

AFRICA UNIVERSITY  
(A United Methodist- Related Institution)

AMOEBIASIS AMONG PREGNANT WOMEN ATTENDING  
ANTENATAL CLINIC AT PARIRENYATWA GROUP OF HOSPITALS  
FROM 2021 TO 2023

BY

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A RESEARCH DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF  
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## ABSTRACT

Amoebiasis, a parasitic infection caused by *Entamoeba histolytica* and poses a significant public health challenge, particularly in developing countries including Zimbabwe. Pregnant women are particularly vulnerable due to physiological changes that may compromise their immune system. The incidence of amoebiasis among pregnant women attending antenatal clinic at Parirenyatwa group of hospitals has not been comprehensively evaluated in recent years. This study investigates the prevalence and risk factors associated with amoebiasis among pregnant women attending antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023. A retrospective cross-sectional study was conducted using laboratory records of pregnant women tested for amoebiasis during antenatal visits. Data on demographic characteristics, medical conditions, and laboratory-confirmed amoebiasis cases were analysed. Prevalence rates were calculated, and associations between amoebiasis and potential risk factors such as residential area and medical conditions were examined. Out of 384 pregnant women screened for amoebiasis, 7 cases tested positive, resulting in an overall prevalence of 1.82%. The amoebiasis prevalences recorded in 2021, 2022 and 2023 were 2.75%, 1.00%, and 2.70%, respectively. All amoebiasis cases were found in women residing in high-density areas, indicating a significant association between poor living conditions and infection risk. Among pre-existing medical conditions, diabetes and hypertension were the most common comorbidities among infected pregnant women. Women aged 25-28 years had the highest prevalence compared to other age groups. The findings suggest that amoebiasis remains a concern among pregnant women, particularly those from high-density areas and those with underlying medical conditions like diabetes and hypertension. Improved sanitation, access to clean water, and targeted health education for high-risk pregnant women are recommended to reduce the burden of amoebiasis. Further research is needed to explore the long-term impact of amoebiasis on maternal and foetal health.

Key words: Amoebiasis, Pregnant Women, Antenatal Care, Prevalence, Risk Factors

## Declaration

I declare that this dissertation is my original work except where sources have been cited and acknowledge. The work has never been submitted, nor will it ever be submitted to another university for the award of a degree.

Nyasha Chiza

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**(Date)**



**Student's Signature**

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16 April 2025

**Supervisor's Signature (Date)**

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## **Dedication**

This dissertation is dedicated to all those who devoted their time and knowledge to this study, as their contributions have been invaluable in helping me reach this point.

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## **CHAPTER 1 INTRODUCTION**

### **1.1 Introduction**

Amoebiasis is a parasitic infection caused by *Entamoeba histolytica* and is prevalent in developing countries with poor sanitation and hygiene conditions (Shirley et al, 2019). The disease poses a significant threat to pregnant women and their unborn children, resulting in adverse outcomes like premature births, low birth weight and even still births (Ximenez et al, 2018). Despite the high prevalence of amoebiasis in developing countries, limited research has been conducted on the incidence of the disease among pregnant women in Zimbabwe. There is a lack of data on the incidence of the disease among pregnant women attending antenatal clinics in Zimbabwe. This gap in knowledge presents a significant challenge for healthcare providers in developing effective interventions to prevent and manage amoebiasis in pregnant women and their foetuses. Therefore, this study aims to assess the occurrence of amoebiasis among pregnant women who attended the Antenatal clinic at Parirenyatwa Group of Hospitals between 2021 and 2023. Parirenyatwa Group of Hospitals located in Harare, Zimbabwe serves as a crucial healthcare facility catering to a large population, including a significant number of pregnant women who attending its antenatal clinic. The findings from this study will offer valuable insights into the prevalence of the disease among pregnant women in Zimbabwe and inform the creation of effective interventions to prevent and manage amoebiasis during pregnancy.

### **1.2 Background to the study**

Amoebiasis is a disease caused by *Entamoeba histolytica*, a single-celled protozoa that enters the human body when a person ingests cysts through food or water or through

direct contact with faecal matter (Anthony, 2022). The disease is prevalent in many developing countries including Zimbabwe and it is transmitted through the ingestion of contaminated food or water, or through direct contact with an infected individual. According to Centres for Disease Control (2022) the symptoms of amoebiasis include loose stool, stomach pain, stomach cramping and bloody stools. Pregnant women are particularly vulnerable to this infection due to their weakened immune system, which is necessary to support the development of the foetus. The complications of amoebiasis in pregnant women include preterm labour, as amoebiasis can cause premature contractions in pregnant women leading to preterm delivery and labour. In a cross-sectional study conducted in Northern Tanzania, it was noted that women with amoebiasis had 2-fold increased odds of preterm delivery as compared to the reference group (Mahande & Mahande, 2016). Amoebiasis poses a significant threat to the expansion of the population and the general health of newborn infants in any given location due to the potential negative repercussions of the condition. Infants and newly born youngsters are often regarded as the most desirable age group in any given community. They represent hope everywhere in the country and are the future of the entire world. Not to mention the unquestionable and enormous value of their mothers, who have a significant influence on how they live. Pregnant women's health and wellness should always be a top concern around the world for these and other reasons. One of the most serious health issues that this population is at risk for is amoebiasis. Amoebiasis can cause anaemia in pregnant women due to loss of blood and nutrients through diarrhoea and vomiting and this can lead to fatigue and other health complications (Karadhaine, et al, 2020). Among other complications caused by amoebiasis in pregnant women that affect the foetus include intrauterine growth restriction, foetal distress, peritonitis which can be life threatening to both mother and

foetus (Fuseini, et al, 2018). Amoebiasis in pregnant women is quite a sensitive issue since each case can affect two lives at the same time (Armon, 2012). Amoebiasis is the third deadliest parasitic disease in the world.

Globally, amoebiasis remains a pressing public health concern, boasting a staggering 40,000 to 100,000 fatalities each year, with an estimated 50 million cases occurring worldwide (Dhawan, et al, 2019). Despite a wealth of research on the prevalence of this infection globally, documentation on the impact of amoebiasis in pregnant women is rather scarce, and many cases have been erroneously diagnosed or overlooked due to various factors. These include the nonspecific nature of the symptoms, as well as the infrequency with which amoebiasis is encountered in developed countries, resulting in a lower index of suspicion for travellers to endemic regions (Anthony & Venyo, 2022). Amoebiasis is endemic in developing regions of Central and South America, Africa and Asia. (Shirley et al, 2019). Although there are not many cases of amoebiasis in the United States of America, at least five people die every year from its complications and the majority of Americans with amoebiasis are immigrants or tourists from nations where amoebiasis is endemic (Shirley et al, 2019).

The highest burden of the disease is found in developing countries including those in the sub-Saharan Africa. According to the World Health Organization (2019), the incidence of amoebiasis in Africa ranges from 2% to 10% with an estimated 20 000 deaths reported annually. The prevalence of amoebiasis in pregnant women in Africa is not well documented, although studies suggest that pregnant women are more susceptible to the infection due to the hormonal changes that affect their immune system. In Lagos, Nigeria research by Akinsanya, et al (2019) indicated that pregnant women receiving treatment in primary healthcare facilities had an intestinal parasite frequency of 0,8% for *Entamoeba histolytica*, 7,5% for *E. coli*, 0,5% for *Ascaris*

*lumbricoides* and 0,8% for hookworm A study conducted in Tanzania reported that pregnant women who had amoebiasis had 79% increased odds of having a preterm delivery compared to those who had no amoeba infection (Mahende & Mahende, 2016). Another study conducted at Thika District Hospital in Nairobi, Kenya examining parasitic infections and risk factors associated with amoebiasis among pregnant women attending the antenatal clinic found that the prevalence of amoebiasis was 8,3% among the study participants and also found that low education level, poor hygiene practices and consumption of untreated water were significant risk factors for amoebiasis (Wekesa, et al, 2014)

Pregnant women in Zimbabwe are at an increased risk of amoebiasis due to poor living conditions and inadequate healthcare services. However, there is limited research on the incidence of amoebiasis among pregnant women in Zimbabwe, particularly urban areas. Parirenyatwa Group of Hospitals is the largest referral hospital in Zimbabwe and it provides antenatal care services to pregnant women from various regions and socio-economic backgrounds and also infectious diseases screening. The study aimed to provide insights into the burden of amoebiasis among pregnant women in Zimbabwe particularly in urban areas, and to identify factors that contribute to high incidence of the disease. The findings of this study will guide policy on what interventions to use in order to reduce the incidence of amoebiasis among pregnant women.

### **1.3 Statement of problem**

Amoebiasis, a parasitic infection caused by the amoeba *Entamoeba histolytica*, poses a significant public health concern, particularly among vulnerable populations such as pregnant women. The incidence of amoebiasis among pregnant women attending antenatal clinic at the Parirenyatwa Group of Hospitals has not been comprehensively evaluated in recent years. This leaves healthcare professionals and policy-makers with

a limited understanding of the extent of the problem and the impacts it may have on the health and well-being of pregnant women and their unborn children.

The proposed research aimed to address this knowledge gap by evaluating the incidence of amoebiasis among pregnant women who attended the antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023. By identifying the prevalence, pregnancy trimester most associated with amoebiasis cases and associated risk factors of amoebiasis in this specific population, the study would provide crucial insights for designing targeted interventions and preventive measures. The research project employed a comprehensive approach, including data collection on the prevalence of amoebiasis among pregnant women and the identification of potential risk factors. The collected data was analysed to determine the incidence rate of amoebiasis and its potential impact on maternal and fetal health outcomes. The findings of this study will have several implications. Firstly, they will provide a better understanding of the burden of amoebiasis among pregnant women attending antenatal care at Parirenyatwa Group of Hospitals. This knowledge will enable healthcare providers to develop evidence-based strategies to effectively manage and prevent the infection in this vulnerable population. Secondly, the research outcomes can contribute to the development of policies and guidelines for screening, diagnosis, and treatment of amoebiasis among pregnant women in Zimbabwe.

Finally this research project aimed to contribute to the improvement of overall health and well-being of pregnant women by providing evidence that will guide interventions that will be used to reduce the incidence and impact of amoebiasis. By addressing this critical healthcare concern, we can ensure the provision of quality antenatal care and enhance the outcomes for both mothers and their babies.



#### **1.4 Broad research objective**

The study intended to determine the rate of amoebiasis infection among pregnant women attending antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023.

#### **1.5 Specific objectives**

1. To determine the prevalence of amoebiasis among pregnant women attending antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023.
2. To identify the risk factors associated with amoebiasis among pregnant women attending antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023.
3. To determine which trimester is most associated with amoebiasis cases.

#### **1.6 Research questions**

1. What is the prevalence of amoebiasis among pregnant women attending antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023?
2. What are the risk factors associated with amoebiasis among pregnant women attending antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023?
3. Which trimester is most associated with amoebiasis cases?

#### **1.7 Justification of the study**

This study will help in the understanding of the prevalence, risk factors of amoebiasis among pregnant women and the pregnancy trimester most associated with amoebiasis cases. Most of the existing studies focused on other aspects of maternal health, Therefore, this study will help update and expand the evidence base on the prevalence, risk factors of amoebiasis among pregnant women attending antenatal clinic at

Parirenyatwa Group of Hospitals, which is a major referral centre for maternal and child health care in Zimbabwe. The findings of the proposed study will have important implications for the policy and practice of maternal and child health care in Zimbabwe and other similar settings.

### **1.8 Delimitation of the study**

The study was conducted at Parirenyatwa Group of Hospitals in Harare. Parirenyatwa Group of Hospitals is one of the largest and busiest medical institutions in Zimbabwe and with a well-established antenatal clinic that serves pregnant women from several districts in Zimbabwe. focused only on pregnant women attending antenatal clinics at Parirenyatwa Group of Hospitals. This remarkable coverage gives a reliable sample size for the study. The study covered the period from 2021 to 2023, allowing for a three-year timeframe to gather data and analyse the prevalence and factors related to amoebiasis among pregnant women during this specific period. The study was therefore restricted to microbiology stool mcs patient records from 2021 to 2023.

### **1.9 Limitation of the study**

This retrospective study was aimed at analysing stool microbiology records for pregnant women who attended antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023, some information such as clinical data or medical history was missing. The research was restricted to Parirenyatwa stool microbiology records.

## CHAPTER 2 REVIEW OF RELATED LITERATURE

### 2.1 Introduction

This chapter provides a comprehensive review of the existing literature on amoebiasis among pregnant women. The purpose of this literature review is to examine the current state of knowledge on amoebiasis in the context of pregnant women specifically, focusing on the prevalence, risk factors, clinical manifestations, and management of the disease. This literature review will not only contribute to the knowledge base on amoebiasis but will also serve as a foundation for our research study. The examination of available literature, will assist in identifying any research gaps or inconsistencies in existing findings pertaining to amoebiasis among pregnant women. By critically analysing and synthesizing relevant literature, this chapter will lay the groundwork for the research study and provide valuable insights into the burden, risk factors, clinical manifestations, and management of amoebiasis in this specific population.

### 2.2 Conceptual framework

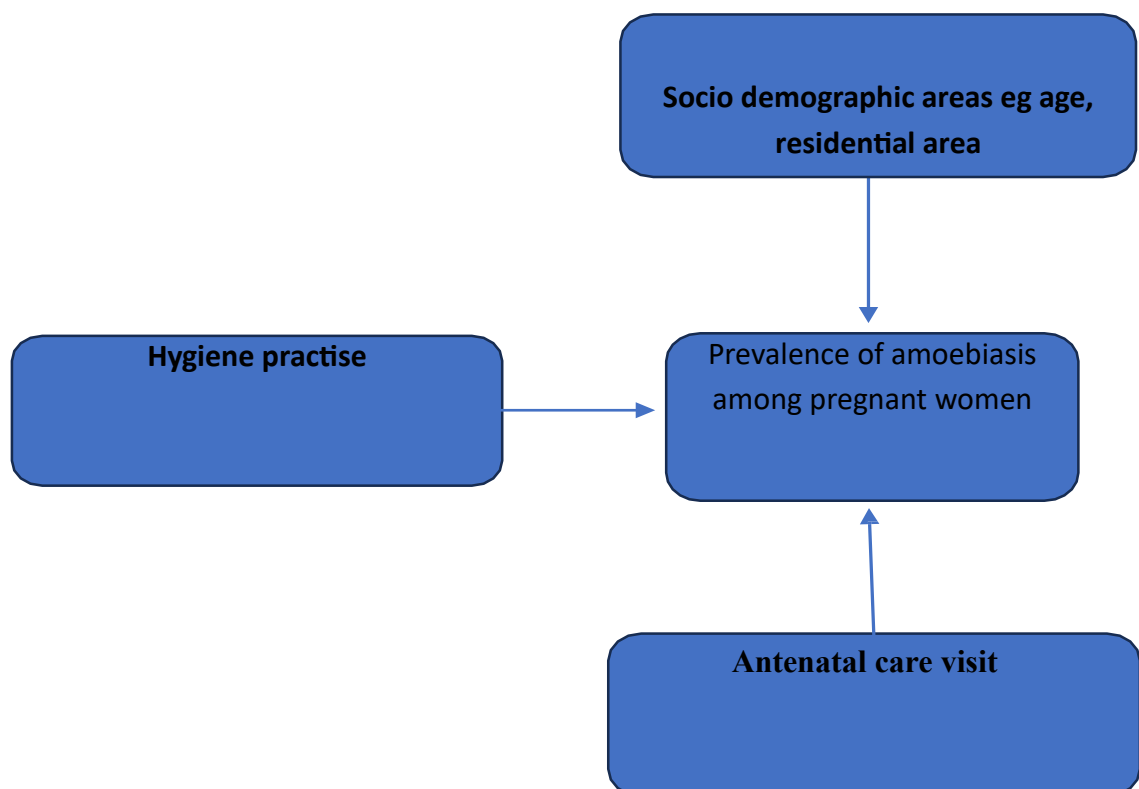


Figure 1: Conceptual framework

This conceptual framework demonstrates the relationship between the dependent variable which is prevalence of amoebiasis among pregnant women attending the antenatal clinic with the following independent variables, socio demographic factors, hygiene practices among pregnant women and antenatal care visits by pregnant women (Swaen, 2024).

For socio demographic factors this variable includes factors such as age, income, residential area of the pregnant women. The relationship is hypothesized to be that certain socio-demographic factors (e.g., low density residential area and higher income) may be associated with better access to healthcare and hygiene practices, resulting in a lower prevalence of amoebiasis (Singh, 2024). For hygiene practices this variable refers to the personal hygiene habits of pregnant women, including hand hygiene, food hygiene, and sanitation practices. The relationship is hypothesized to be that better hygiene practices will lead to a lower prevalence of amoebiasis (VanBaren, 2021). For antenatal care visits this variable represents the frequency and quality of antenatal care visits attended by pregnant women. The relationship is hypothesized to be that regular and adequate antenatal care visits will lead to early detection, prevention, and management of amoebiasis, resulting in a lower prevalence of the disease (VanBaren, 2021).

It is important to note that the conceptual framework assumes that there could be direct and indirect relationships between the independent variables and the prevalence of amoebiasis. Additionally, the framework will inform the research design, data collection methods, statistical analysis, and interpretation of findings for the proposed study (Singh, 2024).

### **2.3 Relevance of Conceptual framework**

The conceptual framework holds great relevance for the research topic of amoebiasis among pregnant women attending the antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023. Analysing demographic factors such as age, underlying health conditions and residential area of pregnant women is significant in determining the relationship between socio-demographic characteristics and the prevalence of amoebiasis. These factors help identify vulnerable groups who may face barriers to accessing healthcare and adopting hygienic practices. Understanding these associations is crucial for targeting interventions and tailoring healthcare services appropriately, ultimately reducing the burden of amoebiasis among pregnant women (Singh, 2024).

The conceptual framework is relevant as it guides the research by identifying the key variables that are likely to impact the prevalence of amoebiasis among pregnant women attending the antenatal clinic at Parirenyatwa Group of Hospitals. It enables a comprehensive investigation of the relationships between knowledge and awareness, demographic factors, hygiene practices, antenatal care visits, and the prevalence of amoebiasis. The findings from this research can inform evidence-based interventions, policies, and practices aimed at reducing the burden of amoebiasis and improving the health outcomes of pregnant women (Swaen, 2024).

### **2.4 Prevalence of Amoebiasis**

Amoebiasis, caused by the protozoan parasite *Entamoeba histolytica*, is a significant public health concern worldwide, affecting both developed and developing countries, while the highest burden is found in developing countries. Globally and regionally, there is limited research specially focused on the prevalence of amoebiasis among

pregnant women. However, studies conducted in different countries have reported varying prevalence rates. For example, a cross sectional and community-based study by Espinosa et al, (2018) among pregnant women in 3 districts of Bogota Columbia, reported a prevalence of 1, 3%. In the study the pregnant women were diagnosed of intestinal parasitic infections and these were including giardiasis, amoebiasis, ascariasis and blastomycosis and 1,3% of the women were found to have amoebiasis. The prevalence was low, and this may be due to that the study was not only focused on amoebiasis only but also other diseases. Similarly, a study by Akisanya et al. (2019) conducted in Nigeria, Lagos among pregnant women attending antenatal clinics in primary healthcare centres reported that the prevalence rate of amoebiasis was 0,8%. The researchers concluded that the amoebiasis prevalence was low due to good environmental sanitation and that there was no significant association between socio demographic factors and amoebiasis prevalence. In contrast Akubakar et al, (2020) reported a prevalence of 5% for a study on amoebiasis and associated risk factors among pregnant women attending the University of Maiduguri teaching hospital, Nigeria. Such differences may be attributed to variations in healthcare infrastructure, socioeconomic factors, and sanitation practices.

Similarly, a study conducted in Northern Tanzania by Mahande and Mahande (2016) showed the prevalence of amoebiasis among pregnant women to be 0.7%. The researchers found out that pregnant women who had amoebiasis had 79% increased odds of having complications in terms of delivery compared to those who had no infection. Similarly, from a study by Atakarah et al (2022) conducted at Tafo Hospital in Ghana, the prevalence of amoebiasis among pregnant women was found to be 3,3%. From this study the researchers assumed that the prevalence was low as most of the antenatal attendees were from the urban areas where sanitation was good.

In contrast, a study by Alem et al. (2013) conducted in West Gojjam zone, Northwest Ethiopia, reported a higher amoebiasis prevalence rate of 15.2% among pregnant women. This variation in prevalence rates may be attributed to differences in geographical location, socioeconomic factors and maybe techniques used. These findings suggest that amoebiasis is a significant concern among pregnant women and highlight the importance of assessing its prevalence in the proposed study setting.

However, there is limited research specifically examining the prevalence of amoebiasis among pregnant women in Zimbabwe. Through this study the researcher tried to fill this research gap by assessing the prevalence of amoebiasis among pregnant women attending the antenatal clinic at Parirenyatwa Group of Hospitals during the specified period. The findings will contribute to the understanding of the local burden of amoebiasis in this population.

## **2.5 Risk factors associated with amoebiasis among pregnant women**

Amoebiasis, caused by the protozoan parasite *Entamoeba histolytica*, is a significant public health concern worldwide (Billet et al, 2019) Pregnant women are particularly vulnerable to amoebiasis due to their altered immune response and physiological changes during pregnancy. Understanding the risk factors associated with amoebiasis among pregnant women is crucial for effective prevention and management strategies (Nath et al, 2015)

Several studies have identified socioeconomic factors as significant risk factors for amoebiasis among pregnant women. A study conducted by Alem et al. (2013) found that low socioeconomic status was associated with a higher prevalence of amoebiasis in pregnant women attending antenatal clinics. Similarly, another study by Akubakar et al. (2020) reported that inadequate sanitation facilities and poor hygiene practices

were contributing factors to amoebiasis among pregnant women in rural areas. While these studies provide valuable insights into the association between socioeconomic factors and amoebiasis among pregnant women, they are limited in their generalizability due to their specific geographical focus. Future research should aim at including diverse populations to obtain a more comprehensive understanding of this relationship.

Dietary habits have been implicated as potential risk factors for amoebiasis among pregnant women. A study by Espinosa et al, (2018) found that consumption of contaminated food and water was significantly associated with an increased risk of acquiring *E. histolytica* infection during pregnancy. Additionally, a systematic review by Derso et al, (2016) highlighted the importance of nutritional deficiencies in increasing susceptibility to parasitic infections during pregnancy.

Pregnancy-induced immunological changes can affect a woman's susceptibility to infections such as amoebiasis. A study conducted by Ali et al, (2016) demonstrated that alterations in immune responses during pregnancy may contribute to an increased risk of developing severe forms of amoebic colitis in infected pregnant women. While this study provides important insights into the role of maternal immune status in amoebiasis among pregnant women, further research is needed to elucidate specific immunological mechanisms involved and how they contribute to disease progression or severity.

Antenatal care plays a crucial role in identifying and managing infectious diseases during pregnancy, including amoebiasis. A study by Ahmed et al, (2018) highlighted the importance of regular antenatal check-ups and appropriate screening for parasitic infections as preventive measures against amoebiasis among pregnant women



attending antenatal clinics. The study emphasizes the significance of antenatal care practices. However, it lacks detailed information on specific screening protocols or interventions implemented within antenatal care settings.

## **2.6 Impact of Amoebiasis among Pregnant Women**

While the impact of amoebiasis is well-documented in the general population, limited research specifically examines its effects on pregnant women. Comparative studies from different regions have highlighted the potential impact of amoebiasis on pregnant women. A study by Mulambalah et al, (2015) found that pregnant women with amoebiasis had a higher risk of adverse pregnancy outcomes, including preterm birth, low birth weight, and intrauterine growth restriction. Similarly, a retrospective cross-sectional study conducted in Tanzania by Mahande and Mahande, (2016) found that women who were recorded as having amoebiasis had 79% increased odds of having a preterm delivery compared to pregnant women without amoebiasis. Karadhajne et al, (2020) reported an association between amoebiasis and gestational complications such as preeclampsia and gestational diabetes and emphasized that these outcomes highlight the need for early detection, treatment, and prevention strategies to safeguard the well-being of pregnant women.

Amoebiasis can also impact foetal health as demonstrated in a study by Tedesse et al, (2020) who found out that amoebiasis can lead to potential complications such as low birth weight, intrauterine growth restriction, and congenital malformations. A study conducted by Wekesa et al, (2014) discovered a higher rate of adverse pregnancy outcomes among infected women compared to the non-infected group. There is a scarcity of studies specifically focused on the impact of amoebiasis on pregnant women attending antenatal clinics in Zimbabwe and at Parirenyatwa Group of Hospitals.

## **2.7 Summary**

All these studies have shown prevalence as well as implications of amoebiasis affecting pregnant women in different populations at different timelines. Worldwide few studies have been conducted on amoebiasis among pregnant women and not even a single study was conducted in Zimbabwe on this aspect. This gap creates an opportunity to carry out this research. This research aimed at adding more insight into prevalence of amoebiasis among pregnant attending the antenatal clinic at Parirenyatwa Group of Hospitals.

## **CHAPTER 3 METHODOLOGY**

### **3.1 Introduction**

Research methodology is the science of examining how research should be conducted. It is a methodical approach to issue solving. Its goal is to provide a research work plan because it is described as the study of knowledge acquisition methods (Sileyew, 2019)

This chapter presents the methodology that was employed in conducting the research on amoebiasis among pregnant women attending the antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023. It outlines the research design, study population, inclusion and exclusion criteria, sample size, sample procedure, data collection instruments, pretesting of instruments, analysis and organization of data, ethical consideration and summary.

### **3.2 Research Design**

This research employed a retrospective observational study design. In the study stool microbiology medical records of pregnant women who attended the antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023 were analysed. By reviewing the microbiology medical records, the prevalence of amoebiasis among pregnant women and risk factors associated with amoebiasis were determined and identified, respectively.

### **3.3 Study setting**

The study was conducted at Parirenyatwa Group of Hospitals, which is a tertiary referral center located in Harare, Zimbabwe. Parirenyatwa Group of Hospitals has a well-established antenatal clinic that provides comprehensive care to pregnant women. Parirenyatwa Hospital is one of the largest and busiest medical institutions in the country and serves as a referral center for several districts in Zimbabwe. The hospital

offers comprehensive antenatal care services to pregnant women, including regular check-ups, laboratory investigations, and treatment interventions. Parirenyatwa Hospital has a dedicated antenatal clinic where pregnant women from various communities and socioeconomic backgrounds receive prenatal care.

### **3.4 Study population and sampling**

#### **3.4.1 Study population**

The study population in this study consisted of pregnant women who attended antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023.

#### **3.4.2 Inclusion criteria**

All stool microbiology medical records of pregnant women who attended antenatal clinic at Parirenyatwa group of hospitals from 2021 to 2023 were included in the study.

#### **3.4.3 Exclusion**

Microbiology stool medical records of pregnant women who did not attend antenatal clinic at Parirenyatwa Group of hospitals at least once during the period from 2021 to 2023.

### **3.5 Sampling**

#### **3.5.1 Sample size**

A sample size was calculated using the formula shown below for estimating population proportions. The prevalence of amoebiasis among pregnant women attending the antenatal clinic was not known. Therefore, assuming a prevalence of 50%, a confidence level of 95%, and a precision level of 5%, the calculated sample size was approximately 384 pregnant women.

$$N = \frac{Z^2 P(1-P)}{E^2}$$

Where:

N = required sample size

Z = Z-score associated with the desired level of confidence

(e.g., 1.96 for a 95% confidence level)

p = expected prevalence (assume 50% as a conservative estimate for maximum sample size)

E = margin of error (e.g., 5% or 0.05)

### **3.5.2 Sampling Procedure**

A systematic random sampling technique was used to select the sample size for the study. Medical records of pregnant women who attended the antenatal clinic from 2021 to 2023 were used as the source of data. They were arranged in chronologically and every 6<sup>th</sup> record was selected until the desired sample size was achieved. A sample size of 384 was used in the study.

### **3.6 Data Collection Instruments**

Data collection instruments or tools refer to the devices used to collect data, such as a paper questionnaire or computer assisted interviewing system and or they can be methodologies used to identify information sources and collect information during an evaluation (Busayo, 2021). A structured data abstraction form was developed based on the research objectives.

### **3.7 Pilot study**

A pilot study/pre-testing of an instrument is the collection of data before the experimental intervention to determine if the instrument can produce results with accuracy, meeting the expectations of the principal investigator (Francis, 2013). In this case, it was done to test feasibility of the study at Citmed Hospital in Chitungwiza.

### **3.8 Analysis and Data Organisation**

Data was collected from stool microbiology records from the microbiology department at Parirenyatwa Group of Hospitals (worksheets and register books) using the abstraction form developed for this project. Patient age, resident, year, preexisting medical condition, amoebiasis status were the main important variables. The data was summarized and captured into Microsoft excel sheets for further analysis and presentation as tables, pie chart and graphs.

### **3.9 Ethical consideration**

Ethics are norms for conduct that distinguish between acceptable and unacceptable behaviour (Enago Academy, 2023). Research ethics provide guidelines for the responsible conduct of research and in addition, educate and monitor scientists conducting research to ensure a high ethical standard (Lee, 2020). Permission to conduct the study was sought from the College of Health, Agriculture and Natural Sciences (CHANS) and Africa University Research Ethics Committee (AUREC) and Authority. AUREC approved the research study. Permission to access and use patient records was sought from the Parirenyatwa Group of Hospitals. Permission to carry out the study was also granted by the Clinical Director, Principal Nursing Officer and Head of Department of Microbiology Laboratory at Parirenyatwa group of Hospitals. Patient records were coded and no patient names were used to provide anonymity.

### **3.10 Summary**

This study was a retrospective cross – sectional study on Amoebiasis among pregnant women who attended antenatal clinic at Parirenyatwa group of hospitals from 2021 to 2023. The study population was pregnant women who attended antenatal clinic and had stool mcs done from 2021 to 2023. A sample size of 384 was used in the study. The data was collected on extraction sheet in Appendix 1. Permission to collect data was

obtained from clinical director at Parirenyatwa Group of hospitals (see appendix2) and permission to carry out the study was obtained from AUREC (see appendix 1). Microsoft Excel was used to analyse the data and confidentiality off patients' identity was exercised by only using laboratory reference numbers in data collection not their names.

## CHAPTER 4 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

### 4.1 Introduction

This chapter presents the findings of amoebiasis among pregnant women attending antenatal clinic at Parirenyatwa Group of Hospitals between 2021 and 2023. The data was extracted from 384 medical records of pregnant women who attended antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023 using the data tool. The results are presented in form of tables, pie charts, graphs. The analysis explores the prevalence of amoebiasis, pregnancy trimester most associated with amoebiasis cases and risk factors associated with the infection, including residential area and medical conditions.

### 4.2 Socio demographic characteristics associated with associated with study participants

Table 1: Socio-demographic characteristics of study participants

| Characteristic             | Frequency N (%) |
|----------------------------|-----------------|
| Age (mean years)           | 25              |
| <b>AREA OF RESIDENCE</b>   |                 |
| High density               | 208(59.4)       |
| Low density                | 156(40.6)       |
| <b>PREGNANCY TRIMESTER</b> |                 |
| First trimester            | 180             |
| Second Trimester           | 80              |
| Third trimester            | 124             |

In total 384 pregnant women were involved in the study, The data indicates that the average age of participants was 25 years, which suggests a relatively young



demographic. In terms of residential area, the distribution shows that a significant portion of participants resides in high-density areas (59.4 %), while a smaller proportion is from low-density areas (40.6%). The near-even split between high and low-density areas may influence various factors such as access to resources, social interactions, and exposure to different environmental conditions.

#### **4.3 Prevalence of amoebiasis among pregnant women who attended antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023**

This study was conducted at Parirenyatwa Group of Hospitals in Harare using the stool medical data of pregnant women who attended antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023. A total of 384 medical records were used in the study and among these, 7 cases tested positive for amoebiasis, translating to an overall prevalence of 1.82% indicating a relatively low occurrence of the disease. Table 2 shows the overall prevalence of amoebiasis among pregnant women who attended antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023. Figure 2 illustrates yearly prevalence of amoebiasis among the pregnant women. The highest prevalence of amoebiasis was recorded in 2021 (2.75%), followed by 2023 (2.70%), while 2022 had the lowest prevalence (1.00%).

Table 2: overall prevalence of amoebiasis from 2021 to 2023 among the pregnant women who attended antenatal clinic at Parirenyatwa Group of Hospitals

| <b>Total Pregnant Women Tested</b> | <b>Total Amoebiasis Cases</b> | <b>Prevalence (%)</b> |
|------------------------------------|-------------------------------|-----------------------|
| 384                                | 7                             | 1.82                  |

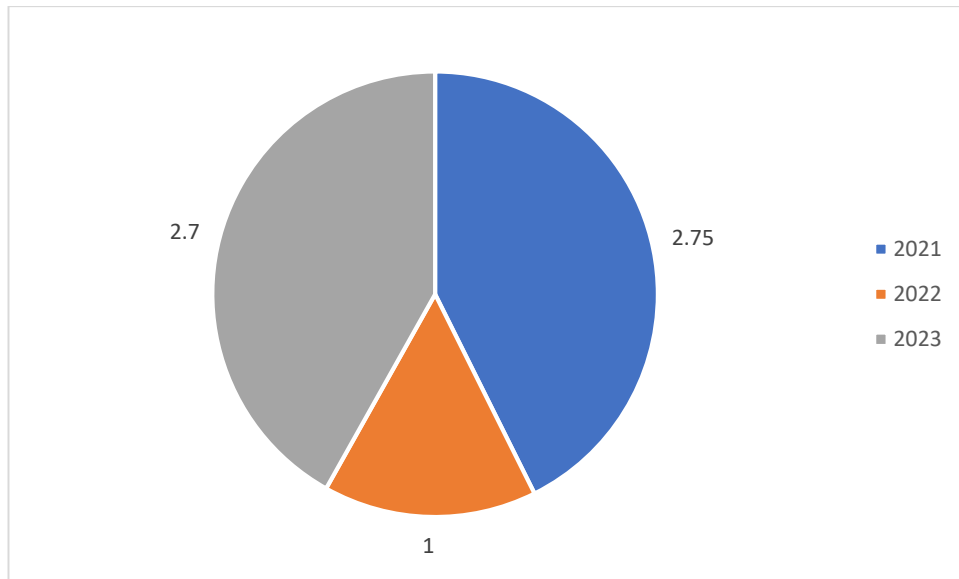


Figure 2: Yearly Prevalence of amoebiasis among pregnant women who attended antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023.

#### 4.4 Associated Risk factors for Amoebiasis

##### 4.4.1 Medical Conditions Among Pregnant Women with Amoebiasis

From the study some pregnant women had pre-existing medical conditions. Among the pregnant women who had amoebiasis, 2 had hypertension, 4 had diabetes while the last one had no preexisting medical condition. The study found out a strong correlation between amoebiasis and other pre-existing medical conditions such as diabetes and hypertension. Among 22 total cases of diabetes, 4 were identified with amoebiasis, leading to a higher association of about 18.2%. This indicates a potential link between diabetes and amoebiasis, warranting further investigation into how metabolic conditions may influence susceptibility to infections. Out of 24 total cases, only 2 were diagnosed with amoebiasis. This results in a low association (approximately 8.3%). It suggests that hypertension may not be a significant risk factor for amoebiasis in this population. The largest group (284 cases) had no specified medical conditions, with only 1 case of amoebiasis reported. This low rate (approximately 0.4%) indicates that amoebiasis is relatively rare in this population,

particularly among those without documented pre-existing medical conditions. In the case of anaemia, with 54 total cases, there were no reported cases of amoebiasis. This finding suggests that anaemia, at least in this sample, does not appear to have a direct association with amoebiasis among pregnant women. This suggests that the state of having a weakened immune system increases the chances of getting amoebiasis. Table 3 below shows the medical conditions associated with amoebiasis among pregnant women who attended antenatal clinic at Parirenyatwa group of hospitals.

**Table 3: Medical conditions associated pregnant women with amoebiasis**

| Medical Condition | Total Cases | Amoebiasis cases |
|-------------------|-------------|------------------|
| Hypertension      | 24          | 2                |
| Diabetes          | 22          | 4                |
| Anaemia           | 54          | 0                |
| Not provided      | 284         | 1                |

#### **4.4.2 Residential area and its association with amoebiasis in pregnant women**

The residential area data of the participants were grouped into high density and low density for easy analysis. Figure 3 summarizes the distribution of amoebiasis cases based on residence. The results indicate that All 7 cases (100%) of amoebiasis occurred in pregnant women from high-density areas, while no cases were recorded in low-density areas. This suggests that living conditions and sanitation levels in high density areas may contribute to the spread of the disease.



Figure 3: Residential areas associated with pregnant women with amoebiasis who attended the antenatal clinic from 2021 to 2023

#### 4.4.3 Age Distribution of Amoebiasis Cases

To analyse the relationship between age and amoebiasis, patients were grouped into age categories. Table 4 summarizes the age distribution of amoebiasis cases. The ages of pregnant women diagnosed with amoebiasis ranged from 21 to 34 years. The most affected age group was 25-28 years suggesting that women in this reproductive age group may be more vulnerable due to lifestyle, dietary habits or immune system factors.

**Table 4: Age distribution of amoebiasis cases**

| Age group (years) | Total tested | Amoebiasis cases |
|-------------------|--------------|------------------|
| 20-24             | 90           | 1                |
| 25-28             | 107          | 4                |

|       |     |   |
|-------|-----|---|
| 29-34 | 187 | 2 |
|-------|-----|---|

#### 4.5 Trimester most associated with amoebiasis cases

The table 5 below shows distribution of the amoebiasis cases in relation to pregnancy trimesters. Most of the pregnant women in the study were in their first trimester, following third trimester and lastly second trimester. Among the amoebiasis cases, the first trimester had more amoebiasis cases 6 out of the 7 cases indicating that the first trimester is more affected by amoebiasis maybe due to that during first trimester the immune system undergoes significant changes and many conditions. Third trimester had only 1 case out of the 7 cases. Second trimester had no amoebiasis case and this may be due to that this is generally considered the period of relative stability of the immune system during pregnancy.

**Table 5: distribution of amoebiasis cases by trimesters**

| TRIMESTER        | Number of pregnant women | Amoebiasis cases | Percentage of amoebiasis cases |
|------------------|--------------------------|------------------|--------------------------------|
| First trimester  | 180                      | 6                | 3.3%                           |
| Second trimester | 80                       | 0                | 0%                             |
| Third trimester  | 124                      | 1                | 0.81%                          |

#### 4.4 Summary

This chapter outlined the results obtained in this study, with respect to each of the study objectives. It was discovered that the prevalence of Amoebiasis among pregnant women who attended antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023 was 1.82%. From the 384 participants in the study, 7 had amoebiasis. The disease which was associated most with amoebiasis was Diabetes, followed by Hypertension. All the amoebiasis cases were of the pregnant women from high density

residential area, while no amoebiasis case was from the low density. The age group most affected with amoebiasis was 25 to 28 years. The trimester most associated with amoebiasis cases was the first trimester, following the third trimester and lastly the second trimester. The findings suggest that improved public health interventions, sanitation, improvements and targeted screening for high-risk groups could help reduce the prevalence of amoebiasis among pregnant women.

## **CHAPTER 5 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter serves to summarise all the research findings and identify any gaps in the information as well as take note of any unexpected information that was discovered. This will be done in relation to the research objectives and literature review. Similarities and differences in the findings of this study and similar studies that have been done in the past will be highlighted. The limitations, implications to public health, recommendations and the action that can be taken in light of the study will also be discussed.

### **5.2 Prevalence of Amoebiasis among pregnant women who attended antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023**

The purpose of this study was to determine the prevalence of amoebiasis among pregnant women who presented to the antenatal clinic of Parirenyatwa Group of Hospitals between 2021 and 2023. The findings were that out of 384 pregnant women screened, 7 were positive for amoebiasis, resulting in an overall prevalence of 1.82%. This relatively low prevalence is consistent with other 3 studies conducted in similar settings, a study conducted in Tanzania by Mahande and Mahande (2016) reported a prevalence of 0.70%, a study by Espinosa Aranzales et al. (2018) conducted in poverty urban areas districts in Columbia reported also a low prevalence of 2% and According to Abaka-Yawson et al. (2020), the prevalence was 5.0%. Variations in disease prevalence rates often find their reason in variations in environmental conditions, access to healthcare, and socio-economic conditions. The prevalence found in this study was in contradiction with the following 3 studies by Alharazi (2023), Alula, Munshea, and Nibret (2021) and Garg et al. (2024) in which prevalence of 28.6%, 15.2% and 32.7% respectively were reported.

Annual prevalence rates of this study also showed variation in that the highest prevalence was found in 2021 (2.75%), followed by 2023 (2.70%), and the lowest was in 2022 (1.00%). These patterns might be signs of shifts in environmental factors, public health measures, or trends in healthcare accessibility. The increase of prevalence in the initial years of this research may indicate that there is a higher need for publicity and surveillance in periods of high infection rates.

### **5.3 Risk factors associated with amoebiasis among pregnant women attending antenatal clinic**

Among the 384 pregnant women included in the study, 22 had diabetes, four of whom had amoebiasis, which made the correlation approximately 18.2%. This suggests a strong relationship between diabetes and susceptibility to amoebiasis, as per literature that relates metabolic disorders to increased susceptibility to infection. Studies indicate that diabetes weakens the immune system, making individuals vulnerable to infections, including those from *Entamoeba histolytica* (Khan et al., 2021). This aligns with the findings of a retrospective study by Bredin et al. (2012), which highlighted the immunocompromised state of diabetic patients as a critical factor in their increased risk of opportunistic infections. Contrarily, in this study, the relationship between hypertension and amoebiasis was not as clear, with only 8.3% of hypertensive women infected. This observation implies that hypertension might not add much to the risk of amoebiasis, contrary to other research which has documented diverse cardiovascular diseases as risk factors for heightened infections (Adeleye et al., 2020). There were no cases of amoebiasis among the 54 anaemic women in this study. This result is in contrary to the findings by Chaudhary et al. (2016) and by Memon et al. (2013) in which a strong correlation between amoebiasis and anaemia.



The pattern of age among the female patients with amoebiasis revealed the highest incidence at the age group 25-28, and four cases were reported. The trend indicates a possibly risky population. The findings from this study were in agreement with the findings of 2 studies by Ahenkorah et al. (2020) and Damtie and Liyih (2021) in which pregnant women of age 23 -28 were most associated with amoebiasis cases. This may be due to that women in this reproductive age group may be leading lifestyle and dietary habits that put them at greater risk of getting infected.

The finding that the older age groups, particularly the 29-34 years age group, had fewer numbers of cases (two cases) can imply that older women would have healthier hygiene and nutrition habits or previous exposures to pregnancy which led to more favorable hygiene and dietary practices. Overall distribution implies that intervention in the form of specific education for the younger pregnant women could result in reducing amoebiasis incidence.

All the 7 amoebiasis cases were found in pregnant women residing in high density areas while none of amoebiasis cases was found among pregnant women residing in low residential area which concurs with findings of similar studies by Ahenkorah et al. (2020), Damtie and Liyih (2021) and Garg et al. 2024. This suggested a close relationship between residence and the prevalence of the disease. Populous areas tend to be linked with poor sanitation, crowding, and lack of clean water, all risk factors for many infectious diseases such as amoebiasis (Khan et al., 2021). This points to the importance of managing environmental determinants of health in a bid to stem the risks of amoebiasis.

#### **5.4 Pregnancy trimester and amoebiasis cases**

The findings from the study were that the highest incidence was recorded in the first trimester with 6 cases identified among 180 women, providing a prevalence rate of 3.3%. On the other hand, no cases were noted in the second trimester, and only 1 case was noted during the third trimester, representing a prevalence of 0% and 0.81%, respectively. The higher incidence of amoebiasis in the first trimester may align with findings in the literature that suggest early pregnancy is a period when women may experience changes in their immune system and dietary habits. Research indicates that pregnant women often have altered nutritional needs and may be more susceptible to infections during this time (Ahenkorah et al., 2020). Increased exposure to pathogens due to dietary habits or environmental factors during the first trimester could contribute to the observed cases of amoebiasis.

The absence of amoebiasis cases in the second trimester is noteworthy. Literature suggests that as pregnancy progresses, women often adopt better health-seeking behaviors and hygiene practices. Damtie and Liyih (2021) noted that pregnant women tend to become more conscious of their health and nutrition in the middle stages of pregnancy, possibly leading to a reduced risk of infections. This could explain the lack of cases in the second trimester. The third trimester shows a slight occurrence of amoebiasis (0.81%) but is still low compared to the first trimester. This may reflect a combination of factors, including increased awareness and health management practices. This finding concurs with the findings of a study by Ahenkorah et al. 2020, Indicating that the third trimester can also be a time of heightened vulnerability due to physical changes and stress on the immune system.

## **5.5 Conclusions**

The study indicated the incidence of amoebiasis to be 1.82% in pregnant women who attended the antenatal clinic at Parirenyatwa Group of Hospitals from 2021 to 2023 with the highest incidence occurring during the first trimester and in women aged between 25-28 years. The disease surprisingly correlated with diabetes and hypertension and was predominantly observed in people who resided in high-density areas. These findings underscore the need for increased public health intervention and focused screening to effectively reduce amoebiasis prevalence in this vulnerable population. Improved sanitation and education are critical in addressing this public health problem.

## **5.6 Implications**

The results of this research hold important public health Implications, specifically in maternal in maternal health at the Parirenyatwa Group of Hospitals. Firstly, having established a 1.82% prevalence rate of amoebiasis in pregnant women indicates an urgent need to raise awareness and promote education on issues of sanitation and hygiene, particularly in high density suburbs where most cases were recorded 1.82% prevalence rate of amoebiasis in pregnant women indicates an urgent need to raise awareness and promote education on issues of sanitation and hygiene, particularly in high-density suburbs where most cases were recorded. The association of amoebiasis with comorbidities such as diabetes and hypertension necessitate comprehensive health approaches that address both infectious and non-communicable diseases in pregnancy

Furthermore, the higher rate of amoebiasis in the first trimester implies a critical phase for health education and targeted interventions aimed at young mothers aged 25 to 28

years, who are worst affected. By promoting sanitation, nutrition, and health-seeking habits through community-based initiatives as this can help in assist in reducing the burden of amoebiasis and improving maternal and foetal health outcomes.

### **5.5 Recommendations**

It is recommended that there should be improvement in diagnosis of amoebiasis among pregnant women attending antenatal clinic especially those from high residential areas between the age of 20 to 30 as to reduce effects associated with amoebiasis on the pregnancy outcomes. The Ministry of Health should allocate more resources into educating women on good health practices, good hygiene sanitation and risks and effects associated with amoebiasis among pregnant women.

### **5.6 Suggestions for further Research**

The researcher recommends that future studies should target larger populations to gather more data on prevalence, risk factors associated with amoebiasis. There is need to evaluate the accuracy and effectiveness of different diagnostic techniques for detecting *entamoeba histolytica*.

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## APPENDICES

### Appendix 1: AUREC approval letter



*"Investing in Africa's future"*

AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

P.O. Box 1320 Mutare, Zimbabwe, Off Nyanga Road, Old Mutare-Tel (+263-20) 60075/60026/61611 Fax: (+263 20) 61785 Website: [www.africau.edu](http://www.africau.edu)

Ref: AU 3603/25

7 February, 2025

**NYASHA CHIZA**  
C/O Africa University  
Box 1320  
**MUTARE**

RE: **AMOEBIASIS AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINIC AT PARIRENYATWA GROUP OF HOSPITALS FROM 2021 TO 2023**

Thank you for the above-titled proposal you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.

a) Research proposal

- **APPROVAL NUMBER** AUREC 3603/25  
This number should be used on all correspondences, consent forms, and appropriate document
- **AUREC MEETING DATE** NA
- **APPROVAL DATE** February 7, 2025
- **EXPIRATION DATE** February 7, 2026
- **TYPE OF MEETING:** Expedited  
After the expiration date, this research may only continue upon renewal. A progress report on a standard AUREC form should be submitted a month before the expiration date for renewal purposes.
- **SERIOUS ADVERSE EVENTS** All serious problems concerning subject safety must be reported to AUREC within 3 working days on the standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.



Yours Faithfully

**MARY CHINZOU**  
**FOR CHAIRPERSON**  
**AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE**

## Appendix 2: Study site approval letter

All communications should be addressed to  
**"THE CHIEF MEDICAL OFFICER"**  
Telephone: 701520-701554/7  
Fax: 706627  
Website: [www.parihosp.org](http://www.parihosp.org)



PARIRENYATWA GROUP OF HOSPITALS  
P.O Box CY 198  
Causeway  
Zimbabwe

22 January 2025

**RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH STUDY AT  
PARIRENYATWA GROUP OF HOSPITALS - NYASHA CHIZA**

The above matter refers.

The Parirenyatwa Group of Hospitals hereby grants you permission to conduct research on:-

**Amoebiasis among pregnant women attending antenatal clinic at Parirenyatwa Group of Hospitals.**

The permission is granted subject to the following conditions: -

1. The researcher will provide all sundries necessary for sample collections. ☐
2. The researcher sponsors all payments for the tests involved. ☐
3. The hospital incurs no cost in the course of the research. ☐
4. All relevant departments are notified in advance and the Head of section/ward signs acknowledgement of such notification. ☐
5. The conduct of the research does not interfere or interrupt the daily service provision by the hospital. ☐
6. Formal written feedback on research outcomes must be given to the Director of Clinical Services. ☐
7. Permission for publication of research must be obtained from the Director of Clinical Services. ☐

DR M. MHLANGA

**ACTING CLINICAL DIRECTOR**

22 JAN 2025

P.O. BOX 198, CAUSEWAY  
HARARE, ZIMBABWE

USE OF RESULTS

The Results can be used to contribute to maternal and perinatal health outcomes by addressing an often overlooked aspect of infectious diseases in pregnancy.

REFERENCES

Dr. S. Mubumbu Mr. G. Malunga

I promise to forward the Conclusions of the study to the CLINICAL DIRECTOR

NAME: NYASTA CHIZA

SIGNATURE

STATION PERMISSION

1. HEAD OF DEPARTMENT

Name: N. Mamura

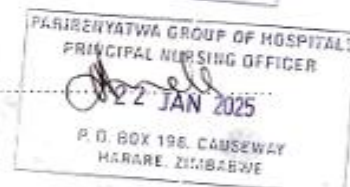
Agree / Do not Agree



2. PRINCIPAL NURSING OFFICER

NAME: NOMAZUKU MPANDE

Agree / Do not Agree



*[Handwritten signature]*