PREVALENCE OF URINARY SCHISTOSOMIASIS AMONG SCHOOL AGE CHILDREN IN SOME SELECTED HEALTH CENTERS OF BOSSO LOCAL GOVERNMENT AREA OF NIGER STATE

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A Research Project Submitted to the
DEPARTMENT OF BIOLOGY
NIGER STATE COLLEGE OF EDUCATION
MINNA

OCTOBER, 2014.

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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).

OCTOBER, 2014.

CERTIFICATION

I certify that this research work was carried out by Umar, Danjuma, Sule, Hauwa and Zainab under my supervision.

Project Supervisor **Date** 28/11/2024

CERTIFICATION

I certify that this research work was carried out by Umar, Danjuma, Sule, Hauwa and Zainab under my supervision.

Mr. Ibrahim

Project Supervisor

Date 28/11/2024

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: 28/11/2014

Mal. Shehu Ibrahim Tabako

Supervisor

Sign _____ Date: 28/11/2014

Mr. Samuel Goshie

H.O.D (Biology)

DEDICATION

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

ACKNOWLEDGEMENTS

All praise, glory and appreciations belong to Allah (S.W.T) the beneficent the most merciful who has protected our health and as well given us the wisdom to undergo the course successfully.

Our profound gratitude, thanks and appreciations also goes to our humble, dedicated and respectful supervisor in person of Mallam Shehu Ibrahim Tabako for his patience, encouragement; constructive criticism and supervision to put this research work to success.

We also strongly register out most sincere gratitude to our parents and our relations.

ABSTRACT

Studies were carried out on 100 School Age Children in IBB Specialist Hospital, Bayclinic Hospital, Optimal Scanning Laboratory, Top Medical Specialist Clinic and Old Airport Clinic to determine The Prevalence of Schistosomiasis (Schistosoma haemitabium) infections using urine sample test method of diagnosis. The prevalence of urinary schistosomiasis among the subject examined in the five health centers. Overall prevalence of the disease was 85 (85%) of the total children examined in five health centers were infected with schistosoma haemitabium respectively. The base line information provide in this research will guide the parents in taking their children to routine periodic screening check-up and simultaneous treatment.

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CHAPTER ONE

1.0 INTRODUCTION

Schistosomiasis is a chronic and debilitating disease caused by digenetic flatworms (flukes) of the genus Schistosoma (Noble and Glem, 1982) it is one of the most common parasitic infection in the world (Gracio *et al;* 1992) ranking second to only malaria in terms of socio-economic and public health importance in tropical areas (Ogbe, 2002), it is also the most prevalent of the water borne diseases and one of the greatest risks to health in rural areas of developing countries (Ogbe, 2002).

Infection occurs through contact with water infested with the free swimming larval stages of parasitic worms (cercariae) that penetrate the skin and develop in the human body with urine or excreta. They hatch in fresh and infect the appropriate aquatic snail intermediate hosts. Bulinus snails are intermediate host for *Schistosoma haematabium* (Ukoli, 1984) within the snails they develop into cercariae, which are, in turn, released into the water to infect new human hosts, transmission can take place in almost any type of habitat from large lakes or rivers to small seasonal ponds or streams (WHO, 2002).

In urinary Schistosomiasis, the worms live in the blood vessels of the bladder only about a half of the eggs are excreted in the urine. The rest stay in the body, damaging other vital organs. It is the eggs and not the worm itself which cause

damage to the intestines, the bladder and other organs (Banerjee and Agrawal1997) the disease occurs in 74 countries in Africa, South America and Asia, with an estimated 200 million people infected 85percent live in Sub-Saharan Africa, and at least 600 million are at risk of infection (WHO, 1993). Recent estimates from Sub-Saharan Africa indicate that 280,000 deaths per year can be attributed to Schistosomiaisis (Vander Werf *et al;* 2003). Urinary Schistosomiasis is caused by *Schistosoma haematobium* which has fresh water bulinus snails as its intermediate host among parasitic disease and in terms of socio-economic and public health importance. Schistosomiasis ranks second to malaria particularly in 44 endemic countries in Africa, including Nigeria (Nnoruka, 2000) where it is often regarded as a chronic illness that can damage human internal organs and in children, impair growth and cognitive development for instance, when the female Schistosome begins to produce eggs in the veins of the urinary bladder (about 4 to 10 weeks after infection).

Many eggs are carried by the hepatic portal circulation backup in the liver where they stimulate, liver cirrhoses and fibrosis which impede portal blood flow as eggs accumulate and fibrotic reactions in the liver continue, cirrhosis and portal hypertension ensue. Splenomegaly occurs due to eggs lodged in the spleen and to chronic passive congestion of the liver. Reactions around the egg cause changes in the urinary bladder wall which becomes ulcerated and hematuria becomes more

marked as the disease develops (Schmidt and Roberts 2000). Between 1987 and 2009 many prevalence studies on urinary Schistosomiasis were carried out in Nigeria particularly in the northern states (Akogun and Akogun 1996; Daniel *et al*; 2001 Idris and Ajanus; 2002; Dakul *et al* 2007; Pukuma and Musa, 2007), Middle-Belt Region.

(Mbata *et al*; 2009) South-Western states (Adeboya and Ojeaga; 2002; Mafiana *et al*; 2003; Adeoye *et al*; 2008; Nwabueze *et al;* 2009), Delta State (Ugbomoiko, 2002; Ogbe, 2002; Nwabueze and Opera, 2007), and South-Eastern States (Ozumba *et al*; 1989 Nnoruka, 2000; Ekejundu *et al;* 2002 Ukpai and Ezeike, 2002; Okon and Umeche, 2003; Alozie and Anosike, 2004, Ekwunife *et al;* 2004 Uneke et al, 2007; Uwaezuoke et al, 2007; Obiukwu et al, 2008; Obiukwu *et al;* 2009) from these studies, it appeared that urinary Schistosomiasis is widespread in Nigeria, not still been determined the present study of urinary Schistosomiasis among children in Okija, South-Eastern Nigeria.

This will highlight and provide the much needed information on the current status of Schistosomiasis in the area. The distribution of the disease is focal, aggregated and usually related to water resources and development schemes such as irrigation projects, rice/fish farming and dams. It occurs in all the states of the federation with a high infection rate among school children (Mafe *et al*; 2000; Okpala *et al*; 2004).

This study is design to investigate the prevalence and intensity of urinary Schistosomiasis among the school children in Bosso local government area of Niger State. It is our hope that findings from this study will inform parents, government, school managements, and control managers on the status of the infection in the study area.

1.1 JUSTIFICATION OF THE STUDY

Studies on the prevalence of urinary Schistosomiasis among children in Niger State are limited, in view of the need for comprehensive, up to date baseline, information on the epidemiology of Schistosomiasis coupled with the possible increase in spread and distribution of the disease Nationwide and in Niger State particularly, the study was carried out in Bosso local government area of Niger State Nigeria.

The choice of this local government for the study was based on certain ecological parameters which favours transmission of Schistosomiasis are proximity of school in the study area of rivers, stream and ponds, persistent water contact of pupils from this school as well as nearby resident with the cercarial infected water bodies (Emerjulu, Alabaronye, Ezenwaji, Okafor 1994).

1.2 AIM OF THE STUDY

The aim of this study is to investigate the prevalence of urinary schistosomiasis among school children and in some selected health centres of Bosso Local Government Area of Niger State.

1.3 SPECIFIC OBJECTIVE OF THE STUDY

1. To create awareness of the danger of snails in the water bodies (river).
2. To find out the level of sanitation of the people that are close to this bodies of water (river).
3. To find out the level of literacy of the people living near the water body on the danger of bilharziasis.
4. To create awareness on the effect of Schistosomiasis on the education of children.
5. To determine the relationship between prevalence and age.

1.4 RESEARCH HYPOTHESIS

H_O parents and children are not aware of the danger of Schistosomiasis.

H_I parents and children are aware of the danger of Schistosomiasis.

1.5 RESEARCH QUESTION

1. Are the parents aware of the danger of polluted water on the children?
2. Are parents frequently taking their children for medical checkup on the danger of Schistosomiasis?.
3. Are the parents aware the effects of Schistosomiasis on the academic performances of children?.
4. Are the teachers in school teaching on the effect of polluted water?

1.6 SCOPE AND LIMITATION

The study is limited to some selected health centres in Bosso and Chanchaga local government area of Niger State.

These health centres includes: IBB Specialist, Old Airport Clinic, Bay Clinic, Top Medical Clinic and Optimal Scanning Laboratory Health Centres. The study is restricted to only two months.

1.7 DEFINITION OF TERMS

VECTOR: Is an organism that does not cause diseases itself but which spread infection or transfers an infective agent from one host to another.

PATHOGEN: Is a bacterium, virus or other micro-organism that can cause disease. A pathogen is also an agent causing disease or illness to its host, such as

an organism or infections particle capable of producing disease in another organism.

Schistosomiasis: Is an infestation with or a resulting infection caused by a parasite of the genus schistosoma haemitabium.

De-worm: Can be defined as the process of treating animal to free it from worm's infection.

Diagnosis: The identification of the nature of an illness or other problem by examination of the symptoms.

Disease: Is the abnormality of health of plants and animals.

Sanitation: Can be defined as the conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal.

Environment: Can be defined as the conditions in which a person, animal or plant lives or operates.

Control: Can be defined as the power to influence or direct people's behavior or the course of events.

CHAPTER TWO

2.0 LITERATURE REVIEW

Schistosomiasiis in man is a chronic and debilitating disease caused by blood flukes known as Schistosomes, it is one of the most common parasitic infection in the world. Schistosomiasis is also known as Bilharziasis or snail fever is a primary tropical parasitic disease cause by (larvae) cercaria of one or more of five types of flat worms.

The worms live in freshwater in the tropics. To infect humans the worms most first infect and mature in fresh water snails which are their intermediate host's cercaria (larvae) emerge from the snails and penetrate the skin of humans in contract with the water bodies (Bello and Dugbola 1992).

2.1 PREVALENCE OF SCHISTOSOMIASIS IN SOME PARTS OF THE WORLD

Schistosomiasis is among the most prevalent parasitic infections worldwide. However, Current Global Burden of disease (GBD) disability adjusted the year estimates indicates that its population level impact is negligible. Recent studies suggest that (GBD) methodologies may significantly underestimate the burden of parasitic disease including Schistosomiasis is between 40% and 50% in the Malawi population overall based on studies undertaken few years ago and in more recent

surveys in known high risk areas find similar levels. However, control measures changing ecology and migration may have led to changes in the prevalence of Schistosomiasis in different part of Malawi.

Result from the third nationwide cluster sampling survey on the epidemiology of Schistosomiasis in the people's Republic of China, conducted by the ministry of health in 2008/2009 are presented A stratified cluster random sampling techniques was used and 300 villages were selected in 7 regions (provinces) where *Schistosoma juponicum* remains endemic. A total of 250, 987 residents 6 to 65 year age were included in the survey. Estimated prevalence rates in the region (provinces) of Hunan, Hubei, Jangxi, Anhui yunna, Sichuan, and Jangsu were 4.2%, 3.8%, 3.1%, 2.2%, 1.7%, 0.9% and 0.3% respectively.

The highest prevalence rates were in the lake and marsh-land region (3.8%) and the lowest rate were in plain region with water way network (0.6% extrapolation to all residents in schistosome endemic areas indicated 726,112 infections. This indicates a reduction of 16.1% company with nationwide survey conducted in 2004. However, human infection rates increased by 3.9% in setting where transmission is ongoing (WHO 2004)

2.2 PREVALENCE OF SCHISTOSOMIASIS IN NIGERIA

The prevalence of urinary Schistosomiasis in Nigeria Adeoye (1997) reported the prevalence of Schistosomiasis in apparently healthy primary school pupils in Apata

and Laranto areas in Jos, plateau State of Nigeria was surveyed using 300 samples of urine samples were processed by ordinary centrifugal sedimentation techniques. The overall prevalence of Urinary (*Schistomosoma Haemitobium)* and intestinal (*Schistosoma Mansoni*) was 0.67% with three samples (1% prevalence) positive for intestinal (*Schistosoma mansoni)* and two of the three cases males in he age group of 10 to 12 years and he one (1%) positive for *Schistosoma haematobium* was a male patient prevalence in the studied area is therefore very low and immigration, sex and age dependent.

The prevalence of urinary Schistosomiasis in IKpeshi a rural area of Edu State, Nigeria showed that 195 (65%) out of 300 volunteers harbored *Schistosoma haematobium* Ova or larvae in their urine. Eosinophiluria was markedly 75 Eosinophilic leucocyturia and reported among 250 (83.3%) in habitants of these, Ovas or larvae were absent in 55 (22%) of urine samples but had other associated urinary symptoms namely proteinuria or haematuria or both (Cheever 2002).

2.3 LIFECYCLE OF SCHISTOSOMES

Schistosomes have a typical invertebrate lifecycle with humans being as host. The lifecycle of all five human Schistosomes are broadly similar parasite eggs are released into the environment from infected individuals, hatching in contact with fresh water snails by penetrating the snails foot r muscular foot. After infection, the miracidium transforms into a primary (mother) sporocyst. Gem cell within the

primary sporocyst will then be dividing to produce secondary (Daughter) which migrate to the snails hepatopancrease once at hepatopancrea the secondary sporocyst being divide again, this time producing thousand of new parasites known as cercariae, within are than the larvae capable of infecting mammals.

Cercariae emerge daily from the snails host in a circadian cyst depending on the kind of temperature and light young cercariae are highly motile, alternating between vigorous upward movement and sinking to maintain their position in the water. Cercarial activity is particularly stimulated by water turbulence by shadows and chemical found on human skin. After the cercaria have attached to and explored the skin. The parasite secrets enzymes that breakdown the skins protein to enable penetration of the cercarial head through the skin. As the cercarial penetrates the skin it transforms into a migrating Schistosomulum stage.

The newly transformed schistosomutum may remains in the skin for two days before locating a post capillary venule from here the schistosomulum travels to the lungs where it undergoes further developmental changes necessary for subsequent migration to the liver. Eight to ten days after penetration of the skin the parasites migrates to the liver sinusoid S *Japonicum* migrate more quickly than S *mansoni* and usually reaches the liver within (8) eight days of penetration Juveniles S *mansoni* and S *Japonicum* worm develop an oral sucker after arriving at the liver and it is during this period that the parasites begin to feed on red blood cells. The

nearly mature worm's pairs with the longer female worm residing in the gynaecophoric channels of the shorter male – Adult worms are about 10mm long worm pairs of *S mansoni* and *Japonicum* relocate to the mesenteric or rectal veins *S haematobium* schistosomula ultimately migrate from the liver to perivesical venons plexus of the bladder, ureters, kidneys through the hemonthoidal plexus.

Parasites reach maturing in six to eight weeks, at which time they begin to produce eggs, Adults *S mansoni* residing in the mesenteric vessel may produce up to 300 eggs per day during their reproductive lives S Japonicum may produce up to 300 eggs per day. Many of the eggs pass through the walls of the blood vessels and through the intestinal walls, to be passed out of the body in faeces *S haematobium* eggs pass through the ureteral or bladder wall and into the digestive tract possibly through the rease of photlytic enzymes, but also a function of host immune response which fosters local tissue, ulceration up to half of the eggs released by the worm pairs become trapped in the mesenterics vein or will be washed back in the liver, where they will become lodged worm pairs can live in the body for an average of four and a half years but may persist up to 20 years.

Trapped eggs mature normally, secreting antigens that elicit vigorous immune response. The eggs themselves do not damage the body. Rather it is the cellular infiltration resultant from the immune response that course the pathology classically associated with Schistosomiasis.

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2.4 EPIDEMOLOGY

People are infected by contact with water used in normal daily activities such as personal or domestic hygiene and swimming, or professional activities such as fishing, rice cultivation, irrigations and other such as socio economic status of the people, presence of the infected snails as intermediate host. Due to lack of information or insufficient attention to hygiene, infected individuals may contaminate their water supply with feaces or urine. The eggs of schistosomes above in the excreta of an infected person when defecated in water source it released parasites, the miracidia. To survive this motile parasite must find a fresh water snails once it has found its snails host the miracidum divides producing thousands of new parasites (cercarial) this cercarial are then excreted by the snail into the surrounding water. They can penetrate and individuals skin within a few second continuing their biological cycle once they have made their way to the victims bloods vessels within 30 to 45 days the parasite is transformed into a long worm which is either male or female. The female lays from 2000 eggs per day over an average of 5 years according to species (WHO2006).

In case of intestinal Schistosomiasis, the worm reside in the blood vessels lining the intestines in urinary Schistosomiasis they lives in the blood vessels of the bladder, only about a half of the eggs are excreted in the feaces (intestinal schistosomiasis) or in the urine (urinary schistosomiasis) the rest stay in the body

damaging other vital organs is the eggs and not the worm itself which course damage to the intestine, the bladder and other organs.

The large fresh water reservoirs associated with dams such as Akosonbo Dam in Ghana, the Kainji Dam in Nigeria and the Kariba Dam in Zimbabwe as well as smaller reservoirs in the Sahel and irrigation systems throughout. African are major transmission schistosomiasis and this endemic area for schistosomiasis. Although the majority of people in endemic areas have only light infections or no symptoms, the impact of schistosomiasis on economic conditions and the general health situation should not be under estimated. In the north-east of Brazil, in Egypt and the Sudan, the work capacity of rural workers has been estimated to be seriously undermined the disease also substantially affects children's growth and school performance. However, medical treatment is rapidly followed by improvement (WHO 2004).

There is an association between urinary Schistosomiasis and a form of a cancer of the bladder in some regions. This link is mainly recorded among the active section of the population, most of whom are farmers in Egypt, Schistosomiasis linked with cancer is primary cause of death among men aged between 20 to 44 years. In the industrialized countries, cancer of bladder without Schistosomiasis is usually prevalent among worker aged between 60 to 65 in some regions of African where *Schistosoma haematobium* is prevalent, the incidence of cancer of the bladder

linked to Schistosomiasis is 32 times higher than the incidence of cancer of bladder in the U.S.A.

2.5 PATHOGENESIS

The major pathology of Schistosomiasis is chronic retention of the eggs in host tissues chronic granulomatous injury. Eggs may be trapped at the site of deposition (intestine or for *S haematobium*) urinary bladder or ureters. This lead to local and systemic host responses. Lymhocyete, microphages, and eosinophillis migrate to these magnet for inflammation, causing granulomas and eventually tissue destruction. The result will be fibrosis and abstraction.

Early symptoms *S mansoni* or *S japonicum* may include colicky abdominal pain, blood diarrhea or no symptoms. There may be fibrosis of the intestinal wall and ulceration. There have been case reports of chronic constipation due to granuloma which obstruct the lumen of the intestine (Arthur 1998).

With longer period of infection, correlation with great parasitic burden, hepatic granulomas may develop granuloma may cause fibrosis but usually do not interfere with liver function until the passage of many years of heavy infection late findings include hepatosplenomegaly, portal hypertension, ascite and hematemesis. Co-infection with either hepatitis c and *S mansoni* but not *S japonicum* are known to accelerate deterioration of hepatic function *S haematobium* can cause dysuria hematuria and urinary frequency early on in highly endemic more than 50% of

children show moderate severe urinary pathology. Even those with less parasitic burden have significant morbidity (Behnman and Vaughn 2000) Bladder involvement can result in hamaturia, hypertension, abstructive uropathy, secondary urinary track infections and ultimately renal failure and ever bladder cancer, gential disease is present in approximately one third of infected women (poggenses et al 2002) resulting in a variety of vulvar and perineal disease, including ulcerative, fistulous, vulvar schistosomiasis may also facilitate the transmission of HIV (Feldmeier 1995).

Acute schistosomiasis or katayama fever is a severe serum-sickness like syndrome characterized by fever, chills, eosinophilia, hepatosptenomegaly, and lymphadenopathylt most commonly affect older people who are heavy exposed to Schistosomiasis for the first time. The on set of symptoms came 4 to 8 weeks after exposure. Eggs from any of the schistosomal species may also escape to the lungs causing pulmonary hypertension or corpulmonale *S japonicum* worms may migrate to the brain, localized lesion there are associated with seizures.

2.6 DIAGNOSIS

The diagnosis of Schistosomiasis is the detection of Schistosome eggs in faeces of urine. As the shedding of eggs fluctuates up to three specimens may be required for diagnostic testing. These are generally observed in saline for a patients likely to

have a smaller parasitic burden such as returning travelers, formalin based techniques improve the yield.

An alternative method used in China for *S japonicum* released on the placement of concentrated feacal ora in distilled water. Hatching miracidia are diagnostic serological testing is helpful in acute Schistosomiasis, where eggs are not to be found. However, the antibodies persist for months. After parasitological cure. Thus they are sensitive, but not specific, anyone who has been exposed will test positive for months or years. Antigen testing (based on urine, faecas or blood) is promising but awaits field testing. Other laboratory findings that support a disgnosis of Schistosomiasis are eosinophilla, anemia, hypo albuminemia, elevated urea and creatinine level (for *S haematobium)* A newer test of intensity of infection for *S haematobium* is the essinophilic cationic protein (ECP) Delining quantitative urinary levels correlate with reduction in severity of illness (Engels *et al,* 2002) this test is particularly helpful for intestinal Schistosomiasis however a dip strip this test is not currently visible to use diagnostically.

2.7 TREATMENT

Single-dose monotherapy using praziquantel is used world wide in community based programmes to control schistosomiasis, a dose of 40mg/kg (divide into a twice daily therapy for one day) curves 60 to 90% of *S mansoni S haeaitabium* and *S japonicum* is generally treated with a dose of 60mg/kg divided into 3 doses

administered over a single day. Even in the minority who are not cured, worms burden and eggs production are reduced it is helpful for reducing the morbidity of chronic liver disease or bladder cancer (Ulzinger *et al,* 2003).

Although the exact mechanism of action is not well understood it is effective against adult worms, it is not however effective against the migrating larvae that are 3 weeks during the transmission season it can be used as an effective prophylactic drug. A third medication oxamniguien has geographically limited effectiveness against *S mansoni*. Although safe and effective in South America the Caribbean and West Africa. It is more costly than praziquantel which is currently priced at U.S 80/25 dose resistance has also repeatedly been described. It has been used to good effect in Brazil overall. It is of declining importance worldwide in the treatment of Schistosomiasis.

Combination therapy using partner drugs which different mechanisms of action are of great interest, partly in the hope that their use may delay the emergence of resistance studies combining praziquantel and oxamniquine have not consistently show improvement over praziquantel alone. The utility of this combination will be further limited by oxamniquine's lack of efficiency in treating *S haematobium* and *S japonicum* by contrast, the combination of praziquantel and artemether is more promising or effective. The target different stages of the worms' lifecycle and show effective both in animal studies and clinical traits. The addition or artemether

would also have the added benefit of controlling malaria if artemether became widely used. This could potentially limit its usefulness for malaria (J Ulzinger) in his excellent review of combination therapy for schistosomiasis looks forward to a new type of synthetic antimalarial drug active against all stages of all schistosomal species.

2.8 CONTROL OF INFECTION

There are four main strategies of control of Schistosomiasis.

1. Large scale population
2. Based chemotherapy
3. Vaccines molluscicides, and
4. Environmental intervention

Various combinations of these strategies have resulted in remarkable progress towards reducing Schistosomiasis. Most formerly endemic countries of the Americas and Asia now have very small risk of infection. Sub-Saharan Africa, by contrast, there has been very little schistosomiasis control activity in the recent past years, WHO is now rolling out initiative to address this. In areas of high prevalence, the availability of low-cost praziquantel has opened up the option of presumptive treatment based on early clinical symptoms, or universal treatment, especially of children current WHO initiative target school-age children with a goal of treating 75% of children at risk of Schistosomiasis of the drugs, school

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teachers can be trained to administered them and record the number of children treated in each round. Under this model individual children are not left out.

Adult at high risk, such as farmers working in irrigation ditches, or fresh water fishermen, should also have access to praziquantel drugs. For areas of lower prevalence, questionnaire based screening tools have proven valid. These have been both to identify individual communities with high prevalence and to identify case who would then be further screened and treated (Bergquist and Robert 2002).

2.9 CONTROL

The control of urinary schistosomiasis depend on a deep understanding of the epidemiology of the disease complex and in particular the Biology, ecology and distribution of the parasite, the snail intermediate host and man (reservoir host). Moreover, the ultimate success of any control programmed is dependent upon a full understanding of the local socio economic conditions and upon the appreciation by the health Authorities as well as by the community of the benefits of the proposed measures. A control strategy for urinary Schistosomiasis can be developed for each endemic country by harmonizing the objectives, resources and managerial capacity of the ministry of health. The approaches to the control of urinary Schistosomiasis include health education, chemotherapy snail control, environmental management and modification and sanitation and water supply.

2.10 HEALTH EDUCATION

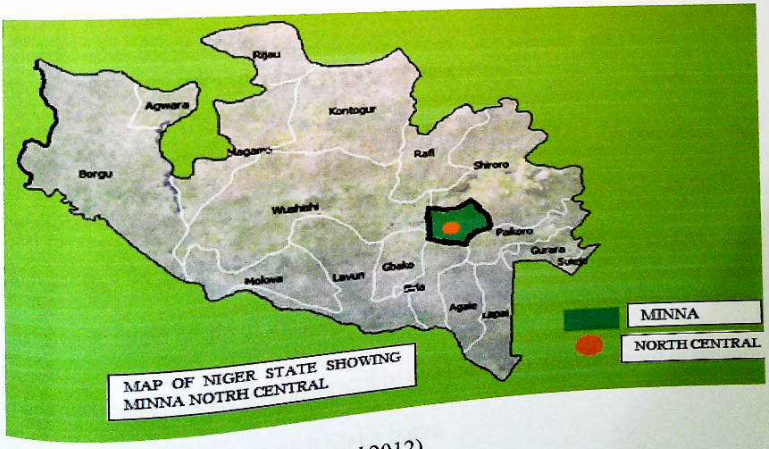
Efforts should be made to modify knowledge, attitude and perceptions with respect to the transmission, diagnosis and control of the disease. Since behavior is often determined by the local culture, it is not easy for control programmes to achieve appropriate behavioural changes within a short time. Health education and communication should not be the responsibility of the professional health educator alone but should involve all members of the control team and in particular the community based, it should also stress the advantages of early as well as preventive action.

CHAPTER THREE

3.1 MATERIAL AND METHOD

3.2 STUDY AREA

The study was carried out at the following health centres, Top Medical Centres, Bay Clinic Hospital, Old Airport Clinic, Optimal Scanning Laboratory and IBB Specialist Hospital in Bosso Local Government Area of Niger State. Mnna the capital of 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. It has a tropical climate with mean annual temperatures, relative humidity and rainfall of $30:20^0$, 61.00% and 1334.00cm respectively. The climate presents two district seasons; rainy season (April – October) and dry season.



(November – March) (Innocent *et al* 2012).

Plate 1 Map of Niger State Showing Minna North Central Metropolis

3.3 ETHICAL CONSIDERATION

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 both biology department and respective health centres i.e. Optimal scan Medical Laboratory (O.S.M.B), Top Medical Hospital (T.M.H), Old Airport Clinic (O.A.C) and Ibrahimm Badamasi Specialist Hospital (I.B.B.S.H). The consent was obtained from each child and parent that participated in the study.

3.4 TARGET POPULATION

The target population is the children that are schooling in Bosso Local Government Area of Niger State.

3.5 POPULATION OF THE STUDY AREA

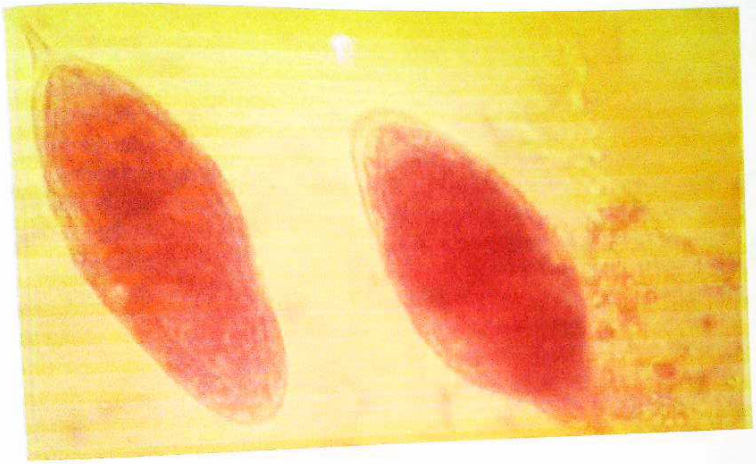
After obtaining permission from the health centres management the consent of the subject were sought, one hundred individuals were randomly selected from the five health centres for the study, participation is entirely voluntary and the children and parents were made aware of the study and its benefit through health education.

A cluster sampling techniques as described by (1) and (5) was employed in random selection of 20 subjects from each health centre.

3.6 URINE SAMPLE COLLECTION AND QUESTIONNAIRE ADMINISTRATION

This study was conducted from August to October, 2013. Each subject was given a 3ml sterile plastic screw-capped bottle by the laboratory scientist of each health centre to provide terminal urine between 10:00am and 2:00pm. Each bottle was labeled to correspond to the Number of subject's questionnaire. A questionnaire was administered to each subject that provided the urine in order to provide information on location, name, sex, age, residence address, source of water, tribe, and schooling or not schooling, type of toilet used, perception about the disease and treatment. The samples were then analyzed. Each subject was given plastic screw –capped bottle by the laboratory scientific of each health centre to provide terminal urine between 10.00 am and 2.00pm. Each bottle was labeled to correspond to the number of subject questinon. questionnaire was administered to each subject that provided the urine in order to provide information on location, name, sex, age, residence address, source of water, tribe, schooling or not schooling, types of toilet used, perception about the disease and treatment. At the laboratory, 10ml of each sample was transferred into a test tube and placed in a centrifuge. The samples were than centrifuged at 1000 rev. (for 3 minute (Monica chees brough, 1985).

The supernatant was discarded and a drop of the sediment was dropped on a glass slide and covered with a cover slip. The slide was the examined for the presence of *Schistosoma haematobium* eggs



3.7 STUDY INSTRUMENTS AND REAGENTS

- Interviewer administered questionnaire
- Plastic screw – capped bottle (sterile)
- Terminal urine sample
- Test tube
- Slide and coverslip
- Microscope
- Filter paper

Vacuum pump filter machine

Syringe (10ml)

Saturated ninhydrin solution

Iodine

CHAPTER FOUR

Table 4.1: Prevalence of urinary schistosomiasis infection in five health centres

NAME OF HOSPITAL	N.P.E	NI	PREVALENCE %
IBB Specialist Hospital	20	19	95%
Old Airport Clinic	20	17	85%
Bay Specialist Hospital	20	18	90%
Optimal K. Scanning	20	16	80%
Top Medical Hospital	20	15	75%
TOTAL	**100**	**85**	**85%**

NPE: Number of patient examined

NI: Number of infection (positive)

P: Prevalence percentage

Table 4.2: Prevalence of urinary schistosomiasis according to the Gender

	Number of Examined			NI			
HOSPITAL	**M**	**F**	**TOTAL**	**M**	**F**	**TOTAL**	**%**
A	14	6	20	14	5	19	95
B	17	3	20	15	2	17	85
C	12	8	20	11	7	18	90
D	11	9	20	8	8	16	80
E	13	7	20	11	4	15	75
TOTAL	**67**	**33**	**100**	**59**	**26**	**85**	**85**

Table 4.3: Prevalence of urinary scchistosomiasis relate to Age – Gender

AGE GROUPS	MALE			FEMALE		
	NE	NI	INF %	NE	NI	INF %
5 – 7	10	9	90	3	2	66.6
7 – 9	12	10	91.6	4	3	75
10 – 12	18	12	92.3	2	1	50
12 – 14	7	6	85.7	5	6	120
14 – 16	9	8	88.8	3	2	66.6
16 – 18	10	10	100	7	6	85.7
18 – 20	16	3	50	9	6	66.6
TOTAL	**67**	**59**	**88.1**	**33**	**26**	**78.7**

NE: Number Examined

NI: Number Infected

Table 4.4: Prevalence of urinary schistosomiasis among difference Age Groups

AGE GROUPS	N.P.E	POSITIVE	PREVALENCE
7 – 9	15	12	85.7
10 – 12	13	13	86.6
12 – 14	14	14	100
14 – 16	15	12	80
16 – 18	14	11	78.8
18 – 20	15	10	66.6
TOTAL	**100**	**85**	**85**

4.5 RESULTS

Table 1 shows that the prevalence of urinary schistosomiasis infection in the health centres comprising 19 (95%) subject in IBB Hospital, 17 (85%) subjects in Old Airport Clinic Hospital, 18 (95%) subject in Bay Specialist Hospital, 16 (80%) subject in Optimal K. Scanning and 15 (75%) subject in Top Medical Hospital respectively. The overall prevalence rate was 85 (85%).

Table 2: shows that the prevalence of urinary schistosomiasis infection according to gender of the subjects in the five health centres. The infection rate was significant higher among males 59 (88.1%) that among females 26 (85%).

Table 3 infection was higher (92.3%) among individuals in the 10 – 12 years of age groups than in other age groups and was lower in the higher age groups. However, the infection rate among individuals aged 12 years and 14 was higher than that of the subject in age groups 14 to 16 years. Table 4 of the 100 questionnaires administered only 100 responses on the knowledge of the etiology and the mode of transmission of schistosomiasis were obtained. Only 85 (85%) of the respondents have attributed urinary schistosomiasis to contact with water bodies.

4.6 DISCUSSION

This study shows that urinary schistosomiasis had a high prevalence rate in in L.G.C community. Previous studies show that urinary schistosomiasis is widely distributed in Nigeria (17 – 21) and suggest a linear relationship between infection and individual's water contact activities in Northern Nigeria (22).

The prevalence rate of 85 (85%) observed in LGC community was higher than a prevalence of 25.5% observed (2) in some rural villages and from settlement in Southeastern Nigeria. The figures was however, lower than a prevalence rate of 98% reported from an agricultural settlement near Yola, Northeastern Nigeria (23). The difference in prevalence rates may be influenced by peculiar ecological characteristics and levels of contact of individuals with water bodies and the degree of exposure to infective schistosome cercariae in different locations.

The prevalence of urinary schistosomiasis infection by L.G.C showed that IBB Specialist had the highest infection rate 19 (95%) followed by Bay Specialist at 18 (90%) followed by Old Airport 17 (85%) and followed by Optimal Scanning 80 (80%) and the Top Medical had the lowest infection rate of 15 (75%) this could be associated with the proximity of IBB and Bay Specialist to

River water in the village, which may have served as a main reservoir and breeding site for the snail intermediate hosts, urinary schistosomiasis eventually, people of the two sub-village utilize river water for irrigation, fishing, swimming and domestic purposes. On the other hand, is the orthest from the river and this may result in lesser contact with the water source by the residents compared with those who live in the other two sub-villages and may have accounted for low urinary schistosomiasis infection rate observed in the area.

Infection rate was highest among subject in the group aged 10-12 years (92.3%) with a gradual decrease in the infection rate among the older age groups. This result was similar to a previous finding (2) in the southern part of Nigeria; however, it was different from previous report (7, 24) from other location which indicated highest prevalence in the 7-10 years aged group. The variation in the previous rate in difference aged groups. From various centres may be attributed to natural environment, water contact patterns, and physico-chemical characteristics of locally available water influencing snail breeding in different ecological area. We observed a gradual decrease in the prevalence rate among subject with ages between 5-7 years. However, subjects of 10 present with infection rate (30%) close to the infection rate among the age group 14-16 years (88.5%). The reason could be that subject

aged 18-20 years and older usually visits the river at sunset to bathe and such exposure may have contributed to the present rate of infection among the group.

Previous studies did not report a consistent pattern on the prevalence of urinary schistosomiasis infection according to sex in Nigeria (6). In this study, we observed a significantly higher prevalence rate of infection with urinary schistosomiasis among males than among females. The observation could be attributed to a cultural habit of the regular and longer contact with the breeding site of the disease vectors among the male folks through farming and swimming than their female counterparts who were restrained by socio-cultural factors from swimming in the locally available river and ponds. This finding differs from a previous report (26) of prevalence or urinary schistosomiasis infection in females, but was however, similar to other published finding (27-28).

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 SUMMARY

The research attempted to investigate critically on prevalence of urinary schistosomias among school children in some selected health centres in Bosso Local Government Area of Niger State.

The tools used for the research is questionnaire and simple random sampling was employed in selected health centres in this research. After successful administer questionnaire were analyzed through tabular form which represent the table and percentage of respondent which consist of 100 sample in all 20 respondent from each selected health centres and only children are allowed to fill the questionnaire.

The research also identify the numbers of cases of urinary in children to identify the factor that influence the distribution of urinary schistosomias among school children, to determined the prevalence rate of urinary schistosomiasis, to find out the effects of literate of the people living near the water body on the danger of bilrarziasis. To create awareness on the effect of schistosomiasis on the education of children. To determine the relationship between prevalence and age, to find out the level of sanitation of the people that are close to the bodies of water (river).

5.2 CONCLUSION

The result of this study has shown that urinary schostosomiasis parasite protozoan still exist and could be a major health problem (growth retardation, morbidity and mortally) among pupils of Nigeria particularly in Niger State. In view of the considerable morbidity and the public significance of these urinary parasite infections, coupled with the fact that children are future of any nation, it then becomes necessary for the governments (Local, States and Federal) as a matter of urgency to control the menace of parasitic protozoan (ppi) in the community through well organized health education programme on personal hygiene improve the sanitary condition in the schools and periodic administration of anti-paratactic drugs (i.e. for protozoan & helminthes).

5.3 RECOMMENDATION

- The government should provide good utilities, like toilets, clean water supply to communities and schools.
- There should be routine periodic screening even of the healthy pupils for urinary schistosome parasitic protozoan to minimize morbidity and mortality.
- Food vendors should be properly inspected and de-wormed before sells.

- School authorities in collaboration with government should organize an enlightenment lectures on the health hords of urinary schistosomiasis.
- Good water (treated) and well toilet facilities should be assisted by the government to the schools.
- The government should established a committee for schistosomiasis control more firm in order to implement the plans of action of the project and provide the necessary manpower facilities.
- Mass treatment of school children should be carried out if the prevalence of schistosomiasis is more than 25%.
- Support from international community should be involve in order to implement the control programme and strengthen to research unit.
- To control urinary schistosomiasis methodologies and managerial tools should be integrated to improve preventive strategies with emphasis on health education information and communication.
- The government should also put more attention simultaneously on the treatment and provision of drug for treating schistosomiasis.

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