

**WATER SUPPLY AND GUINEA WORM ERADICATION  
IN SOUTH EAST NIGER STATE.**

**BY**

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CERTIFICATION

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## DEDICATION

This project is dedicated to my family, friend and well wishers.

## ACKNOWLEDGEMENT

Glory be to Almighty Allah for guiding me and giving me the strength to pursue this programme.

I am very grateful to my Supervisor Prof. J.M. Baba for his immense assistance towards the realization of this project.

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## ABSTRACT

Good drinking water is a basic requirement to sustain life. Its availability guarantee good health and reduction in water related diseases.

The endermicity of guinea worm in South-East Niger State is attributed to inadequate provision of safe drinking water to the rural communities.

Low level public awareness on the causes, prevention/control of guinea worm infection is a major factor to the spread.

Guinea worm infestation affects the socio-economic activities of household community thus increasing the poverty level of that community.

The project is design to collect data on NIGEP/Niger State and focus attention on the responses of the infected villages or persons.

The population of this research work consists of the total number of people with guinea worm in the South East Niger State Random probability and stratified sampling techniques was implored for the research.

The elimination of guinea worm will be an interactive process of Education, provision of safe drinking water and poverty alleviation.

Total elimination, not only reduction in guinea worm infestation is the major focus of these researches. A lot more could be done by NIGEP/Niger State in collaboration with International Agencies to stop transmission/spread of guinea worm diseases through the provision of portable safe drinking water.

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## CHAPTER ONE

### 1.1 INTRODUCTION

Potable water supply is a basic need required to sustain life. It's availability guarantees good health and reduction of water borne or water related diseases like guinea worm infestation, diarrhea, dysentery, typhoid and cholera among others. This is in addition to the good sanitary habits that would lead to a clean and healthy environment. In this context, the involvement of many sectional actors like Health, Education, Information and community mobilization groups as well as donors, is not surprising. What is surprising, is the unpreparedness of each of the participants in the water and sanitation sector to appreciate the need to harmonize their efforts so that the benefits from their individual efforts can overlap onto one another, resulting in a multiplier effect and widespread dissemination of their collective efforts for maximum impact. There is therefore the pressing challenge to ensure inter-sectoral linkage between the Ministry of health in their programs for the control of diarrhea diseases and eradication of guinea worm diseases as well as the nutrition programme.

The provision of water supply in the schools and improvement of their facilities can best be worked out with the Ministry of Education while the advocacy activities of the programme is best harmonized by the Ministry of Information for effective mobilization and establishment of household water security.

### 1.2 **STATEMENT OF THE PROBLEM**

Lack of safe drinking water is the major problem for the endemic outbreak of guinea worm, cholera and diarrhea diseases in South East Niger State.

Guinea worm a disease of the rural poor, the unreachable and silent communities who Lack safe drinking water. During endemicity, the

communities suffer a considerable loss in terms of socio-economic activities. It has been estimated that the annual loss in Nigeria, in production is more than two hundred Million Naira. Guinea worm elimination is estimated to cost about sixty Million U.S. Dollars. Therefore, elimination of guinea worm makes economic as well as moral sense.

NIGEP/Niger State Government through RUWATSAN Agency and other governmental donors try to provide alternative source of safe drinking water for the rural dwellers for the prevention and eradication of guinea worm and other water borne diseases.

### **1.3 AIM AND OBJECTIVES OF THE STUDY**

- The aim is to analyse the spatial incidences of guinea worm in the S-E Niger State and to assess the achievement of NIGEP/ Niger State and RUWATSAN Project in the task of eradicating guinea worm between 1996-2000.

The objectives of the research are:-

- To show the relationship between level of infestation and potable safe water supply.
- The socio-economic effects of guinea worm on the economy of house hold community.
- Recommendation on control and eradication of guinea worm.

### **1.4 LIMITATION OF STUDY**

- Some affected guinea worm endemic villages are inaccessible
- Irregular or documentation of report and review of minutes of meeting are not available.
- Lack of comprehensive channel of communication between the official of NIGEP and infected communities.

## **1.5 STUDY AREA**

The area lies south East of Niger state, consisting of Agaie, Gurara, Lapai and Paikoro Local government areas. Bounded in the south is Federal Capital Territory (append 1.1) Most of the roads leading to the local government headquarters are tarred, while most of the guinea worm infected village roads are either graded or inaccessible, making it difficult for the health officials to get in touch with the villages or persons.

The area experiences distinct dry and wet seasons with annual rainfall ranging from 1,100mm to 1,600mm in the south. The wet season occur annually between MAY and OCTOBER .While the dry season is between NOVEMBER and APRIL. Maximum temperature do not exceed 39°c , usually during DECEMBER and JANUARY

The area is made up of many ethnic communities each with its cultural identity. Most Prominent among the ethnic communities are the Nupes, Gwaris, Hausas, and Fulanis.

In these area the man is the head of the family, and generally extended family is Practiced. Women are mostly uneducated and are involved mainly in farming and marketing agricultural products.

## **1.6 DESIGN OF STUDY**

The project is designed to collect various data NIGEP/Niger State and RUWATSAN project and to show their progress and problems interms of implementation. Also the design focuses attention on the responses of the infected villages/persons. To map out/ intensive strategies and actions which will lead to the interruption of transmission of guinea worm other water borne diseases.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

A lot of work has been done on guinea worm diseases in Nigeria for instance, the Nigeria Guinea worm Eradication Programme (NIGEP), established in 1988, has done a lot in the control and eradication of guinea worm in Nigeria, particularly in Niger State.

Onabamiro, (1951/1958) carried out a research in South Western Nigeria which stands among the leading contributions worldwide to the knowledge of early stages of the development of Drancunculiasis Medinensis in mammalian host.

Muller, (1971) discovered One Hundred and Sixty Two (162) guinea worms, in 10 days, 153 of the discovered guinea worms were found in the subcutaneous tissues surrounding the axillary and lingual lymph nodes.

Also Onabamiro, (1954) identified up to 30 cyclop species and subspecies in ponds in South Western Part of Nigeria, nine of which were new to science, but 21 were the species responsible for infection in Nigeria.

Abolarin, (1979) reported that a village called Wawa, near Kanij lake, Borgu of Niger State, out of 1678 persons he examined 98 people had Dracunculis medinensis and he traced the source to a small lake created by a cattle dam in close proximity to the village as reservoir of infections.

In 1986 Guinea worm studies was conducted in Ibarpa district of Oyo State by Ilegbodu, et al (1987). They attributed the prevalence of guinea Worm in the district to the following reasons.

the country's water resources, both surface and underground water resources, a policy that recognizes the interdependence of the two sources of water must be formulated. Such a policy should take cognisance of the contrasting and often, problematic geological conditions in which ground water is known to occur.

The Environment population and Development (EPD) Programme emphasises education for a sustainable development focuses on wise management of the environment and its resources.

## 2.2 Genesis of Guinea – Worm (Dracunculiasis Diseases.)

The disease is a disabling infection transmitted through drinking water containing cyclopoid copepods (water fleas), harboring infective larvae of parasite Dracunculiasis Medinesis. Once a person has drunk guinea worm infested water, it takes about one year for the guinea worm to mature and move to a position where it emerges from the person's body when the worm is ready to come out, a blister appear (Plate 2). Which causes a painful burning feeling. The infected person may try to relieve the pain by immersing the blister in water.

When coming into contact with the water, whether to relieve the pain, or to gather drinking water, or for any other purpose, the blister breaks and thousands of tiny guinea worm larvae are expelled into the water.

The most common place for a worm to come out of the body is either the legs or the feet. However, guinea worm may sometimes emerge from the hand, arm, head, breast, chest or other part of the body. It may be possible for some one to have guinea worm coming out at once from different sites.

Once in the water the guinea worm larvae either die or are eaten by water fleas called Cyclops. Inside the Cyclops, the larvae continue developing. When a human drinks the water containing these Cyclops with guinea worm larvae inside, the human provides the final home where the guinea worm can continue its development into the adult. Over the next year, it matures, and mates in the human's abdomen and then it migrates to the surface of the skin to emerge as an adult. And so the cycle continues.

### 2.3 Vector Control:

The effective means for the eradication and the spread of guinea worm diseases include,

- Health Education and community action deter infected persons from entering the water, e.g. Information campaign designating persons to gather water for infected persons.
- Filtering drinking water, which is the use of cloth.
- Building physical barriers to keep infected people from entering drinking water (e.g. Walls around wells, fences around pond).
- Constructing safe water sources e.g. bore holes, rain harvesting.
- Boiling drinking water, which kills other disease causing germs.

### 2.4 Classification and Treatment of Guinea worm

Classification of guinea worm is based on the stages of development or disabilities as follows.

- Re-emergent (**mild**) – Disability is where a patient is mobile and suffers little or no discomfort.
- Emergent (**Moderate**) – Disability is where the patient is mobile but suffers a considerable discomfort.



- Complicated (**Severe**) – Patient is immobile, or is unable to use the affected limb and suffers considerable discomfort.

The disability could be physical but sometimes emerges from the scrotum and which could interfere with some one ability to produce children.

There is no cure for persons infected with guinea worm. There is no drugs which can rid the patient of the developing larvae or destroy the mature worm. The treatment only helps to reduce the negative consequences of guinea worm infection. Appropriate treatment responses from the guinea worm help to:

- Alleviate the patient's pain and suffering
- Prevent serious complications
- Return the patient to normal life and work as early as possible.

Many communities believe there is no effective treatment in the orthodox medicine. They resort to making incisions (**Sakiya**) at the site of guinea worm swelling (A thin Iron rod is placed in fire until its tip has become red hot. It is brought out and placed on the skin suspected to be harboring the worm). The worm is extruded and thrown into fire. This has to be done in gently manner, because breaking the worm can cause serious complications.

**Table 2.1 TREATMENTS THAT MAY TAKE PLACE AT THE DIFFERENT STAGES.**

STAGE	SIGNS AND SYMPTOMS	TREATMENT RESPONSE.
Pre -emergent	Blister, Localized itchiness or burning, Mild Swelling, Mild Pain, worm visible under Skin.	Patient Education messages.
Emergent	Ruptured blisters, one to three worms emerging, no or localized secondary infection, Moderate pain, limited or no incapacitation (e.g.) patient still able to perform daily routine tasks e.g. bathing.	Patient Education messages, Analgesics e.g. Aspirin and Antibiotics.
Complicated	Cellulitis, discoloration, extensive swelling Involvement of joint e.g. Knee, elbow, patient unable to perform daily routine tasks. Location of worm in breast or genital region. More than three worms emerging.	Patient Education Messages

**Source:** Hopkins, R. D. (1982)

## **2.5 OBJECTIVES OF EFFECTIVE CONTROL AND TREATMENT OF GUINEA WORM DISEASE.**

Guinea worm eradication efforts in Nigeria began in 1985 with the hosting of the first National Conference on Dracunculiasis. In 1988, a memorandum of understanding between the Federal Ministry of Health

and Human Services and Global 2000, Inc. of the carter center was signed. Subsequently a strong organizational structure was set up for effective Co-ordination of specific activities towards the realization of the objectives.

The objectives of effective control and treatment of guinea worm disease by Niger State, **NIGEP** is to eradicate Dracunculiasis (Guinea worm Disease) by stopping its transmission in Niger. To this end two main strategies are in use: Prevention of guinea worm transmission through health education and safe water supply and case management of guinea worm disease with emphasis on the need for patients to avoid contact with sources of drinking water. The major intervention for carrying out these strategies are distribution and use of monofilament nylon and cloth filters, protection of existing drinking water sources, sanitary wells and bore holes, and applications of chemicals(abate) to destroy Cyclops in water sources.

Other objectives include, to identify special problem areas and needs, to map out/intensify Strategies which will lead to the elimination of the diseases, and to launch powerful advocacy and to appeal passionately to the Federal, State and Local Governments, as well as donors, for the provision of safe water supply in the remaining endemic villages of Niger State. And also to assess what needs to be done, where, when, how and by who.

## **2.6 PROBLEMS AND PROSPECTS OF CONTROL AND TREATMENT OF GUINEA WORM DISEASE.**

Four major **NIGEP** intervention and problems associated with the prospects and treatment of guinea worm disease are identified.

- Surveillance and case reporting

- Filters for drinking water
- Water supply interventions
- Case management of guinea worm patients

### 2.6.1 SURVEILLANCE AND CASE REPORTING:

Surveillance is the regular collection, analysis and use of information of public health importance. Surveillance was formerly on an annual and now on a monthly basis, of reports on new cases of guinea worm disease. This information is the foundation of **NIGEP**. Knowing when, where and how much guinea worm disease occurs helps to plan Intervention activities, to monitor progress in implementation and ultimately to evaluate the success of eliminating guinea worm from the state.

Guinea worm surveillance in Niger State is performed by Village Based Health Workers (**VBHW**) who gather information on a monthly basis about a number of people having new case of guinea worm. This information is reported to the Local Government Area Guinea worm programme coordinator for appropriate action. Appendix 3 shows a classical format of guinea worm cases. The community members facilitate the surveillance by informing the **VBHW** as soon as a white-like worm is seen to emerge from an ulcer on the skin. Reporting only at those times when the worm is actually seen, i.e., do not report other blisters, swelling, pains and ulcers.

Many a time villages may not cooperate in providing accurate and timely reports of Guinea worm cases thereby intervention and treatment incomplete or not done. One reason is that local beliefs may offer a different case definition than that used by **NIGEP**. In some area people believe that any swelling, ache, pain or rash means that a person has

guinea worm disease. At other times people may intentionally report false cases in hopes of attracting attention and aid to their village. On the other hand some people do not bother reporting at all. They said no one offered help when they have reported about their suffering in the past, so why should they bother to do so now. Both the VBHWs and the villagers themselves need to understand the correct case definition of guinea worm to make this exercise effective.

### **2.6.2 FILTERS FOR DRINKING WATER**

Filters are temporary measure to prevent guinea worm disease. If filters are to be used effectively in the local eradication programme, the health workers must think about the required behaviors of the community members that will make for successful implementation after they obtain their filters which include.

- Filter water every time it is collected from the pond.
- Use the filter correctly by

placing the filter tightly on the spot so that there are no gap where water can enter ; And pouring the water slowly so that it does not splash or remove the filter Many communities may not use filters every time they collect pond water. Causing problems in the prevention and eradication of guinea worm disease. They may forget or they may be in a hurry. Some people may not believe that the filter actually prevents guinea worm. This may happen because people want to see quick results, but the year-long life cycle of the worm means there is a time lag before any direct benefits of filtering can be observed. Others prefer a well instead of a filter, because there is a more permanent solution. As such VBHW's should encourage the villages to ensure effective use of the

filters, through village demonstration, Re-enforcement through village leaders and Elders and School Based Education.

### **2.6.3 WATER SUPPLY INTERVENTION**

The availability of safe drinking water is a priority requirement in a guinea worm eradication programme. This involve to improve or make safer an existing source of drinking water, while the other is to plan and construct a new water source. In both cases, continued action and maintenance are needed to ensure that the source remain safe. It is often easier and cheaper to protect or improve an existing water source than to construct new ones, especially if the source yields water throughout the year. An existing source often has the benefit of being acceptable to the community. The following are some examples of community behaviours that can improve an existing source of water :

- Dig an existing well deeper if it's sometimes goes dry.
- Repair a broken well and or pump.
- Protect a spring.
- Construct a barrier around a pond to limit access.
- Help guinea worm patients collect water so that they do not need to enter the pond.
- Apply chemicals (Abate) to the pond to kill Cyclops

So many wells (dug or bore hole) exist, but have been abandoned, making safe drinking water hard to the people. Exposing them more to guinea worm disease.

The wells may have been a mechanical malfunction, a drop in water table or lack of resources for upkeep. Mechanical problems may stem from the fact that local people do not have the skills to fix and maintain the well (e.g. Pump repair). Another major reason why water

projects are abandoned is that villagers feel no sense of ownership in the well.

The acceptability of other alternatives to improve existing sources may depend on people's beliefs about transmission of guinea worm disease. People may see no sense in protecting a water source if they do not believe guinea worm disease is acquired by drinking contaminated water. A typical example could be seen in Tunga Alhaji in Paikoro L.G. a settlement of Gwari and Fulanis. They obtain their water from a contamination pond for domestic purposes (Plate 1<sup>A</sup>).

Plate 1<sup>B</sup> shows a woman obtaining her water from a stagnant pond in Taile village in Gurara L.G.

Some water sources have religious and cultural significance. Efforts to protect or treat these sources may be viewed as an abomination, unless care is taken by the staff to allay fears.

## 2.6.4 CASE MANAGEMENT

When a guinea worm ulcer is not cared for, secondary infections can occur, resulting in many days lost from school and work and even long term disabilities unfortunately, treatment of guinea worm disease is not well developed. There are no specific or quick cures. As such treatment is not a major way to control the disease.

Villagers will be happy when someone attends to their immediate needs, and at the same time prevents long-term disability and economic loss.

Some people do not follow recommended pattern of treatment they may prefer traditional forms of treatment, which could be dangerous, some contain alcohol and thus may kill germs that cause secondary infections. Others contain mixtures of leaves and roots and even cow dung. These items are likely to be contained and cause infection. People may not practice hygienic care because they do not have the skill for cleaning the ulcers.

They may not seek immunization or treatment for infection because of distance to health facilities and the costs involved. Although the traditional medicines may not be very effective in themselves, they are often more accessible and cheaper than modern care. **VBHW** should encourage the helpful practices and discourage those that are sick to learn about the need to help people affected by guinea worm stay out of water source.



## PLATE 1: BAD SOURCE OF DRINKING WATER

Plate 1A: A pond in Tunga Alhaji in Paikoro L.G.A.



Source: *Field Survey*

Plate 1B: Pond in Taile Village in Gurara L.G.A.



Source: *Field Survey*

## 2.7 CONTRIBUTION OF NIGER STATE (NIGEP), AND OTHER INTERNATIONAL DONORS TO THE ERADICATION OF GUINEA WORM DISEASE.

The Niger State Task Force on the Eradication of Guinea worm Disease was inaugurated by then state Military Governor **Lt. Col. Lawal Gwadabe** on June 21<sup>st</sup> 1988. Membership were drawn from nine sectors. The Task Force Secretariat was established in August, 1988, using the sum of **₦53,626.00** released by the State Government for the purpose. In the same month, members of the Task Force made a passive survey of Guinea worm situation in all the LGA's in the state. This was achieved by members visiting all the LGA's and collecting available information on guinea worm as well as other related data.

Since the inauguration of the Task Force, the promotion of Health Education about Guinea worm has featured prominently and provision of safe drinking water. Niger State (**NIGEP**) has done a lot and still doing its best to eradicate the transmission of guinea worm disease.

The achievement cut across the years from 1996-2000. South-East Niger has worst cases in Niger that suffers cases from water borne and excreta-related disease e.g guinea worm and diarrhea, especially among the rural populace. To eradicate these diseases, supply of portable and good environmental sanitation is a cornerstone to the success, **UNICEF**, an international organization in agreement with the Federal Government of Nigeria and Niger State since 1987 assisted in the implementation of Rural Water and Sanitation Projects. Rural Water and Sanitation within the context of **UNICEF**'s assistance represents the application of low cost technologies such as hand pump equipped boreholes, spring development, rain harvesting, hand-dug wells for water supply, **UNICEF** assistance to

the state is vital as **RUWATSAN** project in the state has chose as a nucleus of Rural Water Supply and Sanitation Agency, for the eradication of guinea worm.

Another International donor to the eradication of guinea worm in Niger State is Japanese international and cooperation Agency (**JICA**). **JICA** sponsored Guinea worm eradication and supply of potable water project. **JICA** drilled one hundred and fifty boreholes and installed them with hand pumps as a way of eradicating guinea worm, in Niger State by 1991.

**JICA** also aimed to provide water to rural communities to quench thirst, control Diarrhea diseases and therefore bring life. In 1992 it handed over formally 150 boreholes and all the equipment's which have facilitated the project implementation known as Rig for the provision of safe drinking water to eradicate guinea worm disease.

Other International donors such as, Global 2000, **UNDP** and WHO had committed as much resources, in the eradication of guinea worm disease and related water borne diseases.

## **2.8 GUINEA WORM AND ITS EFFECT ON THE WELFARE OF CHILDREN AND THE FAMILY**

The ill effects of guinea worm adversely affect child care, including breast feeding and taking children for immunization, school attendance is also negatively affected in endemic areas. Not only, do infected children not attend school but often older children especially girls must dropout of school to assume the duties of their sick parents or siblings.

It has been calculated that the annual loss in Nigeria, in production is more than 200 Million Naira. Guinea worm elimination is estimated to

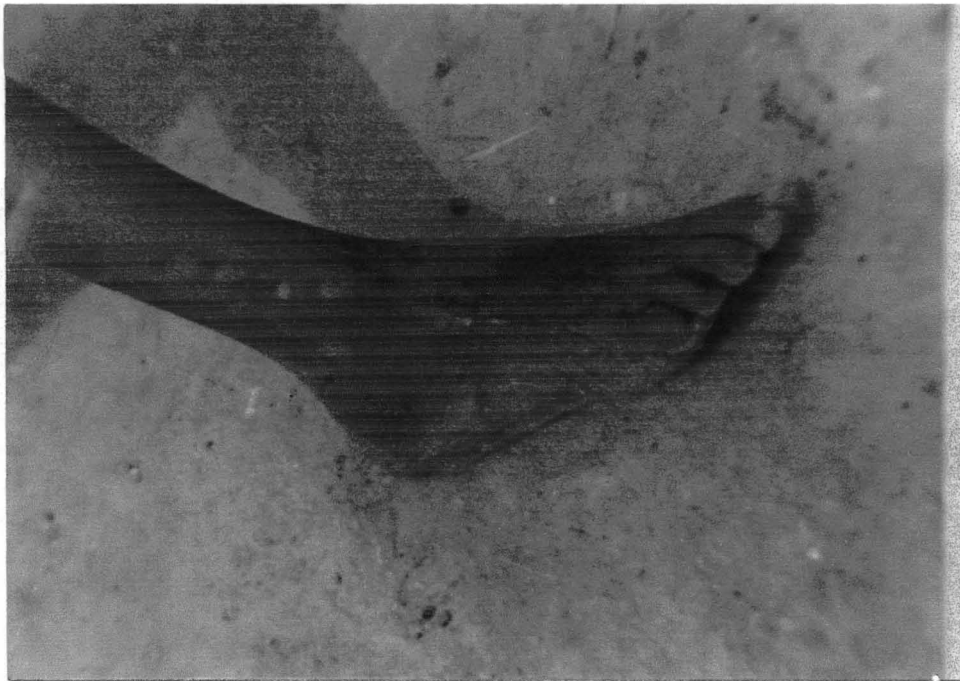
cost about 60 million U.S. dollars. Therefore, elimination of Guinea worm makes economic as well as moral sense.

Guinea worm a disease of the rural poor, the unreachable and silent communities who lack safe drinking water. It is these people who suffer from this most painful and debilitating infestation which is a cause of considerable human suffering and psychological anguish. It degrades the sufferers and reduces the breadwinner to a state of dependency for as long as three months or more.

Its effects are crippling and cause mental anguish as the worms emerge from the hand, chest and even genitalia, but mostly from the feet as seen in plate 2. When the disease affects mothers, it has an impact on child survival in terms of failure of childcare, self-care, and domestic task and income generation.

Agriculturally, low production could be observed. Since the greatest morbidity of Guinea worm is in adults in the productive age groups, it is rare below four years of age and commonest between 10 and 50. Its impact on the agricultural labour force and the work out put in the affected areas related closely to the economic performance of that community. Income and agricultural earnings as well as food supplied and stores for domestic consumption are also adversely affected. It thus follows that during the seasons of major guinea worm outbreaks, malnutrition could be a direct or indirect consequence. Cost of treatment for those affected becomes an additional burden, which can aggravate mental and other social problems in an already impoverished family or community.

**PLATE 2: EMERGENCY OF GUINEA WORM**  
**FROM FOOT OF A GUINEA WORM PATIENT IN**  
**MUIDNA IN PAIKORO L.G.A.**



**Source:** *Field Survey*

## **CHAPTER THREE**

### **3.0 RESEARCH METHODOLOGY**

The research method used in the course of this project, was gathering data and information from the following source.

- Primary Source
- Secondary Source.

### **3.1 PRIMARY SOURCE**

Primary Source stands the major source of this project. The primary sources includes Questionaring and oral interview.

#### **3.1.1 VALIDATED QUESTIONNAIRES**

Close ended questionnaires where implored. The questions require a definite answer. Here the respondent is left to make decision from the suggested alternatives that best suits his response (Appendix 3.1).

A total of three hundred questionnaires were distributed in the four local government area that in the South East Niger State. Two hundred and Ninety were completed and returned. Random probability and stratified sampling techniques was used for the analysis.

#### **3.1.2 ORAL INTERVIEW**

Face to face interview was conducted with some of the infected communities to sample their opinion on how they were infected, time, and treatment; and also to show the performance of NIGEP/NIGER State task force on guinea worm eradication programme through the provision of good and safe drinking water.

### **3.2 SECONDARY SOURCE**

The secondary source and from documentary data base, which includes:

#### **3.2.1 STATISTICAL BULLETIN**

This is a documented information from various aspects of health programmes, mostly from Ministry of Health.

#### **3.2.2 CONFERENCE PROCEEDINGS**

Documented information from conferences held within and outside Niger State.

#### **3.2.3 COMMUNIQUES OF UNICEF ZONAL MEETINGS**

These are documented objectives of UNICEF Zonal meeting on NIGEP annual performances.

#### **3.2.4 STATISTICAL SUMMARIES**

Documented statistical summaries of NIGEP monthly and annual reports.

### **3.3 RESEARCH POPULATION**

The researched population is the total number of people which form South-East Niger State. Comprising of Lapai, Paikoro, Agaie and Gurara LGAs. Irrespective of the Geo-political boundaries, these people have similar socio-cultural and economic identify. Hence the need to analyse the causes and profuse solution towards eradicating guinea worm in the areas.

The population of this research work consists the total number of people that has guinea worm disease reported cases in South-East Niger State as from 1996-2000.

Within the period of five years a population of about 4746 are infected from guineaworm diseases and this is shown in the table below:-

**TABLE 3.1**

*Table showing yearly number of persons infected with Guinea worm*

YEAR	AGAIE	GURARA	LAPAI	PAIKORO
1996	85	325	66	650
1997	95	215	61	636
1998	96	315	43	530
1999	81	225	26	443
2000	5	64	8	36

Source: NIGEP/Niger State

### **3.4 SAMPLE AND SAMPLING TECHNIQUE**

The researcher samples (1996-2000) NIGEP/ Niger State Task Force on guinea worm eradication programme. And employed random probability and stratified sampling techniques for the project.

Random probability sampling technique was used to access the performance of NIGEP/Niger State without any bias.

The stratified sampling method was applied to the NIGEP/Niger State for the study the selected sampling years was classified into five (5) such as 1996, 1997, 1998, 1999, 2000. This method shows the NIGEP/Niger State performance towards the eradication of guinea worm disease yearly.



## CHAPTER FOUR

### 4.1 DATA ANALYSIS

Analysis of information and data collected in the course of the research were presented below, to show the intensity and performance of NIGEP/Niger State and RUWATSAN Agency between 1996-2000. The analysis were discussed under the following source.

### 4.2 ANALYSIS BASE ON DOCUMENTARY METHOD

The following deduction were drawn from documentary sources which forms an integral part of this work.

#### 4.2.1 NUMBER OF GUINEA WORM CASES

The performance has consistently recorded significant annual reduction of guinea worm cases. Although the fight against guinea worm eradication in far from been worn, more effort in intervention by NIGEP/Niger State Government in the South East of Niger State. The following cases were reported and cured.

**TABLE 4.1**

*Yearly number of cases reported in South-East Niger State*

Year	Agaie	Gurara	Lapai	Paikoro
1996	72	310	425	45
1997	67	150	250	32
1998	45	72	150	21
1999	34	51	120	16
2000	2	32	22	4

Source: NIGEP/ Niger State

Generally, between 1996-2000, there was a great reduction of guinea worm cases by 58%.

#### **4.2.2 NUMBER OF INFECTED VILLAGES**

Within the period under research, the number of infected villages vary depending on the intervention, However, villages within a catchment area are usually infected especially were they have a common stream or point source of water supply. The number of villages decreases to about 45 villages. Hence between the period of 1996-2000, the number of infected villages decreased by 25.

#### **4.2.3 WATER SUPPLY AND WATER STATUS**

Between the year 1987-2000, Niger State Task Force on Guinea worm Eradication in conjunction with UNICEF and JICA has provided new safe water supply to infected Villages of about 45% while 55% are still awaiting safe water supply (Appendix 4.1).

In the area of water status about 45% villages still do not have safe water supply. 39% of the villages in the SE Niger State have well or Borehole which required repairs. Only 16% villages have safe water supply.

#### **4.2.4 HEALTH EDUCATION**

A larger percentage of infected villages received health education (81%). While about 19% require health education.

#### **4.2.5. FILTER DISTRIBUTION**

42% out of the total infected villages have been supplied with filters. Other infected villages representing 58% still have problem of filters not been supplied to them.

#### 4.1.6. VILLAGE HEALTH WORKER NEEDS AND MEDICAL TREATMENT

Only 45% of the infected villages had village health workers. The remaining 55% lack village health workers. In the area of Medical treatment only 22% infected villages received medical treatment in the rural centers. The remaining 78% of the infected villages still lack medical treatment either due to lack of medical facilities or traditional perception of the causes of the epidemic.

#### 4.2 ANALYSIS BASED ON QUESTIONNAIRES

A total number of three hundred questionnaires was prepared and distributed within the communities of Agaie, Lapai, Paikoro and Gurara local Government area. Two hundred and Ninety were completed and returned by the respondents (Appendix 4.2).

**TABLE 4.2:** Occupation of respondent.

**QUESTION:** What is your Occupation ?

OPTIONS	NO OF RESPONDENTS	%
1. Farming	220	75.9
2. Business	60	20.7
3. Others	10	3.45
<b>Total</b>	<b>290</b>	<b>100</b>

Source: Compiled by the author

The above table shows the occupational groupings within the regional communities mostly affected with guinea worm infestation.

Farmers who are the dominant labour force of these communities are the worst hit with 72.45% of the infected persons. Businessmen 19.39% and other workforce 3.16%

**TABLE 4.3:** Types of Water sources

**Question:** What is your source of water ?

OPTIONS	NO OF RESPONDENTS	%
Well	30	16.33
Borehole	5	1.7
Pond	60	20.7
Stream	95	32.8
<b>Total:-</b>	<b>290</b>	<b>100</b>

**Source:** Compiled by the author

From the above. Table it shows that those who gets drinking water from stream, represent (32.8%) are more infected by guinea-worm infestation. This is followed by the people that obtained their water from ponds representing (20.7%).

However, the percentage of those obtaining than water from wells and boreholes having guinea worm could be attributed to drinking water from streams while at farm and neighbouring houses violation of sanitary habits.

**TABLE 4.4:** Season of infestation

**QUESTION:** What season of the year do you notice the illness?

<b>OPTIONS</b>	<b>NO OF RESPONDENTS</b>	<b>%</b>
Dry Season	200	68.9
Rainy Season	90	31.1
<b>Total:-</b>	<b>290</b>	<b>100</b>

**Source:** Compiled by the author

The population of those infested during rainy season decrease due to safe water supply from rainy harvesting.

**TABLE 4.5:** Part of the body the worm frequently appear.

**Question:** Which part of your body does the illness frequently appear ?

<b>OPTIONS</b>	<b>NO OF RESPONDENTS</b>	<b>%</b>
Feet	120	35.2
Breast	15	5.2
Eye	8	2.8
Kneel	60	20.7
Site of Organ	5	1.7
<b>Total:-</b>	<b>290</b>	<b>100</b>

**Source:** Compiled by the author

The worm could appear at the feet, breast, eye, kneel and site of organ. The most popular site at which guinea worm disease appears is at the feet with 44.90%.

**TABLE 4.6:** Age group guinea worm mostly infects.

**QUESTION:** What age group do guinea worm disease mostly infects.

OPTIONS	NO OF RESPONDENTS	%
10	10	3.4
11-20Yrs	150	51.7
21-30Yrs	70	24.1
41Yrs	50	17.2
<b>Total:</b>	<b>290</b>	<b>100</b>

**Source:** Compiled by the author

From the above table those within the ages of 16-30years are mostly infected with Guinea worm. These constitute the bulk and active members of these communities making up of 75.51% of the population. The least affected are those in the age range above 41yrs.

**TABLE 4.7:** Causes of guinea worm diseases

**QUESTION:** What do you think is the cause of guinea worm disease ?

OPTIONS	NO OF RESPONDENTS	%
Hereditary	10	3.4
Evil spirits	90	31.0
Bad drinking water	180	62.1
Good Water	10	3.4
<b>Total:</b>	<b>290</b>	<b>100</b>

**Source:** Compiled by the author

The table above shows the various causes of guinea worm diseases based on the belief of the communities.

From the analysis above, it can be deduced that Bad drinking water (44.82%) is the major cause of guinea worm infestation. Those that suggest evil spirits, Hereditary and good drinking water may be attributed to illiteracy.

**TABLE 4.8:** Methods of treatment

**QUESTION:** What method have you employed for treatment.

OPTIONS	NO OF RESPONDENTS	%
Hospitals	90	31.0
Traditional	200	69.1
<b>Total:</b>	<b>290</b>	<b>100</b>

**Source:** Compiled by the author

The above table shows the nature of treatment during the period of infestation. It is noticed that people prefer traditional treatment (65.31%) than hospital treatment (34.69%). This may be attributed to lack of public health facility.

**TABLE 4.9:** Associated disability

**QUESTION:** Do you notice any associated durability

OPTIONS	NO OF RESPONDENTS	%
Physical	195	67.2
Metal/Pschoiological	95	32.8
<b>Total:</b>	<b>290</b>	<b>100</b>

**Source:** Compiled by the author

The above table shows two kinds of disabilities associated with guinea worm disease. The disability could be physical, mental or psychological. Physical disability constitute the longest effects of guinea worm infection.

**TABLE 4.10:** Area of Assistance from the government

**QUESTION:** What assistance do you want from government to help you eradicate Guinea worm disease ?.

OPTIONS	NO OF RESPONDENTS	%
Safe drinking water	200	69.0
Filters	60	20.7
VBWs	15	5.2
Drugs	15	5.2
<b>Total:</b>	<b>290</b>	<b>100</b>

**Source:** Compiled by the author

From the statistics above people prefer safe drinking water (69.0%) while drugs (5.2%) is the list of their wants. Since they mostly depend on traditional method of treatment.

**TABLE 4.11:** Sex of infected persons

**QUESTION:** Sex infected person

OPTION	NO OF RESPONDENTS	%
Male	200	69.0
Female	90	31.0
<b>Total:</b>	<b>290</b>	<b>100</b>

**Source:** Compiled by the author



The table shows the sex that is mostly infected with guinea worm diseases. Male having 200 respondent while Female has 190 across the communities.

#### **4.3 ANALYSIS BASED ON ORAL INTERVIEW:**

A total of fifty communities have been interviewed in Agaie, Lapai, Paikoro and Gurara LGAs. I have the privilege of interacting with these communities during my organize for intervention in rural water supply during the period under research Majority of those interviewed were village head/district head and infected persons.

The responses was quite encouraging, communities in these part of Niger State are mostly infected with guinea worm disease. In most village were infestation are intense, crop production has dropped to about 50%. But due to the intervention of NIGEP/Niger State and RUWATSAN Agency the figure has been raised to 23%.

It is now certain that guinea worm infection hinders the patient from farm activities. It was therefore established that the case of guinea worm has dropped with the rapid intervention of NIGEP/Niger State Task Fore on guinea worm eradication programme.

However, among all the communities interviewed, youths are mostly infected with guinea worm disease. And these communities mostly lacked safe drinking water. They also pointed out that transmission is mostly high in dry season. These communities need more health education on how to prevent and treat guinea worm diseases.

## IMPLICATION

- Poor water source, low level of public awareness and poverty will increase the no of cases of guinea worm infestation in this area. The provision of safe water cannot eliminate guinea worm completely without combine effort in public enlightenment and poverty alleviation program.
- Community participation in project implementation and operation with donor agencies will enhances the sustainability of such project, either in the development of existing source or provision of new ones.
- During the field survey. Some communities with borehole still do have guinea worm. This is due to multiple intake of water from different sources, while in the farm they result to stream water and at home they use borehole water. Such villages/persons will need as a matter of urgency the services of village health worker (VHW's) to enlighten them on the causes, prevention and treatment of guinea worm; so as to eradicate Guinea worm completely.
- It is the vibrant members of the community that are mostly infected with the disease. The elimination of these disease with greatly improve the socio-economic activity of these community and thus increases per capita income which is presently at it's lowest level.

## CHAPTER FIVE

### 5.1 SUMMARY

South-East Niger State is of high endemic guineaworm LGA's in Niger State. But NIGEP/Niger State Task Force on guinea worm eradication have tried to reduce the cases of guinea worm infection to the bearest minimum.

From the research, it was found out that males are mostly infected than females. This is in line with the finding of Udonsi, (1987). Who worked in Ohazara, Imo State, where reported a male preponderance. And further stated that there was a tendency towards a higher male prevalence than female prevalence rates.

The possible explanation for the male preponderance was because women boiled the water they fetch from the cyclops laden stagnant water to prepare food. They are likely to drink from the remaining boiled water, whereas the males that would be on their farms in the day are likely to obtain water to drink wherever they feel thirsty from a source that is near the farm and drink from the cyclop laden stagnant water.

This research shows that majority of those who contacted the disease have unsafe sources of drinking water. For example ponds, streams etc plate 1<sup>A</sup> and 1<sup>B</sup>. Those individuals with guinea worm lesions on their legs are not prohibited from wading into ponds that provided safe drinking water for the community. This creates the opportunity for continual inoculation of ponds containing cyclops with the larvae of *Dracunculus Medinesis*.

Guinea worm disease causes so many deformities on the human body as a result of its emergence. It could emerge from either feet, joints (Knee and ankle), eye and scrotum. Similarly worm emergence at Multiple sites at the same time as also reported by Abolarin, (1981) in his

research that multiple sites of both hand and leg of the same patient were seen.

The disability caused by Guinea worm disease is mainly physical. The patients are unable to move or carry out their normal day to day activities. Abolarin, (1979) reported that some patients were home confined or bed-ridden. The duration of disability caused by guinea worm disease is not fixed. Different workers reported different periods of time, Kale, (1979) reported mean period as 40 days, Edungbola, (1985) reported the period of temporary incapacity as 1-3months death due to this disease has not been reported.

Only few patients went to hospitals for this illness. This is because they believe that there is no any drug in the orthodox medicine for the treatment of guinea worm disease, rather than traditional treatment. The traditional medication is by doing "Sakiya" (A thin rod is placed in fire until its tips has become red hot it is brought out and placed on the skin suspected to be harboring the worms). The worm is extruded and thrown into fire.

It is interesting to note that the infected communities know that guinea worm disease is got from bad drinking water. They are aware that the source is either the stagnant water or stream they obtain their drinking water from. The possible explanation for why they continue to drinking water from unsafe sources, is that, the wells they dug eventually dry up or boreholes drilled needed repair and the people are left with no other alternative than continue drinking water from unsafe sources. Therefore to prevent and eradicate guinea worm good safe drinking water has to be provided.

## 5.2

### CONCLUSION:

In Conclusion, NIGEP/Niger State Task Force on guinea worm eradication and all agencies connected to the eradication and control to intensify strategies and actions that will lead to the total elimination guinea worm and other water borne diseases in Niger State.

Rural people tend to transmit guinea worm disease by their behaviour such as.

- i. Drinking water that has been contaminated by guinea worm larvae.
- ii. Wading by the infected person who has an open ulcer in a pond where the villages get their water.

South-East Niger State is the most endemic part of the State therefore, those LGA's needs more aid to control/eradicate the disease. There is no specific treatment of guinea worm diseases for both traditional and orthodox methods, but only reduce the agonising pain.

There must be a concerted effort in the provision of safe water, effective public mobilization and enlightenment towards poverty alleviation.

Guinea worm eradication will not only lead to Good Health, but also socio-economic enhancement of the communities.

### 5.3 RECOMMENDATION

The following recommendation are deduced from these research.

- i. Provision of adequate safe water supply and rehabilitation of water sources to the infected villages by Federal, State, Local Governments and International agency.
- ii. Adequate funding to active case search by international donors, State, LGA, for effective co-ordination of NIGEP, Programmes.
- iii. Adequate provision of drugs, dressings and vaccines for worm extraction and comprehensive case management.
- iv. All communities should be trained on how to maintain their water sources.
- v. Community mobilization and awareness towards causes, prevention/control of water borne diseases.

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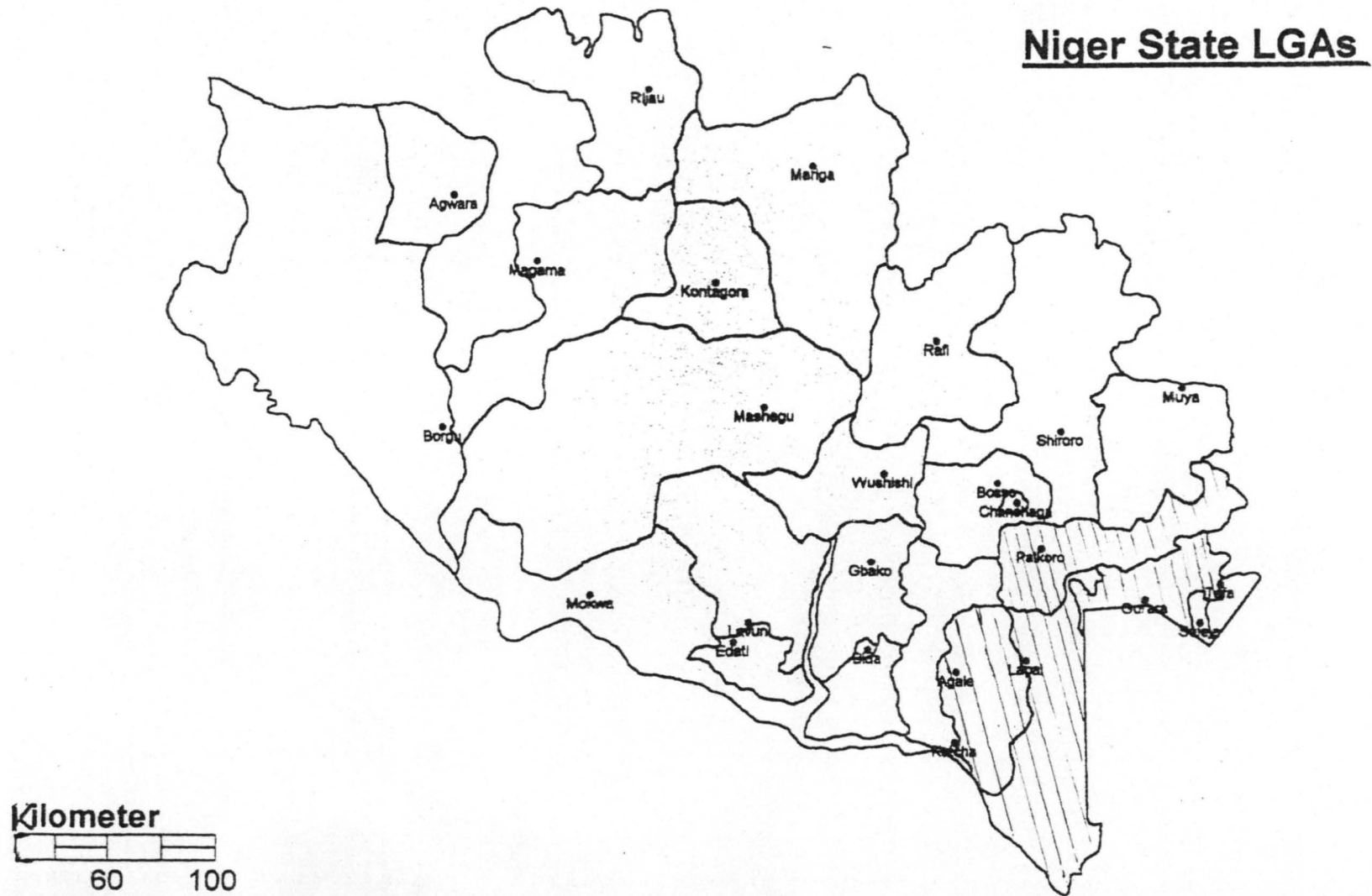
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APPENDIX 1.1: MAP OF NIGER STATE SHOWING STUDY AREA



SOURCE: NIGER STATE LAND AND SURVEY

**Appendix 4.1**

**Chart Presentation of villages provided with Safe Water between the year 1987-2002 in a selected Local Government Areas in Niger State**

