PREVALENCE OF *ASCARIS LUMBRICOIDES* AMONG PRIMARY SCHOOL CHILDREN IN GURARA LOCAL GOVERNMENT AREA OF NIGER STATE.

BY

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A Project Submitted To The
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A PROJECT SUBMITTED TO THE DEPARTMENT OF BIOLOGY NIGER STATE COLLEGE OF EDUCATION, MINNA.

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF NIGERIA CERTIFICATE IN EDUCATION (NCE).

AUGUST, 2014.

CERTIFICATION

I certify that this research work was carried out by Garba Yakubu, Fati, Hassan and Lubabatu under my supervision.

SHEHU IBRAHIM

Project Supervisor

16/12/2014

Date

APPROVAL PAGE

This research project has been supervised and approved to meet the requirements for the award of the Nigeria Certificate in Education (NCE) in Biology Department, Niger State College of Education, Minna.

Sign: _____ Date: 16/12/2014

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H.O.D(Biology)

DEDICATION

This project is dedicated to Almighty Allah and to our parents.

ABSTRACT

Study was carried out on 100 primary school children in Gurara local government area of Niger State, to determine the prevalence of Ascaris lumbricoides infections using pathophysiological test methods of diagnosis. The prevalence of Ascaris lumbricoides among the subject examined in the five different health centres were compared the overall prevalence of the disease was 75 (75.00%). 17 (85%), 10 (50%), 18 (90%), 16 (80%) and 14 (70%) were infected parasite respectively. The baseline information provided in this research will guide teachers and parents in taking routine medical check-up and intermittent treatment with appropriate chemotherapy seriously.

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CHAPTER ONE

1.0 INTRODUCTION:

Ascaris lumbicoides, an intestinal roundworm, is one of the most common helminthes human infections worldwide. Highest prevalence in tropical and subtropical regions, and areas with inadequate sanitation. Ascariasis occurs in rural area of the southeastern United States. In United States. Ascariasis is the third most frequent helminthes infection, exceeded only by hookworms and *Trichuris trichiura.* (Whipworm). *Ascaris lumbricoides* is the largest intestinal nematode of man. The female worms are larger than the males and can measure 40cm in length and 6 mm in diameter. They are while or pink and are tapered at both ends.

Ascaris lumbricoides is intestinal nematodes (Roundworm) which belong to a super family Ascariasis which infects man. A person become infected by ingesting infective eggs in contaminated food, water, or from hands that have become faecally contaminated following ingestion, the larvae hatch in the circulation where they are carried to the heart and lung (Andrade et al, 2001). They remain in the alveoli for several days, ascends the respiratory tree to the epiglottis where they descends, esophagus to mature on the intestine after mating the female large numbers of eggs are layed which are passed in the faeces (Ukoli 1991, cheesbrough 1987). It is particularly common in area of inadequate sanitation

where untreated humans faces are use as fertilization (cheesbrough 1987). Ascaris worms are large heavy infections especially in children worm masses can cause obstruction or perforation of the intestine and occasionally obstruction of the bile ducts and pancreatic ducts (Braids 1986). Though infection with a few worms may be symptomless, heavy infections are serious, as will be known to anybody who has seen marasmic children with distended belies starved 80-100 worms (Denhams et al, 1985),

Ascaris infection has been control in the industrialized world by the person of safe domestic water supplies and sewage (Denhams 1985). The infection occurs in all ages but most prevalent in the 5-9 years old group of pre-school and young school children, who are more frequently exposed to contaminated soil than the adults (Franklin and Harold, 1983). Prevalence and distribution of *Ascaris lumbricoides* in Africa were assessed, it was estimated that about 54 million are children less than 15 years old. A geographic prevalence indicates a zone of high prevalence extending from sierra Leon along the western coast and through the equatorial countries to Kenya and Tanzania (Crompton and Tulley, 1991). About 77% was reported by (Sorenson et al, 1996). In Srilanka, also Guatemala et al, 1996 reported 915 and 82% for *T trichiura* respectively. While in southwest Nigeria revealed 27% of *Ascaris lumbricoides* 13% *T. richiura* 14% hookworm, 4% *Gardia lamblia* and 55 endo-limax nana (Kofic and Dipeolu 1983). *Ascaris lumbricoides*

is a prominent parasites in both temperate and tropical zones but it is more prevalent where sanitation is poor Franklin and Harold 1983 stated the Ascaris occurs at all ages, but is most prevalent in the 5-9 years old group of pre-school and young school children, who are more frequently exposed to contaminated soil than the adults. The incidence is approximately the same in both sexes; the poor classes in urban and rural areas are most affected by the parasite due to soil pollution and poor hygiene. Infection is a house hold affair, the family being the unit of dissemination, infected. Children, provides the chief source of soil contamination by their indiscriminate defecation in door years and earthen-floored houses where the resistant eggs remain viable for long periods.

JUSTIFICATION

The study of the survey on the prevalence of *Ascaris lumbricoides* among school children is scares particularly in Gurara hence the need for the study.

1.2 AIM OF THE STUDY

The aim of this survey is to investigate on the prevalence of *A lumbricoides* among pupils of primary schools and also established the age and sex distribution among primary school pupils in Gurara Local Government of Niger State.

1.3 OBJECTIVE OF THE STUDY

The general objective of study is to determine the prevalence pattern and factors that influence the occurrence of Ascariasis in Gurara area of Niger State.

The specific objective of the study is:

- To determine the pattern and point prevalence Ascarisis among schooling children in Gurara Local Government.
- Determine the factors that influence the occurrence of Ascariasis
- To assess the knowledge and behavior of the parents and children on Ascariasis.
- To create awareness on the danger of Ascariasis on parents and school children.
- To create awareness on the danger of Ascariasis on education.

1.4 RESEARCH HYPOTHESIS

To direct the study, the following hypothesis is stated.

Ho: Parents are aware on the danger of Ascariasis on their children.

HI: Parents are not aware on the danger of Ascariasis on their children.

1.5 RESEARCH QUESTIONS

- What effects does *A.lumbricoides* has on school children?
- Is there any major taken by school management Regarding effects of Ascariasis on school children?
- What effort government is doing to control the problem?
- What are the factors that contributed to Ascariasis?

1.6 SCOPE AND LIMITATION

The study of the survey on the prevalence of *Ascaris lumbricoides* among school children will be limited to some selected health centres in Gurara area of Niger state.

1.7 DEFINITION OF TERMS

- **ASCARIASIS:** Is defined as a disease of human caused by the parasitic round worm called Ascaris Lumbricoides.
- **EPIDEMIOLOGY:** Is defined as the branch of medical science that deals with the study of the occurrence of diseases and there control.
- **INFECTION:** Is the invasion of a host organism's body tissues by diseases causing organisms, their multiplication, and the reaction of host tissues to these organisms and the toxins they produce.

- **SYMPTOMS:** Is the appearance of a part of pathogen in the body of an organism the host which shows the type of diseases affecting the organism.
- **DIAGNOSIS:** Is the identification of the nature and cause of a certain phenomena.
- **TREATMENT:** Is the act or method of handling or dealing with someone or something that is infected or injured.
- **HABITAT:** Is the natural environment in which an organism lives, or an ecological environment that is inhabited by a particular species of animal, plant and other organisms.
- **LIFE CYCLE OF A LUMBRICOIDES:** Is the different levels of development that *A. Lumbricoides* goes through during its life.
- **PREVENTION:** Is the act of stopping the occurrence of a disease from spreading.
- **CONTROL:** Is an action, method or law that limits the amount or growth of something, especially something that is dangerous.

CHAPTER TWO

2.1 ASCARIASIS.

Ascaris lumbruicoides, an intestinal roundworm, is one of the most common helminthic human infections worldwide. Highest prevalence in tropical and subtropical regions, and areas with inadequate sanitation. *Ascaris lumbricoides* occurs in rural and areas of southeastern United States. In United State, Ascaris is the third most helminthes infection, exceeded only by hookworm and *Trichuris trichiora* (whipworm). Khuroo, MS 1996 Seltzer, E. 1999 Anand, etal 1990 Lindo, et al 1998 Respectively

A lumbricoides is the largest intestinal nematode of man. The female worms are larger than the males and can measure 40cm in length and 6mm in diameter. They are white or pink and are tapered at both ends.

2.1 EPIDEMIOLOGY

It is estimated that more than 1.4 billion people are infected with *Ascaris Lumbricoides*, representing 25 percent of world population. A number of features account for its high prevalence including ubiquitous distribution, the durability of eggs under a variety of environmental condition, the higher number of eggs produced per parasite, and poor socio economic conditions that facilitates its parsed. Transmission is enhanced by the fact that individuals can be a

symptomatically infected and can continue to shed eggs for years, fed prior does not confer protective immunity(2).

Although Ascarisis occurs at all ages it is most common in children 2-10 years all, and prevalence decreases over the age of 15 years. Infections tend to cluster in families and worm burden correlate with the number of people living in a home 3). Infection rate for ascariasis have not be reported to be higher in patient nfected with human immune different virus (HIV) (4, 5).

The highest prevalence of Ascariasis occurs in tropical countries were worms, wet climate provide environmental condition that favor year round transmission of nfection. This contrasts to the situation in dry area where transmission is seasonal, occurring predominantly during the raining month (6). The prevalence is also greatest in areas where sub optical sanitation practices lead to increased contamination of soil and water. The majority of people with Ascariasis live in Asia (73%), Africa (12%) and South Africa (81%) where some population have nfection rate as high as 95 percent, 7, (8). In the United State the prevalence of nfection decreases dramatically after the introduction of mordern sanitation and vaste treatment in the early 1900 centuries (9).

t is estimated that the prevalence of *A. lumbricoides* in stool samples is pproximately 2 percent in the united State, but it may be more than 30 percent in

children between the age of 1-5 years, particularly in rural areas of the south (10,11); it is also seen travelers from endemic areas (7).

Ova can survive in the environment for prolong period and prefer warm, shady moist condition under which they can survive for upto 10 years (1). The eggs are resistances to usual method of chemical purification but are remove by filtration. Developing larvae will be destroyed by sunlight and desiccation. There is no significant animal reservoir, but which infect pigs is morphological similar to *A lumbricoides* and the larva forms can occasionally infect humans.

Transmission occurs mainly via injection of water or food (raw vegetable or fruit, in particular) contaminated with *A. Lumbricoides* eggs, and occasionally via inhalation of contaminated dust. Children playing contaminated soil may acquire the parasite from the hand transplancental migration of larvae has also occasionally been reported (12). Confection with other parasites diseases occurs with some regularities because of similar predisposing factor for transmission (10, 13).

2.2 HABITAT

The round worm, *Ascaris lumbricoides* is obligate internal parasite and adult usual reside small intestine of human specifically the jejunum. The worm produces a pepsin inhibitor to prevent host enzymes from digesting it and uses muscular activities to avoid been excreted. The life cycle involves no free living stages or

intermediate hosts, although fertilized eggs require up to 3 weeks of embryo nation in soil before becoming infective and can survive for up to 10 years in soil under warm, moist condition. As part of the life cycle the briefly migrate via the circulatory and lymphatic system through the live, heart and lungs, Rarely the worms may migrate to other region of the body include the appendix, pancreases, kidney, or brain. Temporary infection can induce in other mammals (rodent), but following migration through the liver and Lungs the larvae are expelled from the intestine. (Baron, et al 1996) Bethony, et al (2000) Coromtom, (1988); Dora-Laskey et al(2009); Khuroo (1996); sprend, (1952).

2.3 LIFE CYCLE

Adult inhabit the lumen of the small intestine, usually in the duodenum or ileum. They have a live span of 10 month to 2 years and then are passed in the stool. When both females and males worms are present in the intestine, each female worm produced approximately 200, 000 fertilize ova per day. When infection with only female worm occur, in fertile eggs that do not developed into the infectious stage are produced with male only worm infection, no eggs one female.

The ova are oval, have a thick shell, immolated outer coat, and measure 45-70 4m by 35-50 um. The ova are passed out in the feaces, and embryo developed into infective second stage. Larvae in the environment in two to four weeks (depend

upon environmental condition) when ingested by human, the over hatch in the small intestine and release larvae, which penetrate the intestinal wall and migrate hemagerously or via lymphatics to the heart and lungs.

Occasionally, larvae migrate to sites other than the lungs to the kidney or brain.

Larvae usually reach the lungs by 4 days after injection of eggs. Writing alveoli of the lungs the larvae mature ova a period of approximately 10 days, then passed via bronchi and the trachea, and subsequently swallowed. Once back in the intestine, they mature into adult worms. Although the majority of worms are form in the duodenum, they may be found any were from esophagus, to the rectum. After when excreted, complete in the cycle.

Adult worm do not multiply in the human host, so the number of adult worms par nfected persons related to degree of continued exposure to infections over time vorm burdens of several hundred per individual are not on common in highly ndemic areas, and case report of more than 2000 worms in individual children xist (eggs). However the number of eggs produced per female worm stend to lecrease as the worm burden increase as the worm burden increase, it has be stimated that 9 x 10 (14) eggs contaminate the soil per day world white (14).

2.4 PHYSICAL DESCRIPTION

ADULT: The round worm *Ascaris lumbricoides* is the largest intestinal nematode infecting humans, with female averaging 3cm in Length (ranging from 20-49 cm) and measured 3- 6mm in diameter. But sexes have and elongated cylindrical body with which tapers at both ends, in males' tail curve ventrally. In addition to sexes may be differentiated by the valve opening located ventrally at a point of constriction approximately one third (1/3) of the body length from the entitor and by the papillae, in male grouped pre and post anally. Both sexes cream followed, some time with a pink tinge. The integument of the worm chitimous layer of non nucleated. Circular with circular striation. *A lumbricoides* lack circular muscle, the only muscle band been longitudinal, and the worm uses molecular activities to remain in the intestinal lumen of the host, roundworm also lack a circulatory system and its digestive, excretory nervous and reproductive system one all suspended writing the seodocoelom there are three forms of eggs: fertilized decorticate and unfertilized.

Fertilizes eggs are golden brown collour and are ovoid hi shape measured 30-40 um by 50-60 um. The egg is termed decorate, if the external mummilalated layer is absent unfertilized eggs are large (reaching 90 diameter in length) and more elongated in shape have a thinner shell and are poor organized internally, been a mass of variably size gramules (Chong, 2003; Khuroo 1996).

2.5 REPRODUCTION

Male nematodes use chemo taxis to locate females. They have no individual ability, and instead are attracted to a specific sex pheromones which female release. Once the male has located a male, it use a compulatory accessories such as papillae, spicules and curved tail to direct sperm and sterbiles the female during mating. There is no every evidence of post-copuatory behaviors' such as mate-gearing, although males of other species of nematode have been observed to secrete compaulatory plugs into the valve to prevent other males from fertilizing the same female. However, no information was found regarding the specific mating system of *Ascaris lumbricoides*.(Gauglar et al 2004).

Ascaris lumbricoides is diocious and copulation between individual of opposite sexes is necessary for fertilization, and some evidence suggest pheromones play a role in mating. Males posses two testis and a curved posterior end with spa cue, for copulation. Female posses ovaries which are continues with an oviduct and a tubular uterus; the uteri joint to form a vagina which opens into the valve. Sperm is transferred into the valve of the female, enters the ovum and form a zygote. The zygote the secrete a fertilization membrane which thickens to form the ditinous shell that project the egg when it is expelled from the hosts. Female have been shown to lay as many as 234,000 eggs per day, and this daily eggs output implies

weeks, given warm, moist conditions. At this stage they are infective, and once ingested, the infective eggs hatch in the duodenum. The larva then penetrate through the intestinal mucosa and enter the lymphatic and circulatory systems, migrating through the liver to the heart and lungs.

From the lungs they migrate up the trachea, upon which the host coughs the larva molts. The adult stage is reached 2-3 weeks post-infection and 8-12 weeks after infection the worms reach sexual maturity. (Baron, et al., 1996; Chong, 2003; Crompton, 1988)

2.6 CLINICAL FEATURES

The majority with infection with *A. Lumbricoides* are asymptomatic. However the body of symptomatic disease word wide is still relatively.

High because of the high prevalence of disease. Clinical disease is largely restricted to individuals with a high worm local (1). When symptoms do occur, they laid either to the larval migration stage or to the adult worm intestinal stage.

Pathophysiologic mechanism includes:

- Direct tissue damage
- The munonolic response of the host to infection with larvae, eggs or adult worms (2).

- Obstruction of ancrifite or the lumen of the gastro intestinal track by an aggregation of worms.
- Nutritional sequence of infection (10)

The symptom and complication of infection can be classify into the following

(i) Pulmonary and hyper sensitivity manifestation

(ii) Intestinal symptoms

(iii) Intestinal obstruction

(iv) Hepatobiliary and pancreatic symptom.

PULMONARY AND HYPER SENSITIVITY MANIFESTATION

Transient respiratory symptom can be occurred in sensitized host during the stage of larval migration through the lungs (see pulmonary manifestation of Ascarisis). Symptom associated with preunomonities which are known as Loffler's syndrome; tend to occur 1-2 weeks after ingestion of the eggs. The severity of symptoms tend to correlate with larval burden, but pulmonary are also less common in country with continuous transmission *A. lumbricoides.*

Urticaria and other symptoms related to hyper sensitivities usually occur toward the end of the period of migration through the lungs.

INTESTINAL SYMPTOMS

Heavy infection with Ascaris are frequently believed to result in abdominal discomfort and anorexia nauseas and diarrhea, however, it has not been confirmed whether or not these non-specific symptom can truly be attributed to as ascarisis. With relatively heavy infection, impaired absorption of dietary proteins lactose and vitamin A has been noted and steatorrhea may occur. One view concluded that Ascaris free or treated children showed better nutritional status in terms of growth, lactose tolerance, vitamins A and C, and albumin levels than Ascaris infected and intervention studies from Africa Asia and South America. (15). This review also found significant improvement in weight or height following therapy for Ascariasis. However others studies have not confirm this conclusion and the true effect of ascariasis and intuition is steal widely debated, especial as additional nutritional deficiency commonly co-exist in infected children (16-23). It has also been proposed that heavy infection may be associated with impaired cognitive development in school children (24, 25).

(i) INTESTINAL OBSTRUCTION

A mass of worms can be obstructing the bowel lumen in heavy Ascaris infection, leading acute intestinal obstruction. The obstruction occurs may commonly at the ileocecal valve. Symptom include colicky abdominal pain, vomiting and

constipation. Vomiting may content worms. Approximately 85% of obstruction occurs in children between the ages of 1-5 years.

Some time an abdominal mass that change in size and location serial examination may be appreciation (0). Complication includes *Volvalus, illeocecal* intussusceptions, gangrene, and intestinal perforation occasional result.

The overall incidence of obstruction is approximately one in 500 children. In epidemic areas, it has been shown that between is and 35% of all cases of bowel obstruction are due to Ascariasis (1). One review estimated the one burden with intestinal obstruction to be less than 60 (and ten times higher in fertile cases) (26). Ascaris is said to be the most common cause of acute abdominal surgical emergencies in certain countries including south Africa and Myanmar (18). In a recent Meta analysis of mobility and mortality related to Ascarisis, intestinal obstruction accounted for a mean 72& of complication of the infection (25).

(ii) HEPATOBILIARY AND PANCREATIC SYMPTOM

Symptom related to the migration of adult worms into the biliary tree abdominal pain, biliary colic acalculuous, chulesystitis ascending cholangitis obstractive jaundice o0r bile chut perforation with peritonitis. Strictures of the biliary try tree may occur (28). Hep-atic absesscess can also result 929). R5etaining worms for fracment can serves as needles for recurrent pyogenic cholengistis. The pancreatic

chut may also be obstructed, leading to pancrealitis, and the appendix resulting in appendicitis. Occationally, migrating adult worms emerge from the mouth, nose, lacrimal adult, oblpiscus or inguinal canal, high feaver diarrhea spicy foods, anesthesis and other stresses have all been associated with an increased like lihook of worm migration (10).

In endemic countries such as India, Ascarisis has been found to cause up to one third of biliary and pancreatic disease (30, 31). In one study performing in Syria, 300 patient with biliary or pancreartic ascariasis where diagnosed by endoscopic retrogate cholengio pancreatgraphy (ERCP) over a 5 –year period (32). Of these 300 patient, 98 percent presented with abdominal pain, 16 percent developing ascending cholengitis 4 percentage developed acute pancreatitis and 1 percent developed obstructive jaundice apprecious chulecystectomy or endoscopic sphicterotomy had been perform, in 80% endoscopic extraction of the worms successful in all both 2 cases led to rapid resolution of symptoms.

Complication associated *A. Lumbricoid*es infections are fertile in up to 5 percent of ases. It is estimated 20, 000 dead from Ascariasis occur annually primarily as a uencie quences of intestinal obstruction.

.7 DIAGNOSIS

The diagnosis of ascariasis is usually made via stool microscopy other forms of diagnosis are through eosonophilia imaging ultrasound, or scrology examination

(a) MICROSCOPY

Characteristics eggs may be seen on direct examination of feces or following concentration techniques, however, eggs do not appear in the stool for at least 40 days after infection; thus, the main drawback of relying upon eggs in feces as the sole diagnostic marker for ascaris infection is that an early diagnosis cannot be made, including during the phase of respiratory symptoms. In addition, no eggs will be present in the stool if the infection is due to male worm only. Some times in the adult worms is passal, usually by rectum. If an ascaris worm is found in the feces, a stool specimen can be checked for eggs to document whether or not additional worms are present prior to instituting therapy

(b) EOSINOPHILIA

Peripheral eosinophilia can be found, particularly during the phase of larval migration through the lungs but also sometimes at other stages of ascaris infection (34). Eosinophil level are usually in the range of 5 to 12 percent but can be as high as 30 to 50 percent. Serum levels of Ig G and Ig E are also often elevated during early infection.

(c) IMAGING

In heavily infected individuals, particularly children, large collection of worms may be detectable on plain film of the abdomen. The mass of worms contrasts against the gas in the bowel, typically producing a "whiripool" effect (8) radiologic detection of adult worms is sometimes made by detecting elongated filling defects following barium meal examination of the alimentary canal appears as a white thread bisecting the length of the worm's body (8). Radiograph will also show when there is associated intestinal obstruction.

(D) ULTRA SOUND

Ultrasound examination can help to diagnose hepato biliary or pancreatic ascariasis single worms, bundles of wo0rms or a pseotomur-like appearance may be seen (35). Individual body segments of worms may be visible, and o-n prolonged scanning the worms will show curling movements (36).

Computed tomography (CT) scanning or magnetic resonance Imaging (MRI) may also be used to identify worm(s) in the liver or bile ducts, but this is not usually necessary. Imaging the worm in cross-section give's a "bulls eyes" appearance. When ascariasis involving the biliary tree or

pancreatic duct is suspected ERCP will not only established the diagnosis but also allows for the direct removal of the worm (32, 37).

(E) SEROLOGY

Infected individuals make antibodies to A. Lumbricoids which can be detected. However, serology is generally reserved for epidemiologic studies rather than in the diagnosis in a particular individual (2). Ig G antibodies are not protective against infection (38). Antibodies to Ascaris also often cross react with antigens from other helminthes.

2.8 TREATMENT

Treatment consist of choosing the right drugs therapy follow up and supportive care for each patient

(a) CHOICE OF DRUGS

A number of drugs be used in the treatment of ascariasis.

These include: Pyrantel Pamoate, mebendazole, albendazole, ivermectin, piperazin citrate and levamizole.

- **PYRANTEL PAMOATE:** Pyrantel ppamote (11mg/kg up to a maximum of 1 g) is administered as (1) dose. Adverse effect include gastro intestinal (GI) disturbances, headaches, rash and fever.

Parasite immobilization and death occur, although this happens slowly and complete clearance of the worm from the GI tract may take up to three days. Efficacy varies with worms load, but single dose therapy is approximately 90% effective in eradicating adult worms (6).

- **MEBENDAZOLE:** Mebendazole (100mg BID for 3 days or 500mg as a single dose) is an alternative. Adverse effects include transient GI discomfort, headache, and rarely leucopenia. The three days regiment is approximately 95% effective and the single close seem to have similar results.
- **ALBENDAZOLE:** A single dose of albendazole (400mg) is effective in almost 100 percent of cases, although-ugh reinjection commonly occurs (39).

  Albendazole causes the same adverse effects as mebendazole.
- INVERMECTIN: Invermectin causes paralysis of adult worms and is approximatelpy as effective as other therapies but is not generally used.
- **PEPERAZIN CITRATE**: Peperazing citrate (50 to 75mg/kg QD up to maximum of 3.5g for 2 days) was a frequent treatment regiment, but it is new being with drawn from the market in many developed countries because the other alternatives are less toxic and more

infectious. However, it may still be recommended when there is suspected intestinal or biliary obstruction since this drug paralyzes worms to aid expulsion.

- **LEVAMISOLE:** Levamisole (150mg for adults and 5mg/kg for children) is safe and is effective in 77 to 96% of cases of ascariasis.

(b) CHIOSE OF TERAPY

The meinstays of currently are the benzimidazoles, mebendazoles, and albendazole. However, they should not be given during pregnancy because of possible teratogenic effects. Thus pyrantel pamote should be used in pregnancy. In a randomized study conducted among 2.294 children aged 6 to 12 years in 2 anzibar, single dose mebendazole and albendazole were both found to have efficiaries greater than 97% (40). Similar results wi9th both drugs and good tolerability, have also been observed in other studies (41-43).

(C) FOLLOW UP

All of these therapies act against the adult worms but not the larval. Following therapy, patient should be reevaluated at two to three month to ensure that no eggs are detectable, rather because of adequate elimination of adult worms or becau8se of reinfection. Reinfection occurs frequently, more than 80% of individuals in some endemic areas become reinfected

unthiny six months (1). Evaluation of other family members should be ent6ertained whenever the diagnosis is made because of propensity of the infection to cluster in families (10,12).

(D) SUPPORTIVE CARE

In addition to specific anthelmintic therapy, supportive therapy for complication of ascariasis may be required, including potential surgical intervention for intraabdominal complications. In biliary infections, conservative therapy with antheminthics, often combined with anti spasmodic, is often successful. However surgical endoscopics inter ventions may be required.

Since pulmonary ascariasis is a self limited disease symphonic alleviation of wheeze and cough with in hated bronchodilators can be instituted. Occasionally, systemic corticostenoids may be required for symptoms. Following symptoms therapay, standard therapy for intestinal Ascariasis can be given after the worms have developed to maturity in the small intestine (6). Anthelmic therapy is not usually given at the time of pulmonary symptoms because dying larvae may do more harm than migrating ones.

2.9 PREVENTION

Prevention of reinfection poses a substantial problem since ascaris parasites are abundant in soil. Good sanitation to prevent fecal contamination of soil is required. An education programme advising against the used of human feces as a fertilizer is also needed in some areas. Soiol treatment have been attemped but are generally not practical.

Mass treatment with single dose mebendazole favors all school-age children every 3 to 4 months as been used in some communities. These serve the dual function of treating the children and reducing the overall worms burden in the community. Indeed, mass community there pay have been shown to reduce Ascaris burden and transmission, although. It has a greater effect on the intensity of infection than the overall prevalence (44-47).

This approach has been shown to be cost effective (48). Because reinfection occur so frequently, shorter intervals between treatment have been found to be preferable. Targeted treatment helps control the morbidity of infection but does not have a substantial effect on transmission (44,49,50). In alarge randomized trail of school-based deworming performed in zanzibar, for example, single dose mebendazole, given either twice or three times a year intensity of A Lumbricoides infection by 63 and 97 percent, respectively, compound to control children who receive no mebendazole (51).

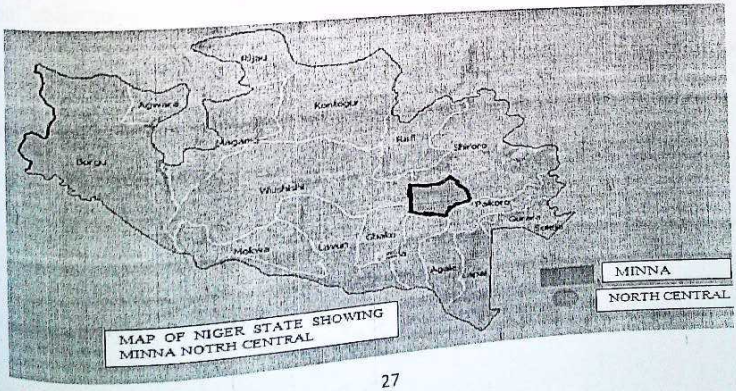
CHAPTER THREE

3.0 MATERIAL AND METHOD

- One (ig) of stool
- Normal saline (5ml)
- Formal- saline (75mls of 10 %)
- Centrifuged (at 3000 rmd)
- Ether (ml)

3.1 STUDY AREA

The study was carried out at the following health centres; Basic Health Clinic Lefu (BHCL), Primary Health Care Department Gurara (PHCG), Primary Health Care Department Lambata (PHCDL), Basic Health Clinic Tufa (B.H.C.T), and Health Clinic Bonu (H.C.B).All in Gurara Local Government Area of Niger state. The area has an area land of 954 km2 and a population of 90, 974. It has a longitude of 6^0. 02^0 East and latitude 09^0 4r North respectively.



MAP OF NIGER STATE SHOWING MINNA NOTRH CENTRAL

The plate above shows the map of Niger State.

People in this area engaged their self in small scale farming most of the farmers (95, 0%) were married with children. Gurara force which is known as Gurara river flows into is the major source of water for the inhabitant of the people living around there .All are in Niger State is located within longitude 6^0 33'E and latitude 9^0 37'N, covering a land area of $88km^2$ with population of 1.2 million. Minna has a tropical climate with mean annual temperatures relative humidity and rainfall of $30{:}20^0$ 61.00% and 1334.00cm respective. The climate presents two district seasons; rainy season (April – October) and dry season (November – March) (Innocent *et al* 2012)

3.2 STUDY DESIGN

The study was conducted on August to September2013 the subjects were primary school children in some selected Health Care Centres within Gurara. And its environs. After obtaining verbally informed consent, faecal sample collection was done in early morning hours 7am & 8am on the total of 100 children

3.3 ETHICAL APPROVAL

This project was approved by the department of biology Niger State College of Education, Minna. A letter of identification was given by the department and

permission to (carry out the study was obtained from the department and respective health centres. The consent was obtained from each child and parents that participated in the study.

3.4 POPULATION OF THE STUDY

One hundred individuals were randomly, selected from the five health centres for the study, participation is entirely voluntary and the children and parents were made aware of the study and as benefit through health education twenty (20) subjects from each health centre were selected.

3.5 FAECAL SAMPLE COLLECTION AND QUESTIONNAIRE ADMINISTRATION.

Each subject was given a 30ml sterile plastic screw capped sample bottle to provide early morning feaces from 7.00am and 8:00am. Which was collected a day after at stipulated time. Each sample bottle was labeled to correspond to the number of subject's questionnaire. A questionnaire on the Resident name, occupation of the parent, Sex, age type of toilet used, type of drinking water and perception about the disease and treatment practice of diseases were taken from subject. The faecal samples were quickly transported to the respective health centres for laboratory analysis..

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3.6 LABORATORY PROCESSING AND EXAMINATION OF SAMPLE (FORMAL ETHER CONCENTRATION METHOD)

With the aid of applicator stick 2g of faeces was placed in a test tube and 5ml of normal saline was added and emulsified thoroughly, it was then centrifugal at 2000rmp for 2mins and supernatant discarded. The process was repeated until the supernatant was clear.' 7mls of 10% formol saline was added to the deposit and was mixed thoroughly, 3ml of either was added and couned with a rubber bank, and shaken vigorous and centrifuged at 2000rmp for 2min, the supernatant was discarded and deposit examined using x10 0bjective of the microscope. Each sample examine macroscopically for the presence of adult worms, segments of costales, blood, and muscus. The colour, odour and consistency of the stools sample were documented. And the data generated were analyzed using simple statistical percentage

3.7 INSTRUMENT AND REAGENTS

- Interviewer administered questionnaire
- Plastic screw-capped bottle (sterile)
- Test tube
- Sube and coverslip
- Microscope

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.0 ANALYSIS OF DATA AND PRESENTATION OF RESULTS

The Data utilized in the analysis were obtained from the questionnaires administered to the subjects and stool samples collected from primary school children that attended medical check up for Gastro-intestinal parasites at the selected Health Centres in Gurara Local Government Area of Niger State. The data were analyzed and interpreted using simple percentage statistical tool in relation to the questionnaires administered

TABLE 1

PREVALENCE OF ASCARIS INFECTION PER HOSPITAL

Basic Health Clinic Lefu (BHCL)	20	17	85
Primary Health Care Department Gurara Gawu L.G.A (PHCAG)	20	10	50
Primary Health Care Department Lambata (PHCDL),	20	18	90
Basic Health Clinic Tufa (B.H.C.T)	20	16	80
Health Clinic Bonu (H.C.B).	20	14	70
Total	**100**	**75**	**75**

TABLE 2: SEX DISTRIBUTION AND PREVALENCE OF ASCARIS INFECTION

SEX	NO/PE	NO POST	PREVALENCE%
MALE	50	46	92
FEMALE	50	29	58
SEX	100	75	

TABLE 3: AGE DISTRIBUTION AND PREVALENCE OF ASCARIS INFECTION

AGE GROUP	NO EXAMINED	NO. POSITIVE	PREVALENCE (%)
5-7	36	25	69.4
8-9	26	20	76.9
10-11	30	28	93.3
12 & ABOVE	8	2	25
TOTAL	100	75	75

RESULTS AND DISCUSSION

A total of one hundred (100) samples were examined 75 was positive for *Ascaris lumbricoides*. Out of 100 children recruited for the study given overall prevalence of *Ascaris lumbricoides* was 75 (75%) as shown in table 1 this is significant higher than the findings of Basir 1998 who recorded 70% in jos, but also lower than the finding of Damshark 1998 who recorded 81% in other areas of plateau state. Also there is a significance difference with that of Kofie and Dipeolu 1983, which state that about 67.5% and Oluwaseyi 1986 who recorded 56.7%. Celia et al 1989 recorded 88.5% in Ile-Ife and Oduntan 1974 recorded 79.1%. Soreson et al 1996, who stated that *Ascaris lumbricodes* was the most commonest infection and he also reported 77% prevalence among children.

Table 2 shows that the sex distribution which shows only 46 (92%) male was positive for *Ascaris lumbricoides* this is not in agreement with Elekwa and Ikeh 1996 which show a slightly higher prevalence among girls compare to boys and it is similar with that recorded by cort stoll 1993, sawyer 1995 Hill 1996 and chandler et al, 1995 whose result shown higher prevalence among males in relation to their female counter part.

Table 3: show that Age distribution. This shows the infection rate on age group 5-7 years of 69.4% and this agrees with the work of Kofie and Deolu 1983, Eaton 1985 and sorenson et al 1996 who reported that *A lumbricoides* infection is common in

children under the age of 12years, the low prevalence of *Ascaris lumbricoides* may be as a result of treatment of infected children who were screened by the previous researcher who have carried out the same work in the environment and probably the pupils must have been educated on the made infection and ways of preventing the infection hence very low prevalence obtained in the survey.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Summary

The research attempted to critically investigate the prevalence Ascariasis among primary school children attending medical checked up in some selected health care centres in Gurara Local Government Area of Niger State.

The tools used for the research is Questionnaire simple random sampling was employed in selected health centres in this research after successful administrate, Questionnaire were analyzed through tabular form which represent the table and percentage of the respondent which consist of 100 sample in all 20 respondents from each selected health care centres and only suspected primary school children or their parents are allowed to feel the questionnaire the research also identified the numbers of cases of Ascariasis also identified the factor that influences the distribution of *Ascaris lumbricoides*. Finally the research investigated effects of *Ascaris lumbricoides* and created awareness to the primary school children, teachers and parents with regard to Ascaris infections.

5.1 Conclusion

The main epidemiological factor to *A lumbricoides* infection in primary school children should be considered in relation to the endemic Ascaris condition under which children are living.poor sanitation is one of the factors affecting the rate of GIT parasite infection in children, living in Ascaris – endemic communities. Proactive steps such as cleaning of water ways, maintaining healthier environment conditions and other effective control strategies would all have a synergistic effect in controlling Ascariasis infection among primary school children.

Conductively, in order to give more knowledge on the prevalence of *Ascaris lumbricoides* among primary school children as an environmental phenomenon, it has been observed that absent or poor waste management facilities ignorance, and lack of awareness among residence of Gurara on the possible factor responsible indiscriminate Ascariasis. However, since there is no efficient and effective method of sanitation that will needed to meet the needs of the growing population of Gurara it is important to note that the threats which the solid waste can pose to the schools and environment of Gurara, these threats includes: the block of urban

drainages which could result to erosion, spread of diseases such as Ascariasis, malaria typhoid, cholera etc.

5.3 Recommendation

These are following recommendations

Parents and children and should be educated on the dangers of Ascariasis in children and on preventive measures to be taken to reduce the risk of occurrence.

- Stagnant water should be treated and disposed in other to prevent the growth of parasite.
- New methods of diagnosis should be brought up and more research should be carried out on how the problem of poor sanitation is associated with Ascsriasis can be dealt with.

Primary school children should be taken routine anmedical check-up and intermittent treatment with appropriate chemotherapy seriously

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