total	187	100%

4.1.3 Factors Associated with Sepsis Among Neonates

4.1.3.1 Maternal Health Related Factors to neonatal sepsis

The factors included in Table 3 below relate to newborn sepsis and maternal health-related factors. All P values for the significance tests for place of delivery, type of delivery, history of UTI/STI during pregnancy, and history of PROM during pregnancy were less than 0.05. While the mother's parity, the frequency of antenatal visits, the length of labor, pre-eclampsia/PIH during pregnancy, and bleeding during pregnancy/labor did not demonstrate any associations.

Table 3: Maternal Health Related Factors to neonatal sepsis

Characteristic	Frequency	Percentage (%)	P value
Parity of mother			
Primipara	63	33.7	0.656
Multipara	124	66.3	
Times for receive antenatal care during pregnancy			
None	44	23.5	0.141

Once	21	11.2	
Two times	35	18.7	
Three Times	57	30.4	
Four Times	30	16	
Place of delivery			
Home	28	15	0.0001
Hospital	90	48.1	
Health center	69	36.9	
Type of delivery			
Spontaneous Vaginal delivery	130	69.5	0.0021
Instrumental vaginal delivery	16	8.5	
Caesarean section	41	22	
PIH/Eclampsia during the pregnancy			
Yes	33	17.7	0.612
No	154	82.3	
Bleeding during the pregnancy/labour			
Yes	59	31.6	0.920
No	128	68.4	
UTI/STI during the pregnancy			
Yes	66	35.3	0.0018

No	121	64.7	
History of PROM during pregnancy			
Yes	42	22.5	0.022
No	145	77.5	

4.1.3.2 Neonatal Health Related Factors to neonatal sepsis

Table 4 demonstrates the relationship between neonatal health-related factors and neonatal sepsis, where gestational age and birth weight statistically significantly ($P < 0.05$) differed from APGAR score and birth hypoxia did not show any significance.

Table 4: Neonatal Health Related Factors to neonatal sepsis

Characteristic	Frequency	Percentage (%)	P value
Gestational age			
Below 37 weeks.	33	17.6	0.001
Between 37 and 40 weeks	41	22	
Above 40weeks	113	60.4	
APGAR score			
Below 7	72	38.5	0.136
Above 7	114	61.5	
Birth Weight at birth			
Below 2.5kg	64	34.3	0.0013
Between 2.5 kg and 4kg	75	40	

Above 4kg	48	25.7	
Birth asphyxia			
Yes	56	30	0.520
No	131	70	

4.1.3.3 Medical related factors to the Neonatal sepsis

Table 5 illustrates the relationship between medical factors and neonatal sepsis and neonatal sepsis, where placing a neonate on ventilation was significantly P0.05, while placing a neonate on oxygen via a nasal mask or cannula, placing a neonate on an IV line, providing nutrition through a nasal gastric tube, and resuscitating a neonate during birth did not demonstrate any significance.

Table 5: Medical related factors to the Neonatal sepsis

Characteristic	Frequency	Percentage (%)	P value
Does the neonate receive mechanical ventilation?			
Yes	54	28.9	0.001
No	133	71.1	
Do neonates receive Oxygen via nasal mask or cannula?			
Yes	36	19.2	0.18
No	151	80.8	
Does the neonate had IV line?			
Yes	62	33.1	0.375
No	125	68.9	

Does the neonate had used nasal gastric tube for feeding?			
Yes	70	37.4	0.078
No	117	62.6	
Did the neonate resuscitate during birth?			
Yes	40	21.4	0.098
No	147	78.6	

4.2. DISCUSSION OF FINDINGS

Neonatal sepsis is still a major problem in developing countries, causing significant morbidity and mortality. The prevalence and associated risk factors of neonatal sepsis in neonates admitted to Kibogora District Hospital were studied in this study. The total prevalence in this study was 23%, which was lower than the 31.4% found in a 2016 study on Prevalence and risk factors for neonatal sepsis in Temeke and Mwananyamala Hospitals in Dar es Salaam, Tanzania. (Jabiri et al. 2016). Furthermore, different studies in different countries revealed different figures: 42.9% in Ethiopia (Nur and Osman 2021), 33.1% in Nigeria (West and Tabansi 2013), and 35.1% in India (Samaga 2016).

The total prevalence in this study was 23%, which was higher than the 1.8% prevalence of neonatal sepsis found in a study conducted by Juliana et al. in Brazil on Early neonatal sepsis: prevalence, complications, and outcomes in newborns with 35 weeks of gestational age or more (Juliana et al. 2022). In addition, Fleischmann et al., study on Global incidence and mortality of neonatal sepsis: a systematic review and meta-analysis found that the overall random-effects estimate for neonatal sepsis case was 17.6%, which is lower than our findings of 23% (Fleischmann et al. 2021).

Our study's findings revealed a relationship between gestational age and sepsis. Preterm delivery was found to be a significant risk factor for neonatal sepsis in comparison to other studies, and this factor has been well documented in previous studies (Jabiri et al. 2016). However, a study conducted in the neonatal intensive care unit of Bishoftu General Hospital in Debrezeit, Ethiopia,

found that preterm neonates did not have a significant association with the occurrence of neonatal sepsis. This could be due to the availability of health care services or the similarity of the study design used (Woldu et al. 2014).

Concerning antenatal care, our findings on antenatal visits did not show a significant relationship with sepsis, whereas a study conducted in Uganda found that a lack of ANC was significantly associated with neonatal sepsis. Thus, antenatal care is a predictor of neonatal sepsis, implying that maternal reproductive health utilization, including this critical care during pregnancy, should be increased (Tumhamye et al. 2020).

In our study we found a link between sepsis and ventilation in our study. In terms of ventilation, neonates who received mechanical ventilation were more likely to develop neonatal sepsis than neonates who did not receive mechanical ventilation after birth. There was a significant relationship between mechanical ventilation and sepsis. A similar study in Mexico found that mechanical ventilation was a predictor of neonatal sepsis. These similarities could be attributed to a lack of knowledge among some health care providers regarding aseptic precautions when resuscitating neonates in all settings (Leal et al. 2012).

In our study revealed a relationship between birth weight and neonatal sepsis, where birth weight was significantly associated with neonatal sepsis and a study conducted in Ethiopia revealed that newborns with a birth weight of less than 2.5 kg were 1.42 times more likely to develop neonatal sepsis infection compared to normal babies (Amare et al., 2020)

4.3 SUMMARY OF FINDINGS

In our study, 187 neonates and their mothers participated. There were 80 (42.8%) males and 107 (57.2%) females among the 187 newborns. The majority of newborns, 42.2% (79), belonged to the 0-10 day category, followed by the 11-20 day category, 34.8% (65), and the 21-28 day category, with 23%. (43). The majority of their mothers were between the ages of 20 and 35, accounting for 46% (86), with the over-35 age group accounting for 32.6% (61), and the under-20 age group accounting for 21.4%. (40).

In this study, 23% of the participants had neonatal sepsis. Sepsis affected 23% (43) of the 187 neonates, while 77% (144) did not. Place of delivery, type of delivery, history of UTI/STI during pregnancy, and history of PROM during pregnancy were the factors related to newborn sepsis and

maternal health. There was a statistically significant relationship between neonatal health-related factors and neonatal sepsis gestational age and birth weight. For medical factors and neonatal sepsis, where placing a neonate on ventilation was significantly beneficial

This study found that neonates born to mothers with a history of urinary tract infections (UTIs) were more likely to have sepsis, which is similar to a previous study. This finding is consistent with previous research in Mekelle, Ethiopia (Gebremedhin et al. 2016), and Bishoftu, which found that maternal urinary tract and sexual infections were a significant risk factor for neonatal sepsis. This finding may help to explain why maternal health problems are frequently associated with neonatal sepsis, particularly if untreated during the third trimester of pregnancy or labor. As a result, neonatal sepsis may result from the infectious agent colonizing the birth canal (Woldu et al. 2014).

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.0 INTRODUCTION

This chapter summarizes the results from the study, makes a conclusion regarding the findings of the study, and finally presents the recommendations on various concerned institutions.

5.1 CONCLUSION

In this study at Kibogora District Hospital, study found that the total prevalence of neonatal sepsis among neonates admitted was 23% (43). The study found that place of delivery, type of delivery, history of UTI/STI during pregnancy, history of PROM during pregnancy, gestational age, and placing neonates on mechanical ventilation were all risk factors contributing to neonatal sepsis. As a result, it is important to train health professionals, provide health care services in accordance with standards, and monitor and assess obstetrical/neonatal care during labor and delivery.

5.2 RECOMMENDATIONS

In this study, the following recommendations were made in different levels to improve those risk factors contributing to neonatal sepsis:

To Kibogora DH: providing standard-compliant healthcare, monitoring and evaluating obstetrical/neonatal care during labor and delivery, and training health care personnel's especial to those who provide care to neonates..

To health care providers: Urinary tract infections should be identified early and treated quickly before giving birth, Preventative therapies like cervical cerclage for mothers with incompetent cervix and quick treatment of maternal vaginal infections should be implemented to stop premature birth and those UTI\STI.

To mothers who attend maternity service for delivery: Encourage hospital deliveries and prenatal care to those mother who attend maternity for delivery service

5.3 SUGGESTIONS FOR FURTHER STUDY

More research is required to demonstrate that most microorganisms cause neonatal sepsis, further laboratory diagnostic techniques should be applied. It is advised to do a more extensive study with a big sample size and various hospitals.

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APPENDICES

APPENDIX 1: CHECK LIST FOR DATA COLLECTION

Part 1: Socio-demographic characteristics of mothers with their neonates (age 0-28 days)

1. Mother's years:

- A. Under 20 years
- B. 20-35 years
- C. Above 35 years

2. Neonate's age:

- A. 0-10 days
- B. 11-20 days
- C. 21- 28 days

3. Neonate's sex:

- A. Male
- B. Female

Part 2: Determination of the prevalence of neonatal sepsis at Kibogora district Hospital.

Does the neonate diagnose with neonatal sepsis?

- A. Yes
- B. No

Part 3: Assessment of related factors to the Neonatal sepsis

❖ Maternal Health Related Factors

1. Parity of mother:

- A. Primipara
- B. Multipara

2. Times for receive antenatal care during pregnancy

- A. None
- B. Once
- C. Two times
- D. Three Times
- E. Four Times

3. Place of delivery

- A. Home
- B. Hospital
- C. Health center

4. Type of delivery

- A. Spontaneous Vaginal delivery
- B. Instrumental vaginal delivery
- C. Caesarean section

5. Fever during the time of labor

- A. Yes
- B. No

6. PIH/Eclampsia during the pregnancy

- A. Yes
- B. No

7. Bleeding during the pregnancy/labor

- A. Yes
- B. No

8. UTI/STI during the pregnancy

- A. Yes
- B. No

A. Yes

B. No

9. History of PROM during pregnancy

A. Yes

B. No

❖ Neonatal Health Related Factors

1. Gestational age:

A. Below 37 weeks.

B. Between 37 and 40 weeks

C. Above 40weeks

2. APGAR score

A. above 5

B. below 5

3. Birth Weight at birth:

A. Below 2.5kg

B. Between 2.5 kg and 4kg

C. Above 4kg

4. Birth asphyxia

A. Yes

B. No

❖ Medical related factors to the Neonatal sepsis

1. Does the neonate receive mechanical ventilation?

A. Yes

B. No

2. Do the neonates receive Oxygen via nasal mask or cannula?

A. Yes

B. No

3. Does the neonate had IV line?

A. Yes

B. No

4. Does the neonate had used nasal gastric tube for feeding?

A. Yes


B. No

5. Did the neonate resuscitate during birth?

A. Yes

B. No

APPENDIX 2: LETTER GRANTING COLLECTION OF DATA

 **KIBOGORA POLYTECHNIC**
Granted Accreditation and Legal Personality by The Ministerial Order N° 7/2015 Official Gazette N° 03 of 19/01/2015
P.O.Box. 50 Nyamashuke Rwanda Tel: (+250)78371294 E-mail: info@kp.ac.rw Website: www.kp.ac.rw

August 31st, 2022

To: Director General OF Kibogora District Hospital

**KIBOGORA DISTRICT HOSPITAL
RECEPTION / MAIL RECEIVED
Date: 31 AUG 2022
Names: _____
Signature: _____**

Dear DG,

Subject: Request for data collection

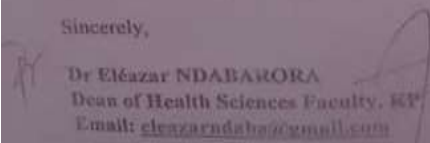
We would like to submit this request for data collection at Kibogora District Hospital for the completion of Bachelor degree dissertation of Mss. Vestine UWINGABIRE Reg. NO: 1800489 and Mss. Jeannette NIYITANGA Reg. NO: 2000481 The above mentioned are students of Kibogora Polytechnic Pursuing Bachelor of general nursing with Honors Program. They will need to conduct questionnaires with nurses and caregiver who are caring for the Neonates with Sepsis about the risk factors contributing to Neonatal sepsis among the neonates (Neonatology ward).


The study title is "ASSESSMENT OF PREVALENCE AND RISK FACTORS CONTRIBUTING TO NEONATAL SEPSIS AT KIBOGORA DH"

Kibogora Polytechnic pledges to ensure that all provided information will be confidential and used in the strict academic purpose

Any assistance rendered to the candidates will be highly appreciated. Please do not hesitate to contact me in case you need to do so.

Sincerely,


Dr Eléazar NDABARORA
Dean of Health Sciences Faculty, KP
Email: eleazarndaba@gmail.com





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Remarks: Low Plagiarism Detected - Your Document needs Optional Improvement.

// FACULTY OF HEALTH SCIENCES DEPARTMENT OF GENERAL NURSING ASSESSMENT OF PREVALENCE AND RISK FACTORS CONTRIBUTING TO NEONATAL SEPSIS Case study: Kibogora District Hospital, Period: January to December, 2021 A research paper submitted in partial fulfillment of the requirements for the award of Bachelor's Degree with honor in Health Sciences with General Nursing PREPARED BY: Vestine UWINGABIRE REG NO:1800489 Jeannette NIYITANGA REG NO:2000481 SUPERVISOR: MUVANDIMWE Jean de la Croix Kibogora, September 2022



Thank you!!