

PROJECT TITLE

EPIDEMIOLOGICAL AND SOCIAL
IMPLICATION OF GUINEA WORM DISEASE
IN PAIKO TOWN

By

ZUBAIRU ABUBAKAR LOGUHA

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*Being a thesis presented to the Department of Geography in
partial fulfillment of the requirement for the award of Post
Graduate Diploma in Environmental Management of the
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ATTESTATION

I Zubairu Abubakar Loguma, do hereby attest that beside the reference made in this work for which I have duly acknowledge contained here are purely mine and based on my field research. I also attest that the work has not been copied from any research project here in the University or elsewhere. Further more, this work has not been presented else where for the award of any certificate.

Signed

Zubairu A. Loguma.

CERTIFICATION

This project have been read and approved as meeting the requirement for the award of
ost Graduate Diploma in Environmental Management, Department Geography Federal
University of Technology Minna.



Thesis Supervisor
Dr. Akinyeye



Head of Dept

Dean of P.G. School

Programme Co-ordinator
Dr. M.T. Usman

External Examiner

Student

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ABSTRACT

The research on epidemiological and social implication of Guinea worm infestation in Paiko town was carried out. The study showed that 85.9% of the inhabitant of the area are affected almost every year.

The study also showed that the age groups 11 - 12 years and 21 - 30 years were mostly affected. This was the active age group involved in farming and food production in the town. The study showed the male have larger number, as against the absence of sex predilection. No reasonable explanation can be given for this.

The people are not unaware of the source of the disease but still collect their drinking water from the same source. The reason being that they have no alternative source.

In order to prevent disability that may be serious as to prevent farming that will affect food production in the area. Health education should be given to the people. Water treatment or provision of pipe borne water could be done by government.

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CHAPTER ONE

INTRODUCTION

1.1 Dracunculiasis (Guinea worm disease) is a crippling water associated disease with severe impact on health, agriculture, school attendance and general socio-economic status of the inhabitant of the affected areas. Ironically the disease is easily preventable through the provision and utilization of safe drinking water. The benefits to the society of controlling and evaluating eradicating the disease is therefore, enormous and should receive the support of the Government and International agencies like the World Health Organisation and Unicef, (A.I.D) Agency for International Development, (WASH) Water and Sanitation for Health Project, Global 2000, Vector Biology and Control Project (VBC) etc.

It is unfortunate that thus far, very little has been done in this Country through a well-articulated programme to control Dracunculiasis and ultimately eradicate it. The guinea worm disease is prevalent among people who live in rural areas, as peasant farmer, cattle rarer etc. who during the dry season invariably depend on contaminated shallow ponds for their drinking water. (Dracunculus or Drancontiasis is a painful incapacitating affliction caused by the parasite *Dracunculus medinensis*)

The disease probably affects an estimated 10 – 15 million people in poor rural areas of Africa and Asia (Hopkins 1982). It is now well known that dracunculiasis is the only communicable disease which is exclusively transmitted through contaminated drinking water

(Toye 1985). Dracunculiasis is not primarily a fatal disease but its complications sometimes arise from the secondary bacterial infection. Guinea worm disease is also known to incapacitate about 30 – 40% of any given population of rural people, predominantly farmers for an average of 3 months at the peak of agricultural activity for example in April in Nigeria.

Intervention efforts have also been successful in several African countries. A number of countries have eradicated guinea worm disease. As for April 1991 National Plans of action had been adopted in Benin, Burkina Faso, Cameroon, Ghana, India, Kenya, Mali, Mauritania, Pakistan, Niger, Nigeria, Senegal, Togo and Uganda, countries with endemic guinea worm disease are conducting National survey to define the extent of the guinea worm disease problem and develop National plan of action for elimination. Most national programmes are directed by the Ministry of Health with the support of National and International agencies non Governmental and Governmental organisations have been collaborating in the guinea worm disease eradication effort including UNDP, AID, WASH, VBC, CDC, GLOBAL 2000, the African Cyanamid Company and Dupont corporation.

1.2 **GUINEA WORM DISEASE**

Guinea worm disease enter the human body when people drink water containing copepods barely visible shrim-like crustaceans infected with guinea worm larvae. When the copepod which is also known as “Water flea” are killed by the gastric juices in the stomach. The guinea worm larvae are liberated or hatch. It move to the small intestine, penetrate the intestinal wall and migrate to the abdominal

muscle, where they begin the maturing in the connective tissue. Male and female worm mate about 3 months after ingestion. After 8 months, the adult female worm which grows to 1 – 3 feet's long usually moves to the lower limbs. Approximately one year (range from 9 – 14 months) after the person is infected, the guinea worm is ready to emerge and emit larvae. The worm migrates to the tissue just under the skin and secretes a toxic substance that produce painful blister. Contact with water causes the worm uterus to rapture and stimulate the worm to expel larvae into water. Each female worm release about one million microscopic first stage into water. The larvae can remain active for up to five days in stagnant water, whereby they die, unless they are ingested by cop epodes, inside the copepods the larvae develop into their infective third stage in 10 – 14 days.

1.2.3 SOURCE OF WATER SUPPLY

The inhabitant of Paiko town uses hand dug wells in their houses, these wells get dry and they have to resort to collecting their drinking water from streams and ponds. No provision of pipe borne water, the few boreholes constructed by DFFRI and Local Government could not serve the population or the purpose for which they were constructed, because it cannot serve the whole town's population, the fact they are few and not functioning properly, for it get dry during the dry season.

1.2.4 RESEARCH PROBLEM

You may find the impact of guinea worm disease is under-estimated or ignore at the regional or national level, because the extent of the disease is not known or because the leaders believe little can be done about, it establishing the extent of guinea worm disease problem and its impact in the community. While guinea worm disease is rarely fatal the pain can be great that victims discontinue many activities that are part of daily living. As many as 50% of guinea worm disease victims are severely disabled and unable to leave their compound for an average of one month (and up to three months). Incapacitation by guinea worm disease can lead to diminished personal hygiene as well as loss of income and poor nutrition. In addition, psychological stress of worm emerging from the leg, chest or even genital can be considerable. Since the crippling effect of guinea worm disease usually occur during the height of agricultural labour season, the disease has an enormous negative impact on agricultural activity. On studies carried out, an estimate of about 5.3% of the total agricultural gross domestic product in Nigeria was lost because of the effect of the disease on local farmers Paul, Isely and Gins berg (1986).

Women suffering from guinea worm disease are often unable to care for themselves, their children or their household or do work that will add to the family income. Although guinea worm disease primarily affect adult, some children are also affected and suffer from temporary disability they may become permanently disable or die of tetanus. Children may also suffer disruption in education while attending to the need of an affected adult. Studies in Nigeria estimate school absenteeism due to guinea worm disease as high as 33%.

1.3 **RESEARCH OBJECTIVE**

- I. To find out if there are any consequent economic loss, cause by the disease in the area.
- II. To find out the sources of water supply in Paiko town and whether or not infested.
- III. To study the epidemiology of the infection and the probable methods of controlling and eradicating the disease in Paiko town and the country in general.
- IV. To make recommendation to appropriate authorities on how to minimise or prevent guinea worm disease

CHAPTER TWO

2.1 LITERATURE REVIEW

A lot of work has been done on guinea worm disease in Nigeria. In (1983) Edungbola and Watts carried out an investigation on the epidemiological assessment of the distribution and endemicity of guinea worm infection in Asa, Kwara State and showed the disease to be widely spread and highly prevalent, 6,250 individuals in villages were examined and 53% had the infection and more adult than children showed evidence of active dracunculus.

Udonsi (1986) carried out a field study in Ohaozara, Imo state of Nigeria to determine the effectiveness of rural water supply project in the control of endemic dracontiasis in the area. In the pilot studies, prior to the water installation project 5,058 inhabitants 47.9% had either dracunculus blisters or ulcers. An overall reduction of (71.8%) was achieved in 18 months, following water supply provision. He attributed it to the fact that provision of pipe borne water reduces the dependence on streams and ponds water and this reduce transmission of the disease.

Still, in the same year (1986), Iligbodu, wise et al carried out a study of guinea worm infection in Ibarapa district in Oyo State and they arrived at different times, 12.3%, and 35%. They attributed it to the following reasons.

1. Water supply to the district was generally low throughout the year

2. There were extruded period in which no water was pumped to the place
3. The volume of water pumped varied periodically, lower volume (considerably less than 40 litres per day recommended by World Health Organisation (WHO) for a tropical climate) usually during the dry season.

Onabamiro between (1951) and (1958) carried out a research in Southern Nigeria, which stand among the leading contribution world wide to the knowledge of early stages of development of dracunculus medicnensis in mammalian host.

Abolarin (1979) reported the work he carried out in a village called Wawa near Kanji Lake, in former Kwara State, now Niger State. Out of 1,768 persons he examined 98 patients had dracunculus disease and he trace the source to a small lake created by a cattle dam in close proximity to the village. Between (1981) and (1982), Steele chambers et al tried to show the impact the disease had on children in Nigeria 768 boys and 727 girls aged 6 – 14 years were examined at 4 primary schools in the village in Western Nigeria, 22% of the girls and 20% of the boys were infected with guinea worm and on average, the infected children were absent for about 25% of school days, with 2.5% absentee rate for uninfected children nearly 6% of children left school permanently because of guinea worm infection.

Edungbola (1985) estimated that infection Nigeria and other West African Countries where the disease is endemic, active guinea worm transmission occur virtually in every state, although the level of endemicity varies. He projected that at present about 2.5 million Nigerians have guinea worm every year. About a million of these

experience shows temporary incapacitation for 1 – 3 months, while about 12,000 individuals suffers irreversible disablement.

2.2 REVIEW OF STUDIES CARRIED OUT IN DEVELOPING COUNTRIES

Today the disease is largely confined to East and West Africa. Although the disease was highly endemic in India, it is anticipated that it had been eradicated in that Country by (1986). This is as a result of the intensive nationwide eradication campaign programme launched in India about 15 years ago.

In East Africa, dracunculiasis is confined to Southern Sudan, Ethiopia and Northern Province of Uganda. In West Africa the disease is endemic in Chad, Cameroon, Nigeria, Benin, Togo, Burkina Faso, Ghana, Liberia, Senegal and Mauritania.

For along time now workers have been trying to draw people's attention to the problem of guinea worm infestation in the rural communities of Africa. A group of workers in Ghana were said to have reported that guinea worm disease is the major cause of agricultural work loss in the Danfo project area. Few other diseases coincide with agricultural activities and even year round malaria cause little prolonged disability in relatively immune adult Muller (1979).

2.3 REVIEW OF STUDIES ELSE WHERE IN THE WORLD

Interesting historical account of dracunculus has been given by several authors. These accounts indicate that dracunculiasis is an ancient parasitic disease which was known to the Greeks and Romans. It has been incriminated as a "Fiery serpent" that hit and killed many Israelites as contained in the Holy Bible. Among the early pioneers,

Rhazes who lived between (865-925), an Arabic physician first attributed the cause of the typical guinea worm swelling to a parasite. Avicenna, who lived between (980-1037) gave detailed clinical presentation of "Medina sickness" so called because it was prevalent in Medina from where it was believed to have disseminated to other parts of the world by pilgrimage routes. Batian (1863) described the morphology of the parasite, while Fed-Shenko (1870) associated cyclops with life cycle of the parasite. This was the first time an invertebrate host was implicated in the transmission of a medically important disease. In India about 30million people were thought to be suffering from guinea worm infection annually. To the disease is largely confined to East and West Africa, although the disease was highly endemic in India.

CHAPTER THREE

METHODOLOGY

For this particular study, two methods of data collection were employed in the collection of data. These were questionnaires and observational methods. Below is the breakdown of what constitute the methodology in the forms of population, sampling technique and data collection methods mention above.

3.1 STUDY POPULATION

The targeted population for this study is the Paiko Community. In Paiko Local Government area of Niger State. Paiko town comprises the following streets, which are Paiko makera, Paiko fulani, Paiko Tagopi, majority of the people living in these streets are farmers, the greater part of Paiko towns' population is made of Gwari, with some of the part consisting of some other ethnic group like the Hausa, Nupe, Yoruba, Ibo and the remaining part of the population are of educated elites which form the work force in Paiko town.

3.2 SAMPLE

Though Paiko town is not very big when considering the overall settlement, yet its size is considerable, given the unofficial population of 36,000 in 1991 census. The town is therefore considered too large for a complete study. So there had to be a sample drawn from the target population on which to base the findings of this research project. Three hundred and twenty six (326) people were drawn as a sample for this study. This number includes children and adult of both sexes were randomly selected.

3.3 METHOD OF DATA COLLECTION

QUESTIONNAIRES

Data were collected by the use of questionnaires, the information collected were in the areas of sources of water supply associated disability.

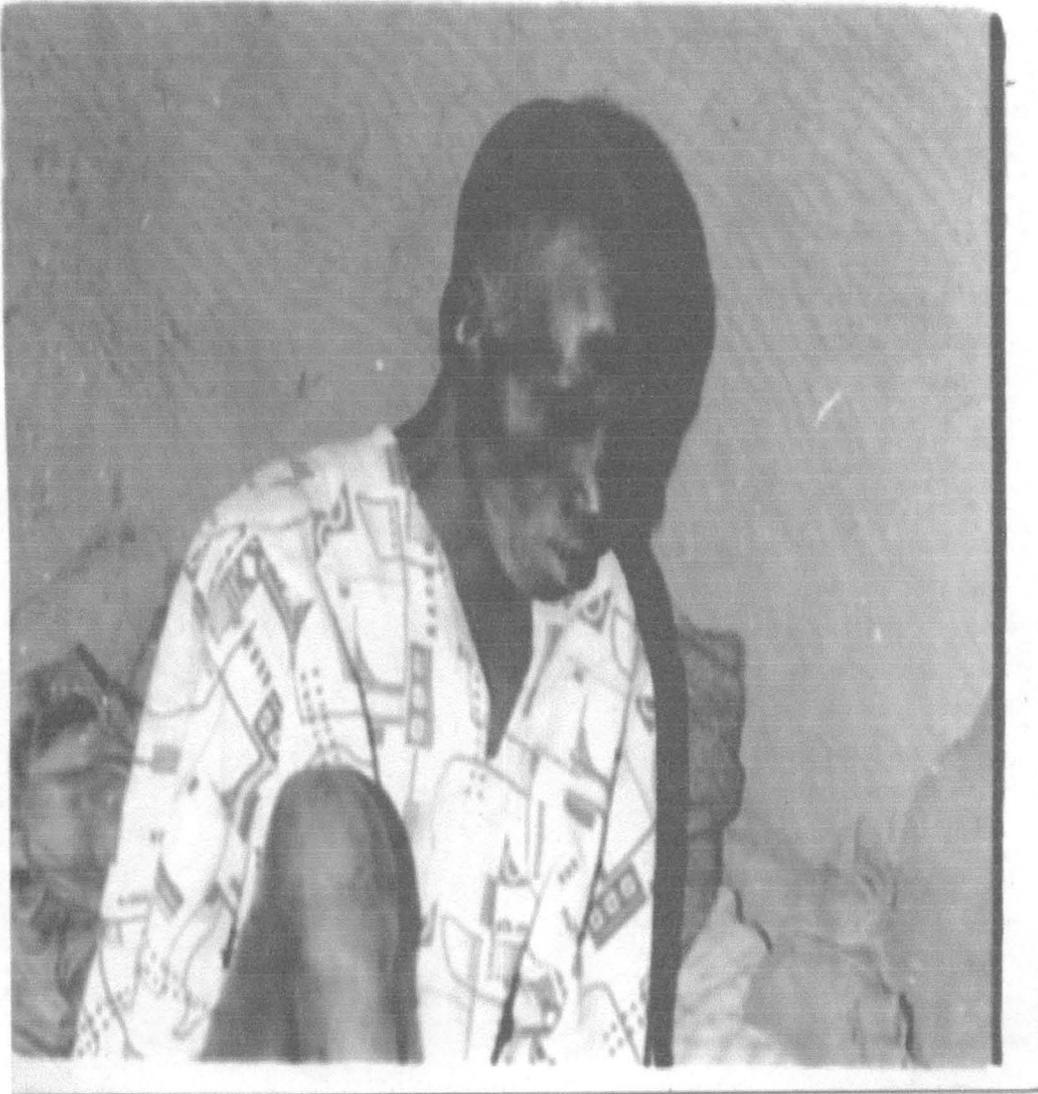
OBSERVATION

In other to increase the quality and quantity of information the researcher had to observe those who were previously attacked and those presently suffering from the disease. Observation as a scientific method of data collection entails the assessment of the research cases in their natural setting.

This part of research project analysis the data collected for the study. The methodology used on the collection of data were interviews, questionnaires, revision of past records and finally observational method. The interview conducted was randomly, it was conducted under a pattern group. The aims were focused on important information that form the main aims and objective of the research project.

Three hundred and twenty six (326) questionnaires were issued out and only three hundred and six (306) were return. Past records of the area (NIGEP) office Nigerian Guinea Worm Eradication Programmes Office and the state Ministry of Health Office, Global 2000 were contacted. Finally, observational methods was used to look at the action and behaviour of patients. Paiko one of the numerous communities in Niger State afflicted by guinea worm disease was the location of study during the visit for this study, a random selection of houses was done. A total sample of three hundred and six were used.

Plate 1



Incapacitated Old man with
guinea worm infection

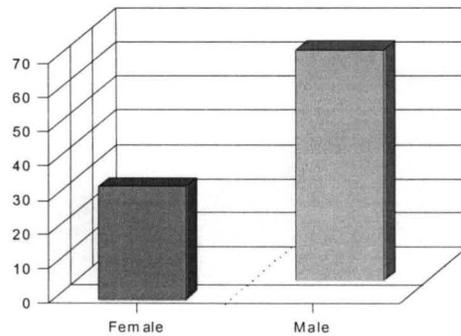
11A

CHAPTER FOUR

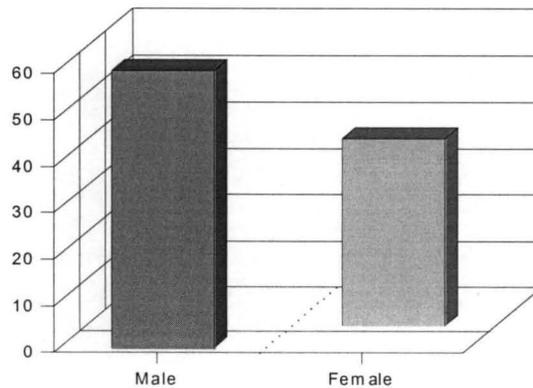
DISCUSSION OF RESULT

4.1 Table 1 – FREQUENCY DISTRIBUTION AND PERCENTAGE OF DRACONTIASIS IN PAIKO TOWN BY SEX

Not affected



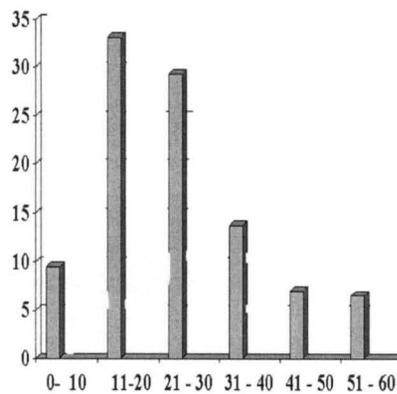
Affected



This graph shows out of three hundred and six (306) patients a total of two hundred and sixty three (263) suffered from the disease between 1998 and 2000. The graph shows that more male were

affected than female. Out of the two hundred and sixty three the probable explanation for the male preponderance in this study is because women boil the water they fetch from cyclops laden stagnant water to prepare food for their infants. They are likely to drink the remaining boiled water, where as the male would be on farms, in the day and are to obtain water to drink whenever they are thirsty from a source that is near the farm and so drink from the cyclop laden stagnant water.

**4.2 Table 2 DISTRIBUTION AND PERCENTAGE OF
DRACONTIASIS IN PAIKO TOWN BY AGE**



Affected

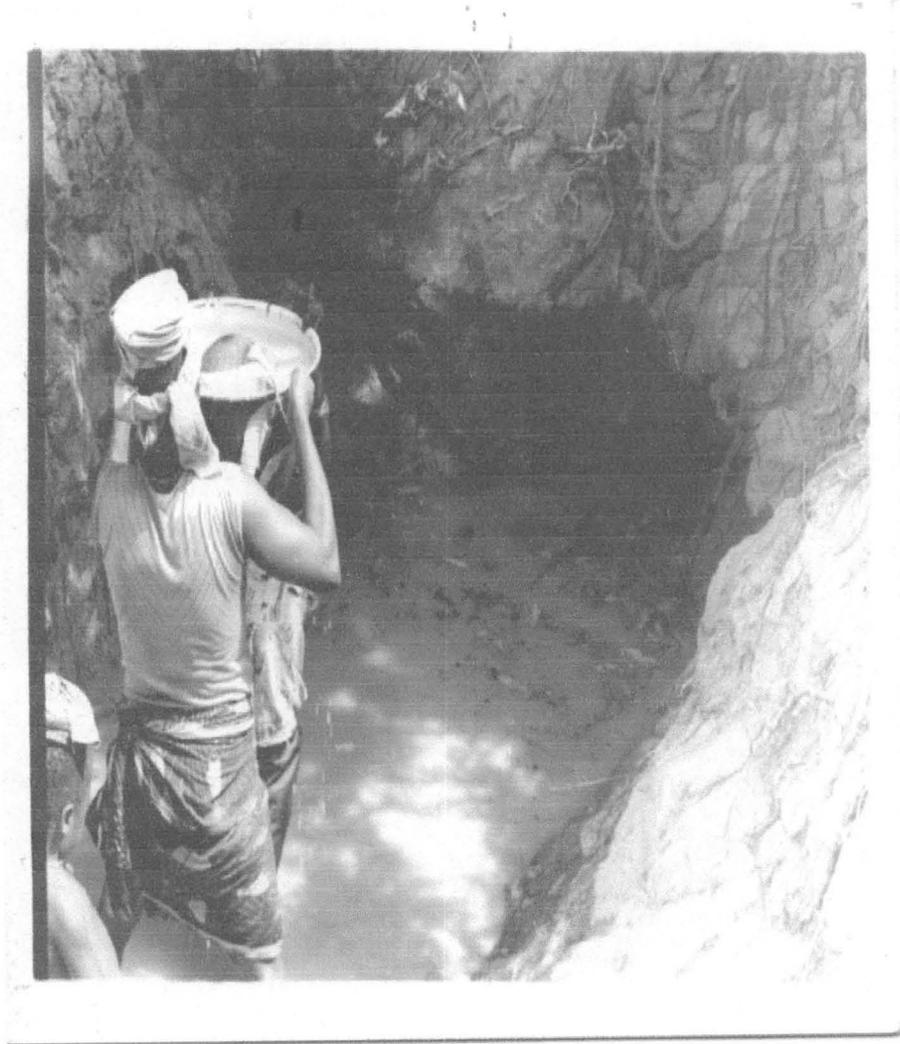
This table shows that those in the age group of 11-20 years were most affected. The group has a prevalence of 33.1% closely followed by the age group 21-30 years which has a prevalence of 29.3%. The test affected are those in the age group of 51-60 and age group 1-10 which as a prevalence of 6.5% and 9.5% respectively.

4.3 **Table 3 DISTRIBUTION AND PERCENTAGE OF DRACONTIASIS IN PAIKO TOWN BY SOURCE OF DRINKING WATER**

Sources of Drinking Water	Affected	%	Not Affected	%	
Stream	198	75.3	31	72.1	229
Stagnant water	65	24.7	12	27.9	77
Total	263	100	43	100	306

The table shows that those who got infection more, are those who obtain their drinking water from the streams 75.8%. The study shows that the majority of those who contracted the disease have streams as their source of drinking water. This is a deviation from the finding of other people who have shown that more number of people get the disease from ponds Ilegbodu, wise, Christensen et al (1986) reported that pond users wade some distance into the pond before sinking their containers to collect water. Those individual with guinea worm lesions on their legs are not prohibited from wading into the ponds, that provide drinking water for the town, this create the opportunity for continual inoculation of pond containing Cyclops with larvae of dracunculus medinensis. The possible explanation for the deviation found in my study is that during the dry season the stagnant water dry up while the streams still have water. The people therefore left with no other option than to collect water from the stream. Majority of them get used to

Plate 2



Stagnant Pond

14A

Plate 3



A Stagnant pond eventually dries up
during the dry season

Plate 4



Stream

14C

obtaining water from the stream and never go back to their stagnant water source.

4.4. Table 4 DISTRIBUTION AND PERCENTAGE OF DRACONTIASIS IN PAIKO TOWN BY PRESENTING SYMPTOMS

Presenting Symptoms	Number	%
Itching only	161	61.2
Itching and body pain	93	35.4
Itching and Headache	9	3.4
Total	263	100

The table above shows that all the patients who suffered from the disease during the period of study have itching as presenting symptoms. Those who had itching as presenting symptom alone have a higher percentage (61.2%) in this study, out of the two hundred and sixty three (263) patients, 161 representing 61.25 have body itching as only presenting symptoms, while 93 REPRESENTING 35.4% had both itching and body pains as presenting symptoms and only 3.4% had both body itching and headache as presenting symptoms. Kale, (1985) IN HIS STUDY IN Ibadana district reported that 80% of all person in whom the adult female guinea worm eventually emerge experience a set of prodromal symptoms a few day or hours and consist of urticarial rash, mild to moderate, itching fever, dizziness etc. He found that 20% of the patients did not admit to the presence of any prodromal

symptoms and he attributed it to a possibility that symptoms were mild and transient in the patient as to go unnoticed.

The finding in this study is in line with the finding in other studies. None of the people reported nausea, vomiting or fever as presenting symptoms because there to malaria.

4.5 Table 5 DISTRIBUTIONS AND PERCENTAGE OF DRACONTIASIS IN PAIKO TOWN, BY POINT OF WORM EMERGENCE.

Point of Emergence	Number	%
Feet only	116	44.1
Joint only	5	1.9
Feet and Joint	86	32.7
Feet, Joint and other part of the body	56	21.3
Total	263	100

The table 4.5 above shows that the worm appears much more in the feet, while in some cases the worm appears on the feet and some other site.

In this study a higher number of patients representing (116) 44.1% reported the emergence of the worm from the feet. (5) of them representing 1.9% reported emergence from the joints, knee and ankle. In those patients where more than one worm emerged (86) of them representing 32.7% reported emergence from the feet and joints while (56) of them representing 21.3% reported emergence from multiple sites including feet, joint and other sites including

unusual one's like the eyes of (two children) and the scrotum of (one adult). Emergence of the worm at site other than the feet has been reported by many workers.

The emergence of worm from the feet of patient is in line with finding of other workers, Onabamiro (1952), Muller (1958). It was reported that no sooner have the limbs been immersed in water than the female worm protrude with their anterior end to shed the larvae into the water.

It is believed that the worms sensitivity to the immersion of limbs in water portrays a natural way for ensuring that new worms to complete their life cycle.

Although the people affected observed the worm emergence at the beginning of rainy season. This is in conformity with the report of other workers. This disability caused by guinea worm disease is mainly physical which lead to social implication, the patients are unable to mover or carry out their normal day to day activities.

Different workers reported a mean periods of disability of 3 months where as the median as 40 days. So also Edungbola (1985) reported the temporary incapacity as 1 – 3 months. Muller, working in Ghana reported a mean period of 15 weeks. Death due to this disease has not been reported but Edungbola has estimated that about 12,000 people suffer irreversible disablement. Since temporary disabilities are more common, this led Kale (1977) to propose a classification for disability as a follows,

GRADE I (Mild disability) Patient is mobile and he suffer little or no discomfort.

GRADE II – (Moderate disability) Patient is mobile but suffers considerable discomfort.

GRADE III – (Severe disability) Patient is immobile or is unable to use the affected limb and suffer a considerable discomfort.

In this study the main disability is Physical, except in one patient who had the worm emerging from the scrotum and the thought it will interfere with his ability to produce children and this lead him to attempt suicide.

None of my patient went to hospital for this illness. This is because they believed that there is no drug in the orthodox medicine for the treatment of guinea worm. The belief is not different from that of other people in other parts of the Country, reported by other workers. Abolarin (1976) reported from his study.

In Wawa village that few patient went to hospital or dispensary and he gave the reason for that as the people believe that traditional treatment is more effective than modern medicine. To support this statement he quoted Belcher et al (1975) as having accepted that neither thiobedazole nor Metronidazole was effective for guinea worm. So far, these have been the drugs in use. Paiko people carryout traditional medication by doing "SAKIYA (A thin iron-rod placed in fire, until its red hot it is brought out and place on the skin suspected to be harboring the Worm). The worm is extruded and thrown into the fire.

It is interesting to note that my patients knows that guinea worm disease is got from the bad drinking water. They are aware that the

Plate 5



Multiple site of guinea worm emergence
point with fresh guinea worm emerging
from the limb

source is either the stagnant water or the stream they obtain their drinking water from. The possible explanation for why they continue to drink from the stream is that the wells they dug eventually dry up and people are left with no other alternative than to revert to drinking water from the streams.

In this study the incidence of the disease among infants and children is low. Out of two hundred and sixty three (263) infected, 25 were in the age group 1 –10 years representing 9.5%, If this number is compared with those not affected in the age group (30 representing 69.7% of those not affected) One may conclude that their age group is among those who are test affected. Many workers have reported similar findings.

Edungbola and Watts (1983) while working in Asa district in Kwara State reported that more adults than children show clinical evidence of active dracontiasis but there was no marked difference between sexes. In another study carried district in former Kwara, now Niger State, he observed that in dracunculus endemic adults area, children are generally less infected than adults, this he attributed to long pre patient period of guinea worm. Infection the destruction of infective guinea worm larvae in the unconscious process of boiling children water with medicinal products prior to ingestion and prolonged breast-feeding.

However, among the infected children, I met during my research, two of them had multiplied site of worm emergence among which were the upper eyelid in both of them. The probable explanation for this is that these children have much less subcutaneous tissue

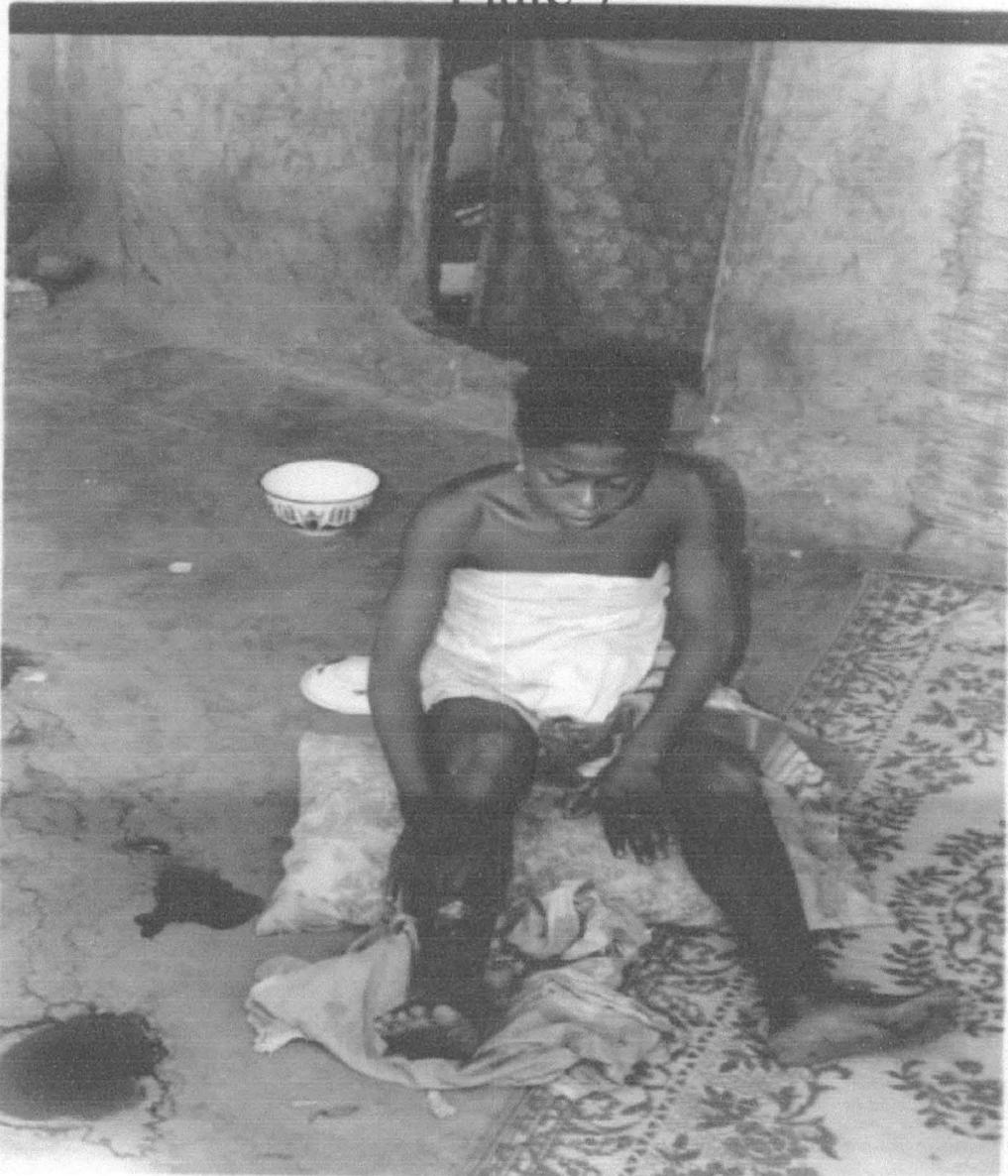
Plate 6



Young man with a severe disability

The patient is unable to use the affected limb and suffers considerable discomfort

Plate 7



A woman with moderated disability

The patient is mobile but suffers
considerable discomfort

19B

than expected, which make it easier for worm to move through long distance and come to reside in the face.

It was not possible for me and have an idea on the economic loss and social implication of guninea worm infestation, because those examined are either farmers, the men while the women are wives of the farmers who along with their children sometimes help the men on the farm. They are subsistence farmers growing food only for consumption of their families. Only a few of the crops are taken to the market for sale in order for them to be able to buy some of these things they need at home.

CHAPTER FIVE

This part of the research project form the conclusion which embraces summary and recommendation

SUMMARY

Since the crippling effect of guinea worm disease usually occur during the height of agricultural season, the disease has an enormous impact on agricultural productivity, some families are affected more heavily than others with virtually all the family members incapacitated at the same time. Families with high rate of infection may suffer during the remaining months of the year from lost agricultural earning and inadequate food supplies for home consumption. Responsibilities for working in the field, may have to be given to other members of the family often to the detriment of adequate child care and education of school age children. Women suffering from guinea worm disease are often unable to care for themselves, their children or their house will to work for the family in order to add to its income. Women play a major role in generating income for the family, especially for the children, when mothers cannot do their regular and usual work (farming, clothing craft) they suffer income losses, equally a month earning or more. This often leads to money for children food, clothing and school fees. Guinea worm disease or incapacitation has also been found to lead to defaulting on children immunization because mothers are unable to bring their children to the clinic, Although guinea worm disease primary affect adults, some

children are also infected and suffer temporary disability. They may become permanently disabled or die of tetanus. Children may also suffer from indirect adverse effects such as poor nutrition or distribution of education, while attending to the needs of affected adults. Studies in Nigeria estimated school absenteeism due to guinea worm disease as high as 33%.

SUGGESTION AND RECOMMENDATION

The quickest least expensive and the most effective way to provide safe drinking water to community is probably through protecting the existing water supplies, and the public should be educated not to enter water if they have guinea worm disease.

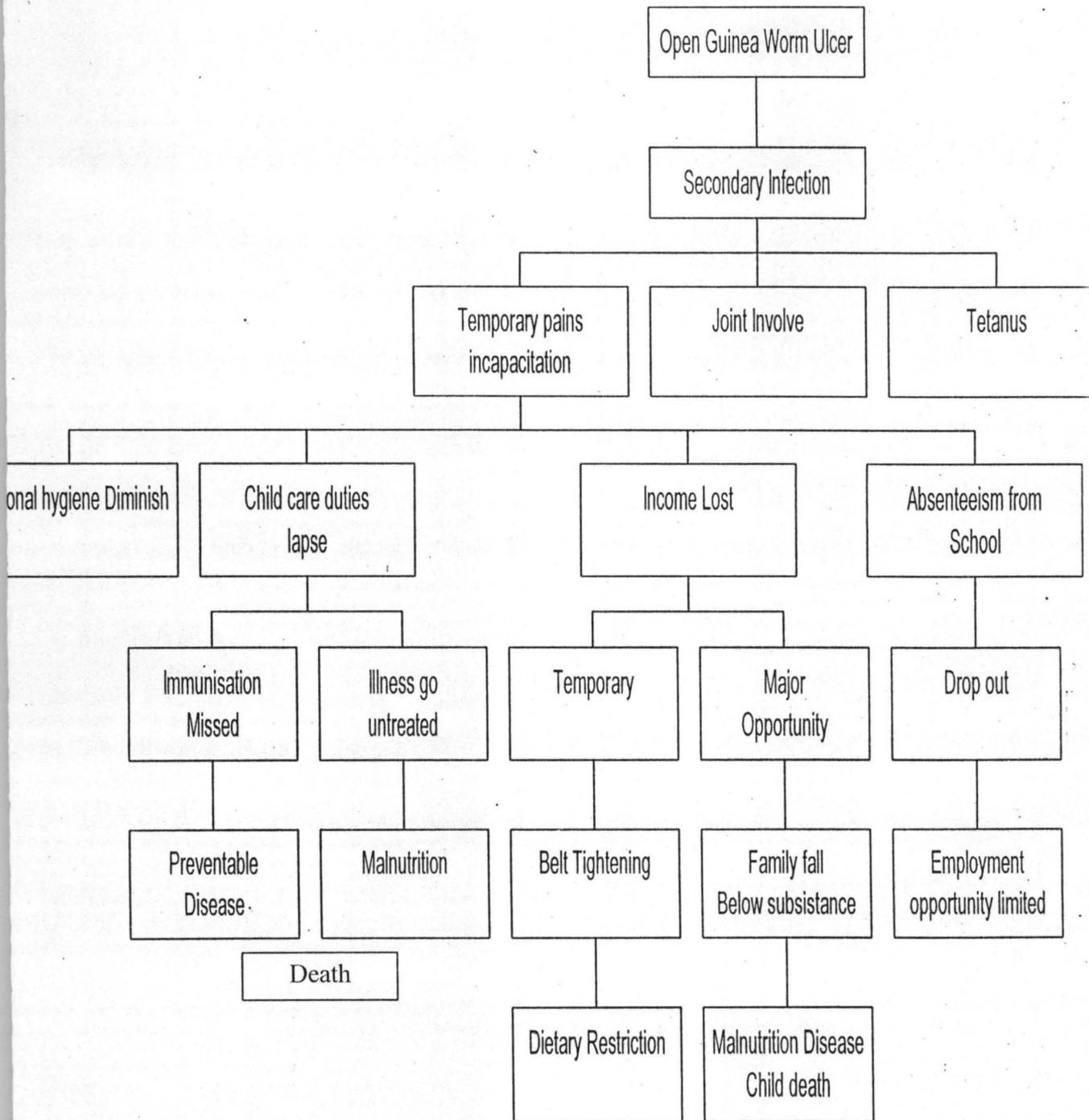
Ways by which food sufficiency in Paiko town and other part of the country could be achieved is by combating guinea worm disease. This is because majority of the farmers in the town are subsistence and they are heavily afflicted by guinea worm during rainy season. Control-erudition can be approached from the following facts.

1. Provision of pipe borne water is the alternative answer to the problem. Wells only may not achieve the desired objective just as Gills and Ball in (1964) reported that Akufo people in western Nigeria prepared pond water to well water. Hopking (1982) reported that the supply of pipe born water to a town of 30,000 people in Nigeria in (1960s) reduced the incidence guinea worm disease from over 60% to zero within 2years. Another findings reported by Udonsi

(1987) working in Ohaozara village in Imo state confirm this, he stated that an Over all reduction of 71.8% in the disease was achieved in 18 Months following water supply prevision.

2. Wells or Boreholes could be constructed by the Government for the people.
3. Health education, Health works should be sent to give health talks with aid of posters on the importance of personal hygiene.
4. They should be informed that the disease could be prevented by filtering water for drinking by the use of cloth or boiling or the use of chemical such as Temephos. It should be noted, however that providing safe water alone is inadequate. The population concerned must be motivated to help maintain the wells or pumps and how to use the new source of drinking water. In several instances some community have persisted in drinking water from contaminated sources, despite a new source having been provided, because the contaminated water is felt by them to be physically easier to collect, cheaper, or tastier, so some health education should be indicated in any case.

SUMMARY CHART



CONCLUSION

This study has shown that guinea worm disease in Paiko town. It is surprising that people know the disease is caused by bad drinking water, but they continue to obtain their drinking water from the same sources.

Many people might have continuous or repeated attack of the infection but because they do not attend hospital, none of such attack has been reported, secondary infection like Tetanus is the one recognised attack which was reported by some workers like Laucker, Rankin and Adi, (1961) in Ibadan, when they said that guinea worm was the third most important portal of entry of Tetanus spores. Abolarin (1979) further said that lack of education about personal hygiene worsened the situation because secondary infections aggravate the nursery. Paiko, being one of the dracontiasis endemic area in the country, need aid to control eradicate the disease.

5. How do you feel at the beginning of the illness? Fever---
Headache---- Nausea ----- Itching----- others ----
6. Which part of your body does the disease frequently appears? -----

7. What season of the year did you notice the illness?
Dry season--- Raining Season---
8. What do you think is the cause of guinea worm?
9. Which method have you employed for the treatment?
Hospital--- Traditional/concoctions--- How?
10. Any associated disability?
Physical--- mental/psychological ---
11. How many acres of land did you farm during 1998/2000 farming
season-----
12. Income for 1998/2000-----
13. What assistance do you need from the Government to help eradicate
the disease.....
14. How does the society view the infection?.....
15. Have you ever read about guinea worm infection in general? If yes
which writer and when did the writer write (date)-----
16. What professional advice do you have to give on how to control the
menace of this guinea worm infection-----

17. What should the society (Nigerian) do in other to dominate this
infections.-----

18. Which professional advice can you give me in order for me to base
finding for this research project-----

19. Do you think Social Institution are free from guinea worm disease?---

B. Why the answer-----

20. Please give list of books articles or paper and magazine that I can
find very relevant to my project. In terms of articles, papers and

magazine state dates and years in order for me to find it easy to trace.....

Thanks for your co-operations.

ZUBAIRU A. LOGUMA

BIBLIOGRAPHY**RREFERENCES**

1. Ramsy G.N. (1935) *Trans. R. Soc. Trop. Med* 28:399 –404
2. Lyons (1973) the control of guinea worm wit Abate: a trial in a village of north west Ghana, *Bull, W.H.O* 49:216
3. GEVITLIN M. et al (1978) “ A case of Eosinophic Pleunsy due to draenculus Medinesis infection” *Transaction of Royal Society of Tropical Medicine and hygiene* Vol. 12 No5 P. 540 and 541.
4. MULLER R. (1979) “Guinea worm disease. Epidemiology control and treatment” *Bulletin of world Heath Organisation* Vol. 57 No 5 p.689.
5. ABOCARIN M. O. (1981) “Guinea Worm infection in a Nigeria village” *Tropical Geographical medicine* Vol. 33 No 1 P. 33-88
6. HOPKINS, RD 1982) “Guinea Worm disease A chance of eradication” *World Health Forum* Vol. 3 No.4 P. 434 and 435
7. Adekolu John (1983) *Int. J. parasite*, 13:427 432.
8. EDUNGBOLA CD and S WATTS (1986) impact of protected water supplies on the prevalence of Guinea Worm disease in Asa, Kwara State, Nigeria. University of Ilorin Nigeria.
9. UDONSI J.K. (1987) “Control of Epidemic drancontiasis by provision of water supply in rural communication of Imo State, Nigeria” *Public Health Journal* No 101 P.63-70

10. ILEGBODU V.A et al (1987) "Source of drinking water supply and transmission of Guinea worm disease in Nigeria "Analysis of Tropical Medicine and parasitology Vol. 81 No 6 P.713-718,
11. SMITH G.S.D. BLUM S.R.A. HUTILY N. OKEKE, B.R-KIRKWOOD and R.G. Feachem (1989) Disability from dracunculiasis, Effect on mobility. Annal Tropical Medicine parasitology 83 (2) 151-158
12. ILLEGBODU (1991) "Clinical Manifestations, disability and the use of folk medicine in Dracunculus infection in Nigeria ,J. Tropical Medicine and hygiene 94-35-41.
13. Guidelines for Health Education and Community Mobilization in Dracunculiasis Eradication Programme (1991) WHO collaborating centre for Research, Training and Eradication of Dracunculiasis of CDC.
14. The clinico epidemiology profile of guinea worm control in the Ibadan district of Nigeria A. M.J. Tropical medicine Hig 26: 208. 214.
15. Angela, Eva and William (1991) Manual for peace corps volunteers. Vector biology and control project VBC Report No 81134.
16. David and Sarah (1991) orientation to guinea worm disease WASH field report No 320