**Chapter one**

**Introduction**

**1.1 Background of the Study**

Intestinal parasitic infections pose a significant burden on public health worldwide, particularly in regions characterized by poverty, inadequate sanitation, and limited access to clean water sources (Pullan *et al.,* 2014). These infections are caused by a variety of parasitic worms, such as *Ascaris lumbricoides, Trichuris trichiura,* and *hookworms*, as well as protozoa including *Giardia lamblia* and *Entamoeba histolytica* (Hotez *et al*., 2008). The transmission of these parasites occurs predominantly through the ingestion of parasite eggs or larvae present in contaminated soil, water, or food (Hotez *et al.,* 2009).

Among the vulnerable population groups affected by intestinal parasitic infections, school-age children, especially pupils, bear a significant burden. The World Health Organization (WHO) estimates that over 270 million school-age children are infected with soil-transmitted helminths, a group of intestinal parasites, globally (WHO, 2020). These infections impaire children's physical development, nutritional status, and cognitive functioning, ultimately affecting their overall health and educational outcomes (Nematian *et al*., 2004).

The prevalence of intestinal parasitic infections among pupils is influenced by various factors. In regions with inadequate sanitation facilities and poor hygiene practices, such as open defecation and limited access to clean water, the risk of infection increases substantially (Brooker et al., 2006). Furthermore, socioeconomic factors, including poverty, overcrowding, and low parental education levels, contribute to the persistence of these infections (Hotez *et al.,* 2009).

The consequences of intestinal parasitic infections in pupils extend beyond physical health. Malnutrition is a common outcome of these infections, as parasites compete for nutrients and impair nutrient absorption in the gastrointestinal tract (Stephenson *et al.,* 2000). Chronic infections can lead to stunted growth, micronutrient deficiencies, and anemia, negatively impacting children's overall well-being and cognitive development (Stoltzfus *et al*., 2003).

In the educational context, intestinal parasitic infections present significant challenges. Infected pupils may experience frequent absenteeism due to illness, leading to educational disruption and hindered academic progress (Brooker *et al.,* 2007). The physical symptoms associated with these infections, such as fatigue, abdominal pain, and diarrhea, can impair concentration and cognitive functioning, affecting learning outcomes (Hesham *et al*., 2014). Additionally, the social stigma attached to these infections may affect pupils' self-esteem and social interactions within the school environment (Albonico *et al.,* 2008).

To address the prevalence and impact of intestinal parasitic infections among pupils, localized studies are essential. Prevalence rates and species distribution vary across different geographical regions due to environmental, socio-economic, and cultural factors (Pullan *et al.,* 2014). Therefore, understanding the specific context and characteristics of intestinal parasitic infections in a given population is crucial for designing targeted intervention strategies and implementing effective preventive measures.

**1.2 Statement of the Problem**

Despite efforts to improve public health and sanitation conditions, intestinal parasitic infections remain a major health concern, especially among school-age children. Pupils are particularly susceptible to these infections due to their close contact with contaminated soil and water sources, inadequate hand hygiene practices, and limited knowledge about preventive measures. The prevalence of intestinal parasites in pupils can have serious consequences, including malnutrition, impaired growth, anemia, and reduced educational performance. Therefore, understanding the extent of the problem and identifying the specific parasite species prevalent in this population is essential for effective intervention strategies and improved health outcomes.

This study aims to determine the prevalence of intestinal parasites among pupils in four (4) selected primary school in Hong Local Government Area of Adamawa State. By identifying the specific parasite species and exploring associated factors, such as demographic and socio-economic variables, hygiene practices, and nutritional status, the study seeks to contribute to the existing knowledge on the burden of intestinal parasitic infections in this vulnerable population group. The findings will provide valuable insights for policymakers, educators, and public health professionals to develop evidence-based interventions that improve the health, well-being, and educational outcomes of pupils affected by intestinal parasitic infections.

**1.3 Aim and Objectives**

The aim of this study is to determine the prevalence of intestinal parasites among pupils in the study area. The specific objectives include:

1. To identify the different species of intestinal parasites, present in the studied pupils.
2. To evaluate if infection is related to age and sex.
3. To assess if infection is related to location of pupils.

**1.4 Significance of the Study**

This study will provide up-to-date information on the prevalence of intestinal parasites among pupils in the study area. The study will provide knowledge on the prevalence of intestinal parasites found in the study area. The findings can be used to create awareness among residents of the study area, policymakers, educators, and parents about the need of preventive measures and improve sanitation facilities in schools. Additionally, the study will identify the specific parasite species prevalent in the area, enabling targeted intervention strategies and appropriate treatment protocols to be developed.

**1.5 Scope of the study**

This study will focus on the prevalence of parasite in the study area.

**CHAPTER TWO**

**LITERATURE REVIEW**

**2.1 Introduction**

This chapter presents a comprehensive review of the existing literature related to the prevalence of intestinal parasites in primary school children. The review aims to provide a solid foundation for understanding the current state of knowledge in this field, identify gaps, and contextualize the present research within the broader academic discourse.

**2.2 Historical Perspective**

The study of intestinal parasites and their implications for child health has a rich historical background dating back to the early days of medical science. Over the centuries, our understanding of these parasites and their effects on children has evolved significantly. This section provides an overview of the historical development of knowledge in this field.

The earliest recorded accounts of intestinal parasites can be traced to ancient Egyptian and Greek texts, where descriptions of helminthic infections are found in medical papyri and writings by Hippocrates. These early observations primarily focused on symptoms and treatments, with limited understanding of the underlying etiology. Throughout the Middle Ages, parasitic infections continued to plague human populations, often associated with poor sanitation and hygiene practices.

The advent of the microscope in the 17th century marked a significant turning point in the study of parasites. Antonie van Leeuwenhoek's pioneering work with microscopes allowed for the direct observation of these tiny organisms, laying the foundation for the field of parasitology. Nevertheless, it wasn't until the 19th century that the life cycles of many intestinal parasites were elucidated, thanks to the work of scientists like Rudolf Leuckart and Charles Louis Alphonse Laveran.

By the early 20th century, the association between intestinal parasites and child health began to receive more attention. Researchers like Sir Patrick Manson recognized the importance of helminthic infections, especially in regions with poor sanitation, as a significant cause of morbidity and stunted growth in children. Manson's work on the transmission of parasitic infections by insect vectors, such as mosquitoes, further deepened our understanding of these diseases.

The mid-20th century witnessed the development and widespread implementation of anthelmintic drugs, such as mebendazole and albendazole, which revolutionized the treatment of intestinal parasites. Mass deworming campaigns, often targeting school-aged children, became a common public health intervention in endemic areas. These campaigns aimed to reduce the burden of infections and improve child health and development.

In recent years, research has shifted from a narrow focus on treatment to a broader emphasis on prevention and control. The importance of hygiene and sanitation in preventing intestinal parasite infections among children has gained prominence. Public health programs now incorporate education on proper hygiene practices as a key component of their interventions.

# CHAPTER THREE

# MATERIAL AND METHOD

## 3.1 Study Area

Hong Local Government Area (LGA) is selected as the study area for several reasons. Hong Local Government Area is located in Adamawa State, Nigeria, and is characterized by its diverse population and geographical features. It is situated in the North Eastern part of the country, known for its unique socio-cultural dynamics and health challenges. Hong LGA covers a significant land area and is home to a substantial population, making it a suitable representation of the region. The LGA consists of both rural and urban communities, providing a diverse range of settings for the study. This diversity allows for a comprehensive understanding of the prevalence of intestinal parasites in different environments, including rural villages and urban areas.

## 3.2 Study Site

The primary schools in Hong LGA will be chosen as the study sites due to their accessibility and the availability of a large number of pupils within the target age group. The selection of primary schools will be done using a random sampling technique to ensure that the study population will be representative of the pupils attending schools in the LGA. Hong LGA is characterized by a mix of socio-economic backgrounds, ranging from low-income households to more affluent communities. This diversity in socio-economic status provides an opportunity to explore potential associations between economic factors and the prevalence of intestinal parasites among the pupils.

## 3.3 Study Population

A total of 200 stool samples from four (4) selected schools will be collected.

## 3.4 Sample collection

Prior to the commencement of the study, the schools will be visited and permission sought from the school authority.

The sample will be collected from four primary schools prior to the collection of the data the researcher met with the authority of the schools to be grant permission. Samples will be collected from two hundred (200) children of age ranging from 4-12 years. The names of schools, locations, age and sex of the pupils will be recorded. The samples will be transported to Federal Polytechnic, Mubi Laboratory for analysis.

## 3.5 Method of Analysis

In the laboratory the samples will be analysed using Formalin-ether concentration method.

1. Collection of Stool Sample.
2. Sample Preparation.
3. Fixation.
4. Homogenization.
5. Filtration.
6. Sedimentation.
7. Decantation.
8. Ether Addition.
9. Mixing.
10. Centrifugation.
11. Observation.

The result obtained will be recorded

## 3.6 Data Analysis

Data obtained from the study will be analysed using tables and sample percentages.

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