THE IMPACT OF A COMMUNITY INVOLVEMENT APPROACH ON GUINEA WORM CONTROL PRACTICES

BY

SAMUEL URHOBO AKPOVI
B.Sc. HONS. (Ibadan)

A dissertation in the department of
PREVENTIVE AND SOCIAL MEDICINE

Submitted to the Faculty of Medicine
in partial fulfilment of the requirements
for the degree of

MASTER OF PUBLIC HEALTH (HEALTH EDUCATION)
of the
UNIVERSITY OF IBADAN

JUNE 1979

D E D I C A T I O N

To my dear wife, Nuoma and children.

D E D I C A T I O N

To my dear wife, Nuema and children.

ABSTRACT

In many developing countries of the world, emphasis on health care has shifted from what can be done for the people to what the people can do for themselves to improve their health. A large number of people suffer from different illnesses which they are capable of acting upon, but lack the necessary incentives and organizational support for health directed actions.

There has been a high incidence of Dracunculus medinensis among the inhabitants of Idere and Tapa farming villages, but no effective action has been taken to control the infection. Though the people possessed some knowledge of the disease, were aware of its seriousness, and believed that they were susceptible to the infection, they could not transform such knowledge and beliefs into action necessary to prevent the infection.

In this study, community involvement and self-help are used as educational interventions for disease control. The area of study covered a number of remote farming villages that had been left out of the mainstream of basic health service amenities in Ibarapa District of Oyo State, Nigeria. The farming villages were from ten to sixty kilometers from the nearest towns. The villagers usually spent between 3 days to 4 weeks in the villages before they would return to visit their towns. The over-all period of stay in the farm

villages was about nine months per year. In the rainy season, the farmers depended on water from stagnent ponds, water holes or slow flowing streams for domestic use. Most of these sources of water become dry during the dry season so that much time was spent trekking long distances in search of water.

There were 30 villages altogether in the area, 50 had Idere as their homesteadand the remaining 30 had Tapa as homestead. Ten Idere villages were the experimental group, while eight Tapa villages were taken as the control group. The villages in the experimental group were those that considered guinea worm to be a problem and voluntarily consented to participate in the health education programme to control the infection. The control group of villages was selected on the basis of having the same health problem - guinea worm, being separated by distance from the experimental group and was comparable in relevant demographic characteristics.

There was no significant change in knowledge, attitudes and behaviour of the control group toward the control of guinea worm infection before intervention (time 1) and after the intervention (time 2) but the experimental group showed some changes in knowledge, attitudes and behaviour.

Before the intervention only 4 (2.5%) of the 160 respondents in the experimental group had adequate knowledge of guinea worm as compared with 42 (26.3%) after the intervention. On attitudes toward solving the health problem through self-reliance, more people in the experimental group were of the opinion that self-help was preferred to depending on government to help at time 2. At the beginning of the study, 72% of the 300 villagers who responded to an interview schedule in selected Tapa and Idere villages did nothing to avoid being infected; while 26% of them employed wrong measures to control the preventable infection. In the experimental group, only 6 (3.8%) took right action to control the infection at time 1. But at time 2, the number rose to 120 (75%).

The operational plan for community involvement and self-help in the selected Idere villages included:

(1) Exposure to the knowledge of guinea worm infection

(2) Assessment or opinion formation about the importance of the infection

(3) Decision making on what action to take to overcome the infection.

(4) Organization of the community for a specific action decided on.

(5) Trial of an accepted way to promote health and protect themselves from guinea worm infection and

(6) Internalization or forming guinea worm control practices.

The participatory process involved a division of labour among the villagers. A number of village health workers were trained on skills to control the disease which they were to impart to other villagers, the village health committee and central health committee had responsibility for planning the action needed for achieving effective control of the disease, while the other villagers were involved in the implementation of the guinea worm control measures.

The study has demonstrated that given encouragement and support through supervision, even the most deprived communities known to depend on external help could be motivated to address themselves to taking care of some of their health problems. Such problems would have remained unattended to under the present system of health care.

The impact of the programme on the experimental villages as reflected in the positive changes in knowledge, attitude and behaviour of the people on guinea worm control suggested that additional study be done in future to monitor the level of the incidence of the disease and the actions people would still take to prevent the disease. The information collected would be compared with the findings of this study as well as comparing the two groups of communities involved in the study.

A C K N O W L E D G E M E N T

There are a number of people, institutions and communities that deserve acknowledgement for their contributions to the success of this study.

I am very grateful to all my Lecturers in the Department of Preventive and Social Medicine, University of Ibadan, Ibadan for preparing me on the background academic requirement to undertake this study. I am particularly grateful to the head of the department, Professor A.B.O.O. Oyediran for his full support and encouragement.

My sincere appreciations go to my supervisor, Dr. D.C. Johnson, Senior World Health Organization Teacher/Consultant, for his very useful suggestions, guidance and consistency. He made his time, skill and resources available throughout the study.

I acknowledge the help rendered by Messrs. B. E. Bassey and S. Ojediran for preparing some visual aids used in the training of the primary health workers during the study. The photographs in this paper were produced through the help of Mr. B. E. Bassey. I am sincerely grateful to Mr. W.R. Brieger, for suggestions on the training of primary health workers for Idere Community. He also helped with the analysis of some of the data. I am grateful to Dr. O. O. Kale for his expert ideas on guinea worm and his useful suggestions. To Dr. O. Ayeni, I express a vote of appreciation for helping in the statistical part of the study.

Mr. Michael Oladokun of the Rural Health Centre, Imbo-Ora deserves special mention for introducing me to the two communities where the study was done.

I thank the dispenser and the midwife working at the Maternity/Dispensary, Idere for their part in the training of the primary health workers. Messrs. J. O. Idowu and I.O. Olanoke of the Social Development Office, Ibarapa Local Government, Idere and Taoa area participated in the follow up of the community health education programme.

The author is grateful to Engineer P. O. Olumande and Dr. P.K.C. Sridhar for their contribution in suggesting the different preventive measures against guinea worm. Mr. O. Sosan deserves my thanks for helping with the location of suitable spots with the villagers for the contruction of wells.

I thank Professor Betty Tonley for her kind suggestionsin the organization of Chapter Four of this paper.

My deep gratitude goes to Dr. & Mrs. C.A. Pearson for their invaluable contribution and support during my stay at Imbo-Ora. They kindly proof-read the manuscripts.

I appreciate the full co-operation of the Oba and people of Idere, particularly the farmers in the ten experimental villages. The farmers in the eight control villages also deserve my thanks for their involvement in the study.

Mr. Michael Oladokun of the Rural Health Centre, Inbo-Ora deserves special mention for introducing me to the two communities where the study was done.

I thank the dispenser and the midwife working at the Maternity/Dispensary, Idere for their part in the training of the primary health workers. Messrs. J. O. Idowu and I.O. Olaoke of the Social Development Office, Ibarapa Local Government, Idere and Tapa area participated in the follow up of the community health education programme.

The author is grateful to Engineer P. O. Olawande and Dr. T.K.C. Sridhar for their contribution in suggesting the different preventive measures against guinea worm. Mr. O. Sosan deserves my thanks for helping with the location of suitable spots with the villagers for the contruction of wells.

I thank Professor Betty Tonley for her kind suggestions in the organization of Chapter Four of this paper.

My deep gratitude goes to Dr. & Mrs. C.A. Pearson for their invaluable contribution and support during my stay at Inbo-Ora. They kindly proof-read the manuscripts.

I appreciate the full co-operation of the Oba and people of Idere, particularly the farmers in the ten experimental villages. The farmers in the eight control villages also deserve my thanks for their involvement in the study.

I am indebted to the authors whose works I have referred to in this paper.

I am most grateful to the Bendel State Government and UNICEF for the financial assistance I received.

I thank Dr. J. D. Adeniyi for his help at different stages during the study.

C E R T I F I C A T I O N

We certify that this study was carried out by Mr. S.U. Akpovi in the Department of Preventive and Social Medicine, University of Ibadan, Ibadan, Nigeria.

Supervisors (1) .....

Donald C. Johnson, AB, MPH, Dr. P.H.,
Senior World Health Organization Teacher/ Consultant in the African Regional Health Education Centre, Department of Preventive and Social Medicine, University of Ibadan, Nigeria

(2) .....

B.E. Bassey, B.A., M.S.,
Lecturer
Department of Preventive and Social Medicine, University of Ibadan.

April, 1979.

TABLE OF CONTENTS:

	Pages
Title Page	i
Dedication	ii
Abstract	iii
Acknowledgement	vii
Certification	x
Table of Contents	xi
List of Tables	xiv
List of Figures	xviii

CHAPTER ONE

INTROOUCTION	1
The Nature and Extent of Problem	4
Past Health Education Activities in Ibarapa District	8
The Study Design	10
Objectives of Study	11
Location and Setting of Study	12

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL CONCEPTS	17
The Guinea Worm Infection	17
Educational Intervention	20
Community Participation	20
A Theoretical Model of Community Participation	21

Pages

Theoretical Support for the Model : : : : : 23

Educating the Community Through Primary Health Workers: : : : : : : 28

CHAPTER THREE

METHODOLOGY : : : : : : : : : : : 36

Assumptions : : : : : : : : : : : 44

Hypotheses : : : : : : : : : : : 45

CHAPTER FOUR

FINDINGS AND ANALYSIS : : : : : : : : 50

Demographic Characteristics of the Control and Experimental Groups : : : : : : : : 50

Data Secured from the Interview Schedule : : : 59

Information Gathered from Observation and Informal Interview : : : : : : : : 105

CHAPTER FIVE

DISCUSSION : : : : : : : : : : : 113

Limitation : : : : : : : : : : : 118

CHAPTER SIX

SUMMARY AND CONCLUSION : : : : : : : : 121

B I B L I O G R A P H Y : : : : : : : : 123

Pages

APPENDICES : : : : : : : : 131

I. A Model of Community Involvement Approach in Effecting Change : : : : : : 131

II. Enumeration of the Control Group of Villages : 132

III. Enumeration of the Experimental Group of Villages : : : : : : : : : 133

IV. The List of Primary Health Workers and their Backgrounds : : : : : : : 134

V. The Course Content for Training Primary Health Workers at Idere : : : : : 135

VI. Interview Schedule : : : : : : : 139

LIST OF TABLES

		Pages
1.	Comparison of the size of both the control and experimental groups : : : : : : :	37
2.	Age distribution of the control and experimental population: : : : : : : : :	51
3.	Sex distribution of the respondents to the interview schedule in the experimental and control groups : : : : : : : :	53
4.	Age distribution of the respondents to the interview schedule in the control and experimental groups	54
5.	Religion of heads of families in the control and experimental farming villages : : : : :	57
6.	Educational level of the people who responded to the interview schedule in the control and experimental groups: : : : : : : : :	58
7.	The chi-square tests of significance on variables on guinea worm infection in the two groups of villages : : : : : : :	60
7.1	Knowledge of both the experimental and control groups before intervention : : : : :	63
7.2	Knowledge of the control group before and after intervention : : : : : : :	63
7.3	Knowledge of experimental group before and after intervention : : : : : : : : :	65
7.4	Knowledge of both the experimental and control groups after intervention : : : : : :	65
7.5	Sources of information on the knowledge of guinea worm in the control and experimental groups :	67
8.	Experience of incidence of guinea worm infection reported by respondents in the control and experimental villages : : : : : : :	68

Pages

9.1 Comparison of perception of both the control and experimental groups on susceptibility of all age groups to guinea worm infection at time 1 : : : : : : : : : 71

9.2 Comparison of the responses of the control and experimental groups to the statement: Guinea worm should not be considered a serious disease at time 1: : : : : : : : : 71

9.3 Comparison of the opinion of the control and experimental groups on the statement: Providing safe water for family use will eradicate guinea worm at time 1 : : : : : 73

9.4 The opinion of the experimental and control groups on treatment of guinea worm with orthodox medicine before the study : : : 73

9.5 The opinion of the control and experimental groups on the treatment of guinea worm with traditional medicine before the study : : 75

9.6 The opinion of the experimental and control groups on leaving guinea worm infection to disappear without treatment before the study : : : 75

9.7 The responses of the control and experimental group to the statement: Waiting for government to solve the problem is preferred to self-help at time 1 : : : : : : : : 77

10.1 The perception of the control group on susceptibility of all age groups to guinea worm infection at time 1 and time 2 : : : 79

10.2 The responses of the control group to the statement: Guinea worm should not be considered a serious disease at time 1 and time 2 : : 79

10.3 The opinion of the control group on the statement: Providing safe water for family use will eradicate guinea worm at time 1 and time 2 80

10.4 The opinion of the control group on the treatment of guinea worm with orthodox medicine before and after study : : : : : : : : 80

		Pages
10.5	The opinion of the control group on the treatment of guinea worm with traditional medicine before and after the study : : : : :	82
10.6	The opinion of the control group on leaving guinea worm infection to disappear without treatment before and after the study : : :	82
10.7	The responses of the control group to the statement: Waiting for government to solve the problem is preferred to self-help at time 1 and time 2 : : : : : :	94
11.1	The perception of the experimental group on susceptibility of all age groups to guinea worm infection before and after intervention	85
11.2	Comparison of perception of the control and experimental groups on susceptibility of all age groups to guinea worm infection at time 2	86
11.3	Responses of the experimental group to the statement: Guinea worm should not be considered a serious disease at time 1 and time 2 : :	88
11.4	Comparison of the responses of the control and experimental groups to the statement: Guinea worm should not be considered a serious disease at time 2 : : : : : : : :	88
11.5	The opinion of the experimental group on the statement: Providing safe water for family use will eradicate guinea worm at time 1 and time 2	90
11.6	Comparison of the opinion of the control and experimental groups on the statement: Providing safe water for family use will eradicate guinea worm at time 2 : : : : : : : :	90
11.7	The opinion of the experimental group on the treatment of guinea worm with orthodox medicine before and after intervention : : : :	92
11.8	The opinion of the control and experimental groups on the treatment of guinea worm with orthodox medicine after the study : : : :	92

		Page
11.9	The opinion of the experimental group on the treatment of guinea worm with traditional medicine before and after intervention : :	94
11.10	The opinion of the control and experimental groups on treatment of guinea worm with traditional medicine after intervention : :	94
11.11	Opinion of the experimental group on leaving guinea worm infection to disappear without treatment before and after intervention : :	97
11.12	The opinion of the experimental and control groups on leaving guinea worm infection to disappear without treatment after the study :	97
11.13	The responses of the experimental group to the statement: Waiting for government to solve the problem is preferred to self-help at time 1 and time 2 : : : : : :	99
11.14	The responses of the control and experimental groups to the statement: Waiting for government to solve the problem is preferred to self-help at time 2 : : : : : :	99
12.1	Efforts to control guinea worm in both the experimental and control groups before the study : : : : : : : :	101
12.2	Effort to control guinea worm in the control group before and after the study : :	101
12.3	Effort to control guinea worm in the experimental group before and after intervention : :	103
12.4	Efforts to control guinea worm in both the experimental and control groups after the study	103
13	Construction of wells in Idere and Tapa Towns between 1978 and 1979 : : : : :	112

LIST OF FIGURES

		Pages
1.	A woman collecting water from a water hole	5
2.	Guinea worm infection at the knee with multiple sites for the lesion . : : : :	6
3	A protruding guinea worm from the site of infection at the foot : : : : : :	7
4.	Map of Ibarapa District showing the group of control and experimental villages : : :	13
5.	Part of a farming village with buildings roofed with thatch and corrugated iron sheets : :	15
6.	A Primary Health Worker educating his people during a meeting of the villagers : : :	39
7.	Comparison of the mean values of the control and experimental group on knowledge, attitude and behaviour toward the control of guinea worm :	105
8.	Some of the villagers collecting water from a sanitary well constructed through self-help by the villagers : : : : : : : :	110

CHAPTER ONE

INTRODUCTION

EMPHASIS has been placed on enlightenment programmes to eliminate ignorance and superstition particularly in health related issues in Nigeria during the past decade. To develop an effective machinery for the national health programme, it has been argued that the health consumers should be involved in the planning, implementation and evaluation. At present, almost all the budget for providing health service amenities have been provided by the government and local authorities. Shehu (1975) observed that most rural communities did not fully appreciate services and amenities provided free of charge and that in some cases such efforts by the authorities were considered worthless by the people served because they had not been involved in the development of the health programme.

The most important needs of the rural ponulation have remained virtually untouched. In Idere and Tapa communities where this study was done, ignorance and deprivation were the most important causes of ill-health among the farming villagers. A majority of these villagers had no potable water for domestic use. Their main sources of water supply were from stagnant ponds, water holes and slow flowing streams.

The approach used in this study was based on respect for people's ability to decide on actions to be taken to meet their own health needs. It was intended that collective wisdom of the villagers would be brought to bear in identifying their problems, working out solutions, mobilizing their financial resources required and deploying community workers for the self help programme. To achieve these Shehu (1975) suggested that: "a novel idea which has yet to be tested adequately is that of training the local village people in simple methods" to health educate the larger still unserved population who were the potential beneficiaries of the health programmes. On this basis, this study aimed at identifying measures which the villagers could take to improve their health and be able to work to raise their income and their standard of living.

The motivation to help the people work out solutions to their problems came from their recognition of guinea worm infection as their priority health problem that needed urgent solution. Ten out of the fifty farming villages in Idere community accepted to do something to control the disease. They were grouped as the experimental villages. Eight out of the thirty Tana villages that had similar complaints were used as the control group.

The study was designed to test the impact of a community involvement technique on the control of the important community

health problem of guinea worm. The intervention included.

(1) the participation of village health committee in problem definition and solution.

(2) the selection by the people of each experimental village, of a local village person (called primary health worker) to be trained in simple methods to overcome the guinea worm problem and other important health problems affecting the well being of the villagers and

(3) the sharing by a selected local village health worker of his knowledge and skills obtained in the training with the people of his village.

A three-month health education programme using the community involvement approach to solve the problem was executed in the experimental villages. Each village selected a primary health worker who was trained and went back to work with the villagers in planning, implementation and evaluation of steps they would take to overcome the infection. This programme was not implemented in the control group of villages. Assessment was done to detect if there would be any improvement in the knowledge, attitude and behaviour of both the control and experimental groups on the control of the disease after the three months programme.

The findings from this study suggested that there was a possibility of effecting change in communities that had predominantly depended on government to provide amenities rather than doing specific things through self-help to meet their needs.

Nature and extent of problem

It has been reported by the people living in Idere and Tapa communities that water was generally in short supply during the dry season. In Iharapa Division, four out of the seven towns have pipe-borne water. Richard (1974) noted that the population supplied with pipe borne water was about 47%. Most of the economically active people lived in farming villages and were not able to use the amenities provided in towns.

These farmers depended on water from ponds, streams, and water holes, most of which dried up during the dry season, (see figure 1).

Guinea worm infection remained predominant among the farming villagers of Idere and Tapa communities because they relied on unprotected sources of water for domestic use. In one small village of about 90 people, visited by the investigator, ten villagers (six adults and four school children) were incapacitated by guinea worm infection at one time. Five out of the ten primary health workers who came for a primary health worker training course

Fig. 1: A photograph showing a woman collecting water from a water hole.

had guinea worm infection, while three could not complete the course due to incapacitation.

The difficulty created by lack of safe water had some adverse effect on agricultural productivity due to the time and energy used in search for water. Some villagers travelled by foot over three kilometres to collect water. Other farmers were forced by water scarcity to leave their work for town during the dry season (Richard 1974). The days spent in bed per person with guinea worm infection ranged from one to three months. Kale (1977) observed that the incidence of the infection was higher in the months of December to March which coincided with the season farmers planted

their crops. The large number of cases appearing during the period of low rainfall could be due to the fact that the pond cyclops reached their highest concentration when the volume of water in the ponds became small. Most infected individuals had more than one site of the guinea worm lesion. (see figures 2 and 3).

Fig. 2: A photograph showing guinea worm infection at the knee with multiple sites for the lesion.

Fig. 3: A photograph showing guinea worm protruding from the site of infection.

The worms did not erupt all at once but one after the other thus prolonging the period of debilitation. Some who had extended family members around shifted the farming duties on to healthy members.

There was, therefore, great need to find a solution to the water supply and Guinea worm problems of these villagers.

Fig. 3: A photograph showing guinea worm protruding from the site of infection.

The worms did not erupt all at once but one after the other thus prolonging the period of debilitation. Some who had extended family members around shifted the farming duties on to healthy members.

There was, therefore, great need to find a solution to the water supply and guinea worm problems of these villagers.

Past health education activities in Ibarapa District

The Ibarapa District of Oyo State has served as a rural health teaching and research area for the Faculty of Medicine, University of Ibadan since 1963. The then Western Regional Government of Nigeria had expanded health services in form of Dispensaries, Maternities and a Rural Health Centre in the District much earlier.

The health education activities had mainly been in the form of dissemination of health information through campaigns, posters, leaflets, film shows and health talks. Some health workers used compulsion to ensure that people complied with their instructions. The citizens had hither-to looked forward to what could be done for them. It was their general belief that the government would provide every amenity for them. The villagers had always expected health workers to bring "ready made" solutions to their problems. In the initial phase of this study, the villagers expected the investigator to provide them with amenities, as others had done before, in the form of free drugs and milk, to encourage them to take part in health programme activities.

The guinea worm problem among farmers in this area had not yet been solved. The provision of potable water would be an important measure in the control of the disease. Other simple control measures included boiling and filtering water. Unfortunately, these

simple, practicable and effective measures of controlling the infection had not been adopted. Oluwande (1975) expressed the opinion that the people with no piped water were too unsophisticated to prevent the disease except if they were helped. The health education programmes embarked upon to control the infection in the past did not bring about any noticeable change in the people's behaviour. This was confirmed by Kale (1977) when he wrote:

> In our experience, health education campaigns directed at preventing pollution of water supplies by active cases, or purification of infected water by boiling or filteration have been very disappointing and largely ineffective.

Numerous case studies have reported limited results or failure of community health projects, where health education activities were limited to information giving, and where the people or their representatives were not included as active participants in programme planning, implementation and evaluation. Thomas (1970) reported such failure in a Hydatid disease control effort in rural New Zealand. Johnson (1977) has also described similar failure of efforts which were primarily informational in a village water supply project in Azozo, Begbemidir Province, Ethiopia in 1959, during the first phase. It was when active efforts were made to involve the people to be served by the programmes that the programmes became successful. This involved the village community or their representatives in defining the problem themselves, deciding on actions

to be taken and participating in implementation and evaluation. An agricultural and community development project in Kenya was reported by Lele (1975) to have failed due to the use of a purely pedagogical approach.

There was evidence that Health Education approaches using the traditional type of teaching, which emphasised listening, observing and reading on the part of the recipients, had failed in the past in Ibarapa District. Also, the approach of making people do things during health campaigns when health workers were present did not result in long term change.

It was believed that modern health education techniques which emphasised personal and community self-reliance would be more effective. This study was designed to introduce one of those techniques: a community participation approach, to see what might happen if applied in an area where the older traditional health education approaches which relied mainly on information giving, campaigns and enforcement techniques, had failed to give satisfactory results.

The study design

The questions the study was set to answer were:

1. Would there be any significant difference in knowledge, attitude and behaviour of the control group between time 1 and time 2 ?

2. Would there be any significant difference in the knowledge, attitude and behaviour of the experimental group between time 1 and time 2 ?
3. Would there be any significant difference in knowledge, attitude and behaviour between the experimental and control groups at time 2 ?

Objectives

The study was to test the impact of a community involvement technique on the control of guinea worm infection. For the experimental approach, see Pages 41 - 44.

Specifically, the objectives of the approach to be tried in the experimental villages were:

1. The ten farming villages (experimental group) would each form a four-man village health committee at the end of October, 1973.
2. Each of the ten villages would select a Primary Health Worker by the end of October, 1973 to attend a training programme on the control of guinea worm in Idere town.
3. Each Primary Health Worker would share the knowledge and skills acquired during training with fellow villagers that he represented during the months of November to January.

4. The individual families in the villages in the experimental group would filter water for drinking by the end of November.
5. The farmers in the experimental group would carry clean (potable) water for drinking when going to their farms by the end of November.
6. The farming villages in the experimental groups would dig wells through self-help in their villages by the end of March, 1979.
7. No educational intervention would be carried out in the control group of villages.
8. An assessment would be made of the knowledge, attitude and behaviour of the people on the control of guinea worm at the beginning (time 1) and at the end (time 2) of the programme in both the experimental and the control communities.

Location and setting of study

Idere and Tapa are two towns having surrounding farming villages forming a community each. The two communities are located in the western part of Ibarapa District of Oyo State. The two towns are ten kilometres apart. Idere lies between Igbo-Ora and Aiyete towns while Tapa is between Aiyete and Inangan towns (see figure 4).

According to the 1963 Census, Ibarapa District had a total population of 136,613 people while Idere had 5,694 people and Tapa 11,024 people respectively.

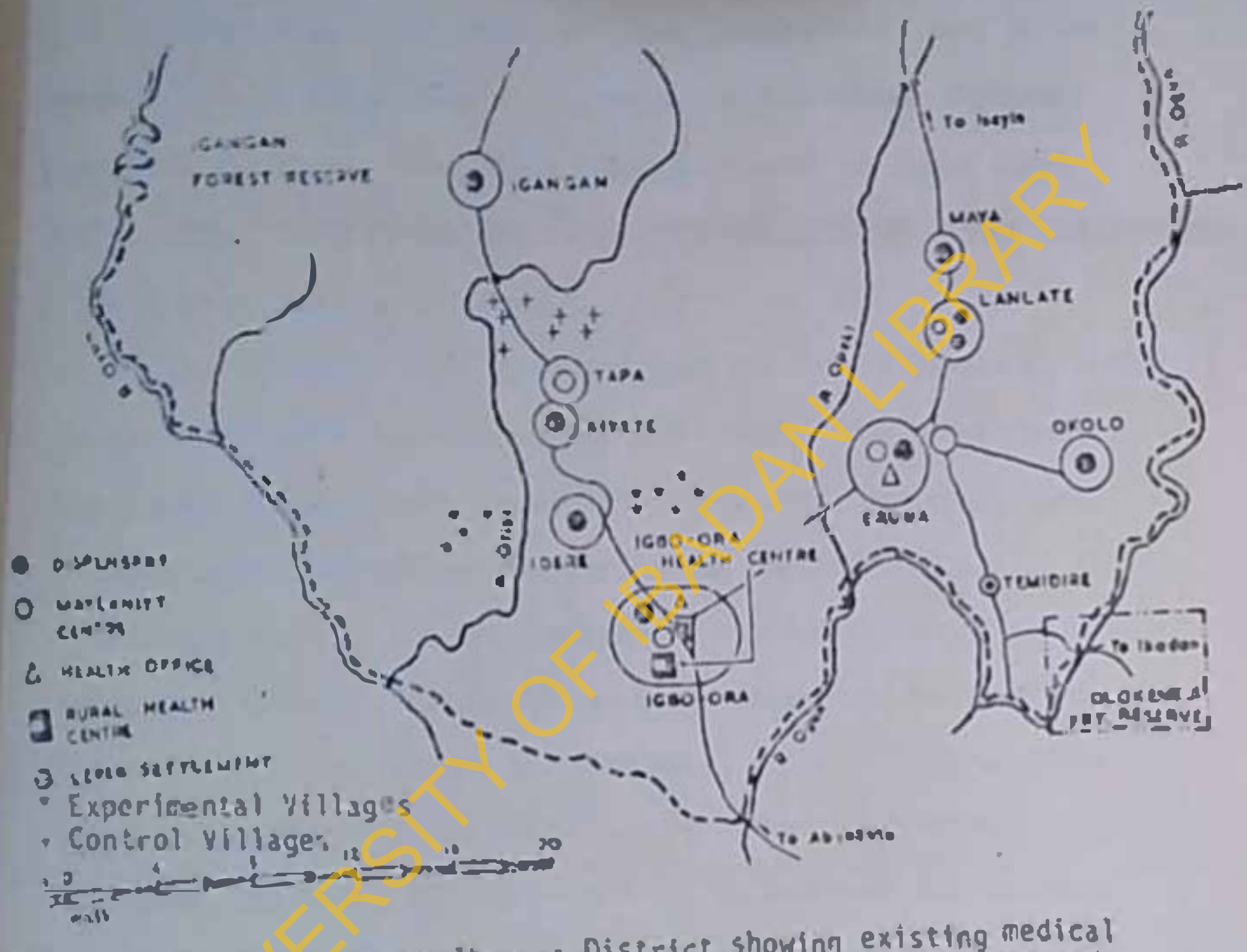


Figure 3 Map of Ibarapa District showing existing medical and health facilities plus the experimental and control villages used during the study

Adapted from the University of Ibadan Ibarapa Project Report Number 2

Like in other developing countries a majority of Nigerians live in rural areas. In Idere and Tana communities, most of the farmers live in their farming villages. A few others, however, live in their towns, from where they go to work on their farms daily. This study is not concerned with the farmers who do not live in their farming villages.

The inhabitants of Idere and Tapa are mainly Yoruba by tribe; though there are a few Fulani, Ibo and Afemai. The predominant occupation of the people is farming. They grow food crops like cassava, yams, vegetables, oranges, melon, millet and beans. The cash crops grown in the two communities include cocoa and tobacco. Apart from farming, few people are under government employment. There are yet other groups who have small scale industries like: dress-making (weaving and tailoring), blacksmith, goldsmith, carpentry and bakery. Others are hunters, butchers and traders.

There are some government agencies that are located in the two towns. These are a maternity, a dispensary and primary schools. Tapa has a one year old secondary school while Idere has none. Both towns have environmental sanitation workers, town planning authority, agriculture extension workers and community development workers.

The youths in the two towns have social clubs. The local government is building a library each in the two towns.

Idere community has an Oba but Tapa has a Baale.

Idere has fifty farming villages while Tana has thirty. Like in all farming villages in the district, each village in Idere and Tana is an agglomeration of houses built with mud walls and roofed with either thatch or corrugated iron sheets (see figure 5).

Figure 5: Photograph showing a part of a farming village with buildings roofed with thatch and corrugated iron sheets.

A village consists of five to fifty houses or living units. The buildings are dwelling apartments for individual families, which may be demarcated into two or more rooms.

For administrative purposes, each village has a head called Baale. The Baale has authority, both legal and judicial, in matters concerning the members of his village, so that every member owes individual allegiance to him in matters of corporate interest to the whole village.

Each village has "open door" to welcome people to build houses and live peacefully with others. This means that in a village, one may find a few families from other towns living and working happily as good neighbours. Most people from the same town however, prefer to live in clusters as a village.

The experimental villages are scattered and the distances between them ranged from a quarter kilometre to twenty kilometres apart. Some of the villages have motorable roads while others only have foot paths. The experimental and control villages lacked some essential amenities like clinics, dispensaries, pipe-borne water and wells, at the time the study started.

There are two primary schools for the 50 Idere villages, while the 30 villages of Tapa community have none.

Both Idere and Tapa communities trace their titles, names and ownership of property, especially land, to their paternal lineage. This was referred to by Okediji and Ogionwo (1973) as "Patrilineal Settlement".

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL CONCEPTS

The literature review, which includes attention to theoretical considerations supporting this study, covers the following fields.

1. the guinea worm infection.
2. educational intervention.
   (a) Community participation and interaction in the control of guinea worm.
   (b) Theoretical support.
   (c) Community education through primary health workers.

1. The guinea worm infection:

Guinea-worm infection which has been demonstrated to be curable and preventable is found predominantly in rural communities in developing countries where domestic water supply is from contaminated surface water (Onabamiro, 1952). Guinea-worm or Dracunculus medinensis occurs in West, Central and East Africa, the Sudan, Arabia, Iran, Turkey, Pakistan, Central India, Burma, the Caribbean Islands and the northern part of South America, where cases have been reported (Macleod, 1976). It was estimated in 1947 that 15 million people in Africa had guinea worm infection (Stoll, 1947). A study of guinea-worm in Ibadan District revealed an overall incidence of 13.5% (Kale, 1977).

Tobaloobo - one of the farming areas in Idere - had an incidence of 12.3% guinea worm infection in 1971 (Oluwande, 1971). In another study, out of the two hundred people interviewed in Idere, 34% of them indicated that they had the infection while out of the two hundred people interviewed in Tapa/Aiyete, 68% of them indicated having the infection (Ezekwen, 1975).

Individuals could be infected with guinea worm through drinking contaminated water. Water would become contaminated when an infected person with the guinea worm blister waded into a source of domestic water. The female worm would discharge its larvae into the water which could be taken up by cycloos (intermediate host). Man would be a victim whenever he drank the untreated water containing certain species of the cyclops. (Lucas and Gilles, 1973; Davey and Wilson, 1974; Onabamiro, 1952; Parekh and Kulkarni, 1958).

The infection would result in disability which could be mild or severe, accompanied with discomfort, pain insomnia and immobility, that disrupted normal daily activities. Other complications include cellulitis , abscess, arthritis, tendon contracture, epidydimo-orchitis and tetanus. (Kale, 1977; Ezekwen, 1975). Reports from Kale on the study of guinea worm infection in Ibadan District showed that the infection incapacitates people between three weeks to nine months, with an

Tobaloabo - one of the farming areas in Idere - had an incidence of 12.3% guinea worm infection in 1971 (Oluwande, 1971). In another study, out of the two hundred people interviewed in Idere, 34% of them indicated that they had the infection while out of the two hundred people interviewed in Tapa/Aiyete, 68% of them indicated having the infection (Ezekwen, 1975).

Individuals could be infected with guinea worm through drinking contaminated water. Water would become contaminated when an infected person with the guinea worm blister waded into a source of domestic water. The female worm would discharge its larvae into the water which could be taken up by cyclops (intermediate host). Man would be a victim whenever he drank the untreated water containing certain species of the cyclops. (Lucas and Gilles, 1973; Davey and Wilson, 1974; Onabamiro, 1952; Parekh and Kulkarni, 1958).

The infection would result in disability which could be mild or severe, accompanied with discomfort, pain insomnia and immobility, that disrupted normal daily activities. Other complications include cellulitis , abscess, arthritis, tendon contracture, epidydimo-orchitis and tetanus, (Kale, 1977; Ezekwen, 1975). Reports from Kale on the study of guinea worm infection in Ibadan District showed that the infection incapacitates people between three weeks to nine months, with an

average duration of one hundred days. The cost of treatment of the disease could be expensive (about five naira per head).

The appropriate solution would be action to prevent the occurrence of the disease by breaking the life cycle as indicated by (Lucas and Gilles, 1973) .

1. Treatment of those with the infection.
2. Those with obvious infections should be prevented from wading into source of water supply.
3. Boil water before drinking.
4. Filteration of water before use.
5. Use of chemicals like copper sulphate to destroy cyclops.
6. Provision of sanitary wells or pipe-borne water.

It has been reported by Belcher and Nurapa (1975) that depending on treatment alone is not very effective because patients treated with niridazole developed new guinea worm lesions some weeks later after the primary condition treated has healed. Some effective control measures were needed.

The control of the infection by the use of sanitary wells, and pots for filtering infected water had been demonstrated in Sarakki near Bangalore, India (Sridhar, 1978). The control of guinea worm is therefore very amenable to health education; because if people agree to take appropriate action to break the life cycle,

the transmission would cease.

2. Educational intervention

There are various possible health education intervention approaches, some of which include:

1. Instructional
2. Group Discussion Method
3. Community Involvement Technique
4. Consultation
5. Training
6. Counselling

The educational intervention strategies chosen in this study were (i) community involvement techniques in problem definition, setting priorities, decision making, implementation and evaluation of programme and (ii) training.

(i) Community participation and interaction

The investigator in this study proposed a theoretical model of six stages or levels in the participatory process in which the community members (farming villagers) could be involved in the process of achieving guinea worm control practices.

The model is similar to a number of change process models worked out by social science theorists and health education practitioners, some of which are discussed later in this chapter.

The model was operationalized on the participation of farming villagers in the improvement of their health status through education and self-reliance in the ten experimental villages at four levels: (1) The central health committee at Idere town, (2) the village health committees (3) village selected primary health workers and (4) in meetings with all the village people.

A theoretical model of community participation approach in the control of guinea worm

The participation of a community from the first level to the sixth did not take place automatically. The movement from the lower to the higher levels (see Appendix I) depended on the group interest, decision and readiness to accept and effect the stages sequentially. The six levels were as follow:

(a) Exposure:

The people who were not sensitised to guinea worm infection as a health problem were made more aware of it. The villagers were guided by the primary health workers to identify their health problem in terms of the existence of the guinea worm infection among them. They were helped to realize their susceptibility to the infection, the seriousness of the infection and the need to take effective action through self-help to control the disease.

(b) Assessment:

The inhabitants of each village were, at this level, involved in defining and analyzing the guinea worm problem. They were given opportunities to interprete the problem from their various perceptions. Consideration was also given to the possible alternative solutions to the problems, weighing the work load against their resources and potentialities in deciding what actions to take. The people reasoned and did things together.

(c) Decision:

At this crucial stage, there were two forces in action - positive and negative in that there were those interested in doing something new and others who wanted to retain the "status quo". This created two factions among them, those who wanted to accept the new programme, and solving the problem through self-reliance, and those who kept to the old idea of waiting for government to help. In taking decision, the people were guided by the use of their past experiences. After considering the feasibility and acceptability of the programme, the villagers finally came to an agreement on what, when and how to solve their guinea worm problem.

(d) Organization:

Having decided on what to do, the people at this stage planned how they would go ahead with action. They pooled their resources and were ready to work.

(e) Practice:

This was the trial stage to assess results. The action taken at this level could be due to temporary stimuli. It could be that some people participated at this level to comply with societal norms and avoid immediate blame from fellow community members. At this stage too, the people could weigh the resources invested against the outcome to determine if it was worth continuing. If the practice of filtration of water and construction of wells solved their problem, in ensuring that clean water was available for domestic use, then the people would maintain the practice thus leading to the next stage.

(f) Internalization:

Practices that meet people's expectations satisfactorily often lead to permanent adoption. Habits of the tried action would be formed and maintained. Growth and long term change would be thus achieved.

Theoretical support of the model

The concept of stages or steps in the change process has been supported by theoretical works of a number of behavioural and educational scientists.

The classical conditioning theory by Ivan Pavlov in 1927 (Jehu, 1970) stated that responses were evoked by stimuli. In Pavlov's experiment, there were three stages of learning described:

1. Before conditioning - Exciting stage
2. During conditioning - Acquisition stage
3. After conditioning - Habit formation stage.

These three stages were experienced by the experimental group of villages so that their process of participation was comparable to the Pavlov's experiment.

1. Excitation - Exposure. The ten farming villages were made to be aware that they could do something about guinea worm which was their great problem.
2. Acquisition - This covered the levels of decision making, organization of selves for action and practice. The villagers were given time to select a primary health worker who was trained and worked among them.
3. Habit formation - Internalization. The people, on their own, worked on the solution to guinea worm infection, satisfied themselves, and adopted the practice.

Writing on purposive behaviour in animals and men, Tolman (1932) affirmed that behaviour was goal directed since it would always be a getting away from something. There could be a selective preference for short or easy means-activities as against long or difficult ones.

This theory was demonstrated by the villagers in the Idere area where they tried to get away from guinea worm infection and the sufferings that accompany it. But of the various preventive measures, most people tried to find the easy way out and thus selected what they perceived as easier and short-term like filtering water, avoid wading into source of domestic water supply rather than digging wells.

Hence Ademuwagun (1975) explained that every human behaviour has a cause and to effect change in behaviour, the health programme must meet the real felt needs and interests expressed by the consumer.

There are additional theories in the social sciences that help to explain why the concept of community participation has relevance for influencing behaviour. The normative theory of social integration by Talcott Parson (Bredemeier, 1962) stated that people in traditional communities share basic values from their cultural heritage. Its members know and interact with one another according to accepted norms and patterns. Communities, though consisting of individuals, function as a unit to carry out some activities. The functional theory of social integratinn (Olsen, 1970) states that for efficient functioning of an organization (community), there must be division of labour, specialization and interdependence of all parts. The community

members in the experimental group of the investigator's study were organised to perform specific roles like the Primary Health Worker, the village Health Committee members, and the Central Health Committee members. The ultimate aim of the exercise was that the organization of communities should be meaningful and functional so that members would have some sense of belonging and control over their environment (Ross, 1967).

There have emerged over some years past, concepts and models developed by leaders and researchers in health education which provide theoretical support for the process of participation and change; many of which are similar to the model used in this study.

Green (1969) postulated a model of participation and change that the population should be involved in planning of programmes that concerned them. For the process of participation to be effective in influencing change, he pointed out that it would be necessary for them to be involved in the identification and definition of needs and problems; and in setting of objectives and establishment of priorities. In the identification of priorities, he went further to state that it required that the learners participate in bringing about awareness of the importance of the problem, community sanction or social acceptability for doing something about it and in selecting the methods to be used in solving the problem.

Right from the onset of exposure to creative new ideas, some form of active responses will usually be taking place in the minds of the community members. Such a response would facilitate individual involvement in determining what to do by channing perceptions and utilizing motivational force to make decisions on which to act (Griffiths, 1957). The involvement of individuals or groups requires participation in identification of problem, planning and implementing such a plan (Keyes, 1972).

The diffusion Model of Wilkening (1958) and Rogers (1962) came up with a series of stages in the process of adopting new innovations. These included:

1. Awareness and knowledge of the innovation
2. Interest in it
3. Mental evaluation
4. Actual trial
5. Adoption.

Ross (1967) developed a model from the field of community organization which has been popular, widely accepted, and used by people on field work. The model proposes four steps of involvement of the people in.

1. Identification of Problem
2. Study of the nature, meaning and implications of the problem

3. Decision regarding ultimate solutions

4. Action on the solution.

Johnson (1977) developed and field tested an instrument for measuring various levels of personal participation in community health programmes. The levels included participation in:

1. gaining knowledge and developing attitudes toward the problem
2. problem definition
3. decisions on action
4. implementation of decisions
5. continuation - reinforcement, feedback, evaluation and moving on to solving other problems.

It can be seen that the concept of participatory process is not new and has relevance in health education techniques to effect guinea worm control practices through self-reliance.

(ii) Education of the community through primary health workers

The concept of using various types of primary health care workers in promoting and facilitating community participation in solving health problems has been accepted as a major element of international health policy. This experiment has included elements of the emphasis of this approach. The process involved the formation of Community Health Committees, selection of Primary

Health Workers who would be trained for the community and would go back to work among their people and share with them what they have learned (Contact 41, 1977; Manzor, 1979; UNICEF/WHO, 1977; WHO, 1977; Schwartz, 1977). This approach to health education of the public has proved successful in other parts of the world: The Bare Foot Doctor in China (Banjo, 1977), the Rural Health Promoters in Guatemala State of Huehuetenango (Salubritas, 1978), Health Education Assistant in Danfa project, Accra, Ghana (Ward, 1979) and the Village Health Aides in Koje near Korea (Salubritas, 1978). Though the primary health workers have different names, background and support, their functions are similar. They were trained village health workers who belonged to the local community. They were prepared to give simple ~~promotive,~~ preventive and curative measures as well as on how to refer serious cases to health institutions for proper management. They were trained to carry out health education in their villages. The primary health workers were of different educational background in different places, and were either supported by the villagers or received a stipend from the government or its agencies.

One of the ten principles on the Primary Health Care programmes ~~recommended~~ by WHO Technical Reports (1977) was the reliance on local resources primarily in community participation in decision making, implementing and integration. The UNICEF/WHO Joint Committee on

Health Policy (1977) made a point that readiness for change would accellerate individuals' decision to participate in health programmes.

The Primary Health Workers were sent to their communities to share their experiences and involve their people in specific actions to take. Rine (1963) stressed that such practical experiences could only be effective if the people were adequately guided. Such guidance was provided by the investigator in this experiment. Maslow (1968) wrote that such guidance required trust; not making them do things or forcing them into a predetermined design, but rather letting them grow and helping them grow.

Knowles (1975) described situations in which individuals use their own initiative to learn when motivation is from within, i.e. they develop self-directed learning, or an andragogical approach to education so that in mass participation people would educate themselves to all possibilities of controlling their own destiny (Schwartz, 1977).

The training of Primary Health Workers in the control of guinea worm demanded their exposure to both theoretical and practical aspects of controlling the disease. It would enhance their knowledge, attitudes and what they would do about guinea worm.

There are some theories and philosophical bases for the community involvement approach that explain how learning occurs.

The WHO Expert Committee on Health Education of the Public listed some principles of education of the public to include:

1. Learning is an active process - Individual's own efforts would be required in bringing about change.
2. Motivation - Intrinsic factors that could make people learn were goals, interest and group approval.
3. Real life experiences and understanding - actual experiences in places like farms and village settings - would make the learning more meaningful (W.H.O., 1954).

Havelock and Havelock (1973) have enumerated some principles of education to be applied in the training of change agents. These include:

1. Structure - a training programme should be planned, have specific objectives and learning experiences that should be unfolded sequentially.
2. Relevance - The training should be relevant to the set of objectives, real social needs of the people, and also relevant to the trainee's back-ground or home situation as well as their needs and interests.
3. Reinforcement - The design should be such that the outcome could produce positive reinforcement. This would enable the people to appreciate the need to change and chances of reverting to earlier behaviour would be unattractive.

4. In the process of training, evaluation and feedback should be continuous.

5. Linkage - The training environment should be conducive for easy flow of communication and direct interaction between the trainees and trainers, among the trainees and their community members.

6. Involvement - The trainees need to actively involve the community in the programme.

7. Synergy - a number of inputs or stimuli from different sources to make a point meaningful to learners. This approach validates experience.

These concepts were operationalized through the following:

(a) The programme was structured, and had specific objectives and learning experiences which were relevant to the villagers health needs.

(b) The training was sequential during the three months period.

(c) Provision for reinforcement was given through the supervisory role of the investigator and community development officer.

(d) Feed-back was through reports received from primary health workers, and observations and findings during follow-up visits by the investigator.

(e) There were different health education inputs at various levels, such as the central health committee, Village Health Committee meetings and by the Primary Health Workers to the general village gatherings.

The Gestalt theory (Kingsley and Garry, 1962) emphasised the organization of ideas. The pattern of ideas and configuration of parts should be seen as a whole, instead of viewing them as separate entities. In the education of the community, the people were encouraged to view the whole programme as one. The different aspects of the programme were organised toward the achievement of the community objectives to control guinea worm and improve their health. This helped the people to gain insight, understanding and motivation to work and evaluate objectively.

There are some psychological principles for effective method of basic skill training (Bakare, 1975), some of which are:

1. Eye-hand co-ordination in measuring arm circumferences of under five children for evaluation of their nutritional status.
2. Thinking and reasoning required all through the programme especially during the primary health workers training, different levels of committee meetings and in all the stages of participatory process (see model on Pages 21 - 23).

3. Recognition of limits to attention span, and the factors that are needed to keep the attention of learners with little basic education.
4. It is important to facilitate a clear perception of details, so that all items of information are brought together and the learner synthesizes the whole. Johu (1970) explained that a solution to a problem could be built up in stages. This involved perception of the relationshins between the elements of a problem and its solution. The learner needed to recall relevant past experiences.

Thorndike in his educational research came up with the Law of Readiness, which when translated into educational terms by Rines (1963) stated that when people are ready to learn, to do so will be satisfying; but it will be annoying to be ready, and not be in a situation to learn, or be unprepared to learn and be expected to learn. This study was based on community readiness to work out solutions to their common health problems so that the people recognized their health problem and showed concern of readiness to learn to effect change. It was an opportunity for these villagers to show willingness and ability to take responsibility for their own health. The communities that were not ready were not involved.

Throughout the study, attempts were made to facilitate free flow of communication between the investigator, the primary health worker and the village people. The communication technique of message passing through different stages to the receiver was described by Rogers and Shoemaker (1971) as multistep flow model. A person from the local community was used in the Idere experiment. A local person (primary health worker) was used in order to communicate effectively to the recipients (farming villagers). The investigator, who was a professional health worker, communicated with the primary health worker and sought from him traditional stories, songs, proverbs and riddles. The primary health worker was encouraged to use such traditional media, for conveying health education messages to his people. A report of the Commonwealth Conference on Education (1970) asserted that simple media were specially useful in face to face teaching situations, or as supporting materials to direct communication with adult learners.

The training concepts from the afore-stated educational theories on learning and change processes, were applied in the training of primary health workers in this study. They have proved effective in teaching the theoretical and practical aspects of guinea worm control practices in the experimental villages.

Throughout the study, attempts were made to facilitate free flow of communication between the investigator, the primary health worker and the village people. The communication technique of message passing through different stages to the receiver was described by Rogers and Shoemaker (1971) as multistep flow model. A person from the local community was used in the Idere experiment. A local person (primary health worker) was used in order to communicate effectively to the recipients (farming villagers). The investigator, who was a professional health worker, communicated with the primary health worker and sought from him traditional stories, songs, proverbs and riddles. The primary health worker was encouraged to use such traditional media, for conveying health education messages to his people. A report of the Commonwealth Conference on Education (1970) asserted that simple media were specially useful in face to face teaching situations, or as supporting materials to direct communication with adult learners.

The training concepts from the afore-stated educational theories on learning and change processes, were applied in the training of primary health workers in this study. They have proved effective in teaching the theoretical and practical aspects of guinea worm control practices in the experimental villages.

CHAPTER THREE

METHODOLOGY

The study was done in ten villages in Idere Community (experimental group) and in eight villages in Tapa Community (control group). The rationale for choosing Tapa and Idere farming villages for this study was that the study was directed to communities that considered guinea worm as a priority problem requiring attention. The two groups of villages could be manageable in an experiment of this nature and had not been exposed to such a programme before. The villages included in the study were those visited, whose members had expressed the view that guinea worm was one of their major health problems.

Tapa

The control villages in Tapa were chosen because many villagers came from the area for treatment of guinea worm infection at the Rural Health Centre, Igbo-Ora. The villages were listed and located. The eight villages chosen were those that were more isolated by distance from the experimental group. They also had populations similar to the experimental group. The selected eight villages were enumerated and visits to them were restricted to keep them in their natural and existing situation without influencing their knowledge.

attitude and behaviour. There were 140 households in the control group with a total population of 904 people (see table 1 and appendix II)

Table 1

Comparison of the size of both the Control and Experimental Groups

	Experimental	Control
No. of Villages	10	8
No. of Families	160	140
Population	979	904

Idere

The experimental villages in Idere Community were visited and invited to send representatives to attend a meeting in Idere town during which the guinea worm control programme was explained to them. Time was given for the discussion of the issue among the villagers, so that they could decide to accept or reject the programme. Hence the ten villages in the experimental group were those which were interested and had indicated their willingness or requested to participate. Follow-up visits were made to the villages in the experimental group to explain the programme in further detail.

There were 160 families in the ten villages with a population of 979 people. (See table 1 and appendix III).

A three-man Village Health Committee (VHC) was formed in each of the ten villages. The fourth person that joined each committee later was chosen by the villagers as their Primary Health Worker (PHW). The Village Health Committees were asked to send two representatives each to Idere town for Central Health Committee (CHC) meetings. Thus, Committee meetings were held at central and village levels to discuss the feasible ways of defining and solving the problem. At the Central Health Committee meetings, the Obas, Chiefs, Village heads, Religious leaders, Local Government Councillor for Health, Community Development Officer, the Chief Medical Officer for Ibarapa District, the Midwife, the Dispenser in Idere and the Lecturer in Health Education assigned to Ibarapa were requested to attend. They were involved in the programme planning to put their thoughts together. The time and place of meeting were decided by the people to ensure that it was convenient for them.

Each of the ten villages in the experimental group was asked to choose a Primary Health Worker (PHW) who should be:

(1) a married person who lived and worked in the village;

(2) a volunteer whom the villagers would accept;

(3) a respected person in the village who has love for his people and

(4) a person who knows how to read and write the local language - Yoruba

All the PHW's (see appendix IV for the list) attended training in Idere town on simple epidemiology and control of guinea worm. Other topics covered included nutrition, village and home sanitation, and prevention of common infections (see appendix V for course content). The training was on Saturdays and Sundays for three months being the time chosen by the PHWs. They went back to their villages during the week, called all the villagers together at a convenient time (usually

fig. 6: A primary health worker educating his people during a meeting of the villagers.

in the evening after the day's work) to share their experience with their fellow villagers (see Figure 6). Each village as a group thus learned the skills directly from one of their own villagers who understood the culture and practices of his people. This method transferred skill to the local people so that they could work toward change through their own effort at their own pace (Bennis, et al., 1961. Benne and Birnbaun, 1976). The areas covered during training were designed to elicit the advantages of taking action to reduce guinea worm infection. The course emphasized:

(1) Seriousness of guinea worm

(2) Susceptibility of farmers to the infection

(3) Actions farmers could take to protect themselves from the disease.

(4) Action farmers could take to protect themselves and their families from diarrhoea, malaria, environmental health problems, and to overcome malnutrition.

To enable the people to comprehend the deeper meaning of the content in the context of their own culture, the presentations took the form of riddles, jokes, folk-songs, proverbs, parables and short stories in Yoruba language. The training took place in the locality of the villagers, using the natural setting. The investigator visited the villages to supervise the work of the FMNs,

to assess the skills the farming villagers had acquired on simple, feasible and acceptable measures to control the disease. A healthy competition was created among the villagers which also motivated them to action.

The experiment

Idere and Tapa had no current and adequate census. It was imperative to have a good knowledge of the population of the villages concerned with the study. Permission was then sought from the Baale of each village before anything was done. The farming villagers were enumerated during which the following steps were taken:

(1) Every village was identified by name and code numbers were given.

(2) Identification of the number of households or families in each village.

(3) The number of persons living in each family or household in the village were identified.

(4) Demographic data was collected from each respondent (see interview schedule on Appendix VI).

There were two communities involved in the study - an experimental and control - that were alike as possible at time 1 in regard to potential factors that could affect the results.

The community involvement programme was introduced to the experimental group but withheld from the control group. The knowledge, attitude and behaviour of the people toward the disease was assessed at the beginning (Time 1) and at the end of three months (Time 2).

The changes that occurred in the experimental group were then compared with the changes that occured in the control group. Any differences observed were considered attributable to the effect of the educational approach used in the experimental group of villages. Though the selection of the villages in the experimental group was by voluntary participation, the control group was selected on the basis of similar residential area, occupation and having the same priority health problem - guinea worm. The two groups of villages were similar in other relevant variables like age, sex, religion and education. (see tables 2 to 6, pages 51 - 58). The characteristics of the two communities have been discussed (see location and setting of study, pages 12 - 16).

Data were collected using an interview schedule which was translated into Yoruba language (Appendix VI) and was pretested outside the experimental and control communities. Some of the PHNs and teachers who normally reside in the villages were trained on the interview technique required for collecting the data. The advantages of using these interviewers were:

1. The presence of the interviewers did not create fear or suspicion in the minds of the respondent.
2. There was no haste because the interviews were held at the times the respondents were most relaxed - in the evenings after the days work.
3. There was full co-operation as the respondents expressed their opinion without reluctance.

On the spot supervision of the interviewer's work was done. The investigator also did re-check a week later to ensure reliability of the responses.

The responses were gathered on household basis. The respondents were the heads of the families and where they were absent, any individual male or female next in position in the family who should be an adult was interviewed. Where an individual lived alone, he should be an adult to qualify to be interviewed. The information gathered from the interview included:

1. Demographic data.
2. Knowledge of the infection in terms of (a) having been a victim, or seen an infected co-villager; (b) how one gets infected and (c) known preventive measures.
3. A determination of the attitudes of the people by exploring their opinions about the disease.

4. Information on action the people had taken to control the disease, and the effectiveness of such action.

Some questions in the interview schedule were repeated in different forms to test the validity of the information given by the respondents.

The Primary Health Workers, Village Health Committee members, and some school teachers in the villages were very interested in terms of action taken in respect of the control of the disease. The investigator spent some days in the villages to observe what the people were doing.

The PHWs were given a written test and interviewed at the end of their training to assess:

1. How they felt about the training
2. Why they came for the training
3. What benefits their respective villages derived
4. What they understood their role to be in their village
5. What changes had taken place in the villages since they had been involved in the health education programme.

Assumptions

It was assumed during the study that:

1. There were no socio-cultural differences between the experimental and control groups

2. There were factors that might have influenced the knowledge, attitude and behaviour of the experimental group toward the control of the disease before the study started. Some neighbouring villages close to the experimental group had been provided with wells. Those villages had been visited by some health workers at which time villagers infected with guinea worm had been referred to the Rural Health Centre for treatment.
3. The failure to take right actions in the control of guinea worm infection was because the farming villages did not know the cause of the disease.
4. The farmers who were mostly illiterate could be amenable to change in knowledge, attitude and behaviour through health education intervention.

Hypotheses:

The following were the hypotheses of the study:

1. There would be no significant difference in the knowledge of the control and experimental groups at time 1.
2. There would be a significant difference in the knowledge of the control and experimental groups at time 2.
3. There would be no significant difference in some specified attitudes of the control and experimental groups toward guinea worm infection at time 1.

4. There would be a significant difference in some specified attitudes of the control and experimental groups toward the control of guinea worm infection at time 2.

5. There would be no significant difference in some specified effort of the control and experimental groups to control guinea worm at time 1.

6. There would be a significant difference in some specified effort of the control and experimental groups to control the infection at time 2.

Definition of terms

The following are the terms of reference for some of the key words and expressions used in the text of this dissertation:

1. Guinea-Worm Control:

   The effort by individuals or groups of people to protect themselves from and to reduce the incidence of guinea-worm infection.

2. Community:

   A group of people who live in farming villages in a rural area which owe allegiance to a central town, in which most of them have a family house.

3. Involvement/Participation:

A process where-in recipients of health programmes take part in the planning, implementation and evaluation. Through this, a collective responsibility for community decision can be taken to ensure programmes are acceptable, available and accessible to all.

4. Self-help:

This is an attempt to be independent, self-reliant, self-sufficient with or without any financial aid from outside, in carrying out any specific project or health action. People of the locality take responsibility and utilize their own resources in meeting their own felt health needs.

5. Farming Village:

A group of families who choose to live together near their farms which may be located some distance from their town. The villagers live in these places for, from 3 to 21 days continuous stay before they come to town on visits. Farming is the chief occupation of the inhabitants.

6. House-hold/Family:

This is a collection of the father, mother, children and at times other relatives living together under one roof.

7. Primary Health Worker:

The primary health worker is called "Olutoju Ilera" by the villagers in Yoruba language, meaning "care-taker of health" or "village health caretaker". He is a community chosen person or volunteer who is trusted by his people, resident in the village, who has been given trainins in simple procedures which the villagers can take to promote and protect their health. He is a part-time health worker who continues with his normal farming occupation, yet passes on health knowledge and skills to his neighbours on what to do to be healthy.

He derives any support for his health activities from the villagers. Other names used for this type of worker are: Village Health Worker, Front Line Health Worker, Rural Health Promoter and Community Health Worker.

6. House-hold/Family:

This is a collection of the father, mother, children and at times other relatives living together under one roof.

7. Primary Health Worker:

The primary health worker is called "Olutolu Ilera" by the villagers in Yoruba language, meaning "care-taker of health" or "village health caretaker". He is a community chosen person or volunteer who is trusted by his people, resident in the village, who has been given training in simple procedures which the villagers can take to promote and protect their health. He is a part-time health worker who continues with his normal farming occupation, yet passes on health knowledge and skills to his neighbours on what to do to be healthy.

He derives any support for his health activities from the villagers. Other names used for this type of worker are: Village Health Worker, Front line Health Worker, Rural Health Promoter and Community Health Worker.

8. Abbreviations

(i) P. H. W. ---- Primary Health Worker

(ii) S. A. ---- Strongly agree

(iii) A ---- Agree

(iv) U ---- Uncertain

(v) D ---- Disagree

(vi) SD ---- Strongly disagree

(vii) V.H.C. ---- Village Health Committee

(viii) C.H.C. ---- Central Health Committee

8. Abbreviations

(i)	P. H. W.	----	Primary Health Worker
(ii)	S. A.	----	Strongly agree
(iii)	A	----	Agree
(iv)	U	----	Uncertain
(v)	D	----	Disagree
(vi)	SD	----	Strongly disagree
(vii)	V.H.C.	----	Village Health Committee
(viii)	C.H.C.	----	Central Health Committee

CHAPTER FOUR

FINDINGS AND RESULTS

During the study, data were collected on selected demographic characteristics and on the knowledge, attitude, and behaviour of the experimental and control groups toward the control of guinea worm infection. This chapter therefore presents:

1. demographic characteristics of the control and experimental groups,
2. data secured from the interview schedule on knowledge, attitudes and behaviour of the people toward the infection, and
3. information gathered from observations and informal oral interview.

1. Demographic characteristics of the control and experimental groups

Age (and Sex) distribution:

The experimental and control villages were comparable in age and sex except for the school age children where there were some differences (see table 2.) The age sub-group, where differences were shown included the 5 - 9 years in which the control had 115 (12.7%) out of 904 people; while the experimental group had 157 (16%) out of 979 people. Also, the proportion of the population within age sub-group 10-14 years in the control population was 78 (8.6%) out of 904 people; while the experimental group had 145 (14.8%)

Table 2: Age Distribution of the Control and Experimental population

Age	Control				Experimental			
	Male	Female	Total	Percentage	Male	Female	Total	Percentage
0 - 4	78	88	166	18.4	80	92	172	17.6
5 - 9	59	56	115	12.7	76	81	157	16.0
10 - 14	31	47	78	8.6	71	74	145	14.9
15 - 19	55	40	95	10.5	45	25	70	7.2
20 - 24	20	16	36	4.0	10	13	23	2.3
25 - 29	60	84	144	15.9	70	73	143	14.6
30 - 34	69	80	149	16.5	67	83	150	15.3
35 - 39	41	46	87	9.6	39	41	80	8.3
40 - 44	10	9	19	2.1	13	8	21	2.1
45 - 49	7	1	8	0.9	9	2	11	1.1
50 & above	3	4	7	0.8	5	2	7	0.7
TOTAL :	430	474	904	100	485	494	979	100

out of 979 people. The experimental villagers had a larger number of children of school age living with them. This was due to the fact that there was no primary school in the control area while the experimental area had two primary schools. It meant that the children had to stay where there were schools for them.

The proportion of people in age sub-group 20-24 in both the experimental and control areas were small. This could be due to two reasons: (1) The majority of this age-group had left their farming villages for towns in pursuit of jobs that could earn them salaries. (2) Others could have left the villages to further their education elsewhere.

Comparison of the control and experimental groups of respondents (see questions 2 - 6 on appendix VI)

Sex distribution:

There were more males than females interviewed in both the experimental and control groups being 97.5% and 88.6% males respectively. The percentage of females interviewed in the control group was 11.4% while in the experimental group, it was 12.5%. These figures show close similarities when comparing the two groups of villages (see table 3).

Age:

The minimum age required of any individual to be a respondent was twenty years.

Table 4 shows the age distribution of the people

Table 3

Sex Distribution of Respondents to the interview schedule in the Experimental and Control Groups

Experimental Group

Village	Male	Female	Total
001	15	5	20
002	13	1	14
003	11	2	13
004	8	-	8
005	14	3	17
006	14	2	16
007	6	-	6
008	7	-	7
009	15	4	19
010	37	3	40
Total	140	20	160
%	87.5	12.5	100

Control Group

Village	Male	Female	Total
021	15	2	17
022	11	1	12
023	17	4	21
024	30	-	30
025	15	5	20
026	12	3	15
027	12	-	12
028	12	1	13
Total	124	16	140
%	88.6	11.4	100

Table 4:

Age Distribution of Respondents to the Interview Schedule in the Control and Experimental Groups

Age	Control		Experimental	
	Number	Percentage	Number	Percentage
20 - 24	8	5.7	3	1.8
25 - 29	45	32.2	51	31.9
30 - 34	50	35.7	62	38.8
35 - 39	22	15.0	15	9.3
40 - 44	9	6.4	12	7.5
45 - 49	3	2.1	10	6.3
50 and above	3	2.1	7	4.4
Total	140	100	160	100

who answered the interview schedule. A large number of them could not tell their exact age. However, they know some important events in the district that could be used to tell their anproximate one. A list of events in the district compiled by the medical records section of the Rural Health Centre, Inbo-Ora was used to estimate the ages of individuals interviewed. Most of the resoondents in the experimental and control nroups were within the age sub-nroun 30-34 and 25-29. In the age sub-nroup 30-34, there were 50 (35.7%) out of the 140 respondents in the control nroup and 62 (38.8%) out of 160 resoondents in the experimental nroup. For the age sub-nroun 25-29, the respondents were 45 (32.2%) of the control and 51 (31.9%) of the experimental nroups. The number of neonle in age sub-nroup 20-24 in the two areas of study was few. The reason was that narents did not encnurage their youna men of this age nroun to take un farming or stay in farming villages. The youna men were encouraged to no to the cities for "white collar" jobs or further education.

The two nrouns of neonle in the study have shown close similarity even in the number of neonle who respondod to the interview schedule from the age sub-nroups shown on table 1.

Relision:

The two main relinious affiliations of the people in the two communities were to Christianity and Islam. Table 5 shows the Moslem relicious group having the largest number of people among the heads of families interviewed in the two communities. The Moslems were 50.6% of the experimental group and 55% of the control group. The Christians constituted 42.5% in the experimental villages and 40% in the control villages. Those who believed in traditional relegion were 1.4% in the experimental villages and 1.4% in the control villages. A few others claimed to have no relision. These were 2.5 % of the experimental group and 3.6% of the control group.

Educational level:

The majority of the farmers were illiterate in the two communities, being 52.1% in the control group and 51.2% in the experimental group (see table 6). A number of the people however, benefited from adult literacy courses conducted in the two areas a few years back. 17.9% of the control and 13.8% of the experimental groups had attended adult education programmes. A large proportion of the few who attended primary education could not finish their training while none of them ever attended any secondary school.

Table 5: Religion of Heads of Families in the Experimental and Control Farming Villages

	Experimental		Control	
	Number	Percentage	Number	Percentage
Christianity	68	42.5	56	40
Moslem	81	50.6	77	55
Traditional	7	4.4	2	1.4
Others	4	2.5	5	3.6
Total	160	100	140	100

Table 6: Educational Level of the People who Responded to the Interview Schedule in the Control and Experimental Groups

	Control Group		Experimental Group	
	Number	%	Number	%
Illiterate	73	52.1	32	51.2
Arabic Education	19	13.6	22	13.8
Adult Education	25	17.9	30	18.8
Some Primary Education	18	12.8	15	9.4
Completed Primary School	5	3.6	3	1.8
Some Secondary Education	-	-	-	-
Completed Secondary Education	-	-	-	-
Post Primary Professional Training	-	-	3	1.8
Others (Secondary Modern School)	-	-	5	3.2
TOTAL :	140	100	160	100

There were 5% of the respondents in the experimental group who were primary school teachers. Of this group, 1.8% of them received professional training and 3.2% attended secondary modern school.

The demographic data presented above have shown that the two communities had similar characteristics.

2. Data secured from interview schedule

Information was collected, by using the interview schedule, to test the differences in (a) knowledge, (b) attitudes and (c) behaviour of the people toward the infection. For each of the three variables, tests were done on data collected to know:

(i) if the two communities were comparable before the study started,

(ii) if there were factors other than the health education programme that could possibly affect change during the period of study and

(iii) if the health education programme had effected any change in the experimental group.

A summary of tests of significance of changes in the selected critical variables on knowledge, attitudes and behaviour between the control and experimental villages at time 1 and time 2 are shown on table 7.

Table 7: The chi-squaretests of significance on variables on guinea worm infection in the two groups of villages

Variables	Control Group		Experimental Group		Comparison of the Experimental with the Control Group			
	Before Vs. After Comparisons		Before Vs. After Comparisons		Before		After	
	Probability	Significant	Probability	Significant	Probability	Significant	Probability	Significant
1. Knowledge	0.9>P>0.80	No	P<0.001	Yes	P<0.001	Yes	P<0.001	Yes
2. Attitudes								
a. Susceptibility	P>0.99	No	P<0.001	Yes	P<0.001	Yes	P<0.001	Yes
b. Seriousness	0.10>P>0.05	No	P<0.001	Yes	0.2>P>0.1	No	P<0.01	Yes
c. Use of Safe Water	0.95>P>0.90	No	P<0.001	Yes	0.3>P>0.2	No	P<0.001	Yes
d. Orthodox Treatment	0.9995>P>0.995	No	P<0.001	Yes	0.3>P>0.2	No	P<0.001	Yes
e. Traditional Treatment	0.90>P>0.80	No	P<0.001	Yes	0.80>P>0.70	No	P<0.005	Yes
f. No Treatment	0.95>P>0.90	No	P<0.025	Yes	0.30>P>0.70	No	P<0.005	Yes
g. Dependence on Govt. Help	0.10>P>0.05	No	P<0.001	Yes	0.30>P>0.20	No	P<0.001	Yes
3. Control Action Taken	0.99>P>0.975	No	P<0.001	Yes	0.1>P>0.05	No	P<0.001	Yes

Table 7: The chi-squaretests of significance on variables on guinea worm infection in the two groups of villages

Variables.	Control Group		Experimental Group		Comparison of the Experimental with the Control Group			
	Before Vs. After Comparisons		Before Vs. After Comparisons		Before		After	
	Probability	Significant	Probability	Significant	Probability	Significant	Probability	Significant
1. Knowledge	0.9>P>0.80	No	P<0.001	Yes	P<0.001	Yes	P<0.001	Yes
2. Attitudes								
a. Susceptibility	P>0.99	No	P<0.001	Yes	P<0.001	Yes	P<0.001	Yes
b. Seriousness	0.10>P>0.05	No	P<0.001	Yes	0.2>P>0.1	No	P<0.01	Yes
c. Use of Safe Water	0.95>P>0.90	No	P<0.001	Yes	0.3>P>0.2	No	P<0.001	Yes
d. Orthodox Treatment	0.9995>P>0.995	No	P<0.001	Yes	0.3>P>0.2	No	P<0.001	Yes
e. Traditional Treatment	0.90>P>0.80	No	P<0.001	Yes	0.80>P>0.70	No	P<0.005	Yes
f. No Treatment	0.95>P>0.90	No	P<0.025	Yes	0.30>P>0.70	No	P<0.005	Yes
g. Dependence on Govt. Help	0.10>P>0.05	No	P<0.001	Yes	0.30>P>0.20	No	P<0.001	Yes
3. Control Action Taken	0.99>P>0.975	No	P<0.001	Yes	0.1>P>0.05	No	P<0.001	Yes

There was no significant change in the control villages between the period before (time 1) and the period after the study (time 2) in all the nine variables tested. The experimental villages exhibited significant changes in all the nine variables between the period before and after the experimental health education approach had been implemented.

When the control and the experimental villages were compared at time 1, there were found to be significant differences between them in their level of knowledge about guinea worm and perception of their susceptibility to the infection. In the remaining seven variables the base line results were comparable before implementation of the experimental health education approach in the experimental group of villages.

In addition to the significant changes that occurred in all the nine study variables in the experimental villages between time 1 and time 2 referred to above, there were also found to be significant differences in all the nine variables between the control and experimental villages at time 2.

Thus, the test results have evidence that there were significant changes in all the nine variables on knowledge, attitudes and behaviour associated with the health education approach applied in the experimental villages.

There was no significant change in the control villages between the period before (time 1) and the period after the study (time 2) in all the nine variables tested. The experimental villages exhibited significant changes in all the nine variables between the period before and after the experimental health education approach had been implemented.

When the control and the experimental villages were compared at time 1, there were found to be significant differences between them in their level of knowledge about guinea worm and perception of their susceptibility to the infection. In the remaining seven variables the base line results were comparable before implementation of the experimental health education approach in the experimental group of villages.

In addition to the significant changes that occurred in all the nine study variables in the experimental villages between time 1 and time 2 referred to above, there were also found to be significant differences in all the nine variables between the control and experimental villages at time 2.

Thus, the test results have evidence that there were significant changes in all the nine variables on knowledge, attitudes and behaviour associated with the health education approach applied in the experimental villages.

There was no significant change in the control villages between the period before (time 1) and the period after the study (time 2) in all the nine variables tested. The experimental villages exhibited significant changes in all the nine variables between the period before and after the experimental health education approach had been implemented.

When the control and the experimental villages were compared at time 1, there were found to be significant differences between them in their level of knowledge about guinea worm and perception of their susceptibility to the infection. In the remaining seven variables the base line results were comparable before implementation of the experimental health education approach in the experimental group of villages.

In addition to the significant changes that occurred in all the nine study variables in the experimental villages between time 1 and time 2 referred to above, there were also found to be significant differences in all the nine variables between the control and experimental villages at time 2.

Thus, the test results have evidence that there were significant changes in all the nine variables on knowledge, attitudes and behaviour associated with the health education approach applied in the experimental villages.

There was no significant change in the control villages between the period before (time 1) and the period after the study (time 2) in all the nine variables tested. The experimental villages exhibited significant changes in all the nine variables between the period before and after the experimental health education approach had been implemented.

When the control and the experimental villages were compared at time 1, there were found to be significant differences between them in their level of knowledge about guinea worm and perception of their susceptibility to the infection. In the remaining seven variables the base line results were comparable before implementation of the experimental health education approach in the experimental group of villages.

In addition to the significant changes that occurred in all the nine study variables in the experimental villages between time 1 and time 2 referred to above, there were also found to be significant differences in all the nine variables between the control and experimental villages at time 2.

Thus, the test results have evidence that there were significant changes in all the nine variables on knowledge, attitudes and behaviour associated with the health education approach applied in the experimental villages.

(a) Test of knowledge:

For the test of knowledge of guinea worm infection, the respondents were scored on the following four points from the interview schedule found in the appendix VI.

1. knowledge on how to reconnize guinea worm
   (see question 8)
2. knowledge of the causes of the disease
   (see question 9)
3. knowledge on the means of transmission
   (see questions 10 and 11)
4. knowledge on guinea worm control measures
   (see questions 17-18)

Test of comparability

Hypothesis 1: That there would be no significant difference in the knowledge of the control and experimental groups at time 1.

At the beginning of the study, the experimental groun had 4 (2.5%) of the 160 respondents scoring all the four points right (table 7.1) and 23 (14.4%) of them had three points right. But in the control group, no one scored all the four points while only 10 (7.1%) of the 140 respondents scored three points right. The majority of both the experimental and control grouns scored one and two points right.

Table 7.1:

Knowledge of both the Experimental and Control Groups Before Intervention

Group	Scores 4	3	2	1	0	Total
Experimental	4	23	51	63	19	160
Control	0	10	53	75	2	140
Total	4	33	104	138	21	300

x^2 = 22.75 d.f P<0.001

Table 7.2

Knowledge of the Control Group before and after intervention

Period	Scores 4	3	2	1	0	Total
Before	0	10	53	75	2	140
After	0	6	55	77	2	140
Total	0	16	108	152	4	280

x^2 = 1.046 d.f 0.90 >P >0.30

The chi-square = 22.75,(4 df) P<0.001 indicated that there was a statistical significant difference between the control and the experimental groups at time 1.

Test of no other factors causing change in knowledge:

The control group did not show much difference in the knowledge of the disease between time 1 and time 2 (see table 7.2). The chi-square = 1.044,(4 df) 0.90> P>0.30 supports the statement that there was no statistically significant difference in knowledge of the control group at time 1 and time 2.

Test of effect of health education

Hypothesis 2: That there would be a significant difference in knowledge of the control and experimental groups at time 2.

There was a marked change in the knowledge of the experimental group between time 1 and time 2 (see table 7.3). At time 1 only 4 (2.5%) of the 160 respondents scored all the four points but at time 2, 42 (26.3%) had all the four points correct. At time 1, 23 (14.4%) of them scored three points while at time 2, those who scored three points correct were 47 (29.4%) of the respondents. The number of those who knew nothing or scored one point decreased drastically at time 2. For statistical test, x^2 = 92.404, (4 df) P<0.001. The data showed that the change was significant and tended to support the second hypothesis stated above. (Table 7 for the overall results of the performances of the two groups).

Table 7.3

Knowledge of the experimental group before and after intervention

Period	Score 4	3	2	1	0	Total
Before	4	23	51	53	19	160
After	42	47	59	10	2	160
Total	46	70	110	73	21	320

χ^2 = 52.[illegible] d.f. P<.001

Table 7.4

Knowledge of both the experimental and control groups after intervention

Group	Score 4	3	2	1	0	Total
Experimental	42	47	59	10	2	160
Control	0	6	55	77	2	140
Total	42	53	114	87	4	300

χ^2 = 124.629 7d.f P<0.001

Invariably, the experimental group was still more knowledgeable at time 2 (table 7.4) than the control group. The chi-square equals 124.628,(4 df) P<0.001 indicating that there was statistically significant difference in the two groups at time 2.

Source of information on the knowledge of guinea worm (question 12 of appendix VI)

In the control group, there was no change in responses on the sources of information on the knowledge of guinea worm at time one and time two (table 7.5). The experimental group had a significant change in their responses concerning their sources of information at time 2. 88 respondents constituting 59.5% attributed their knowledge of the disease to the teaching of the primary health workers in their area. The villagers who had earlier got some information about the disease before the programme started, received more detailed explanation from their primary health workers. It was on that basis that they ascribed their level of knowledge of the infection at time 2 to the effort of their primary health workers.

Experience of incidence of guinea worm (see questions 13, 14 and 16 of appendix VI)

There has been no study of the incidence of guinea worm in the two groups of villages before. They responded to the statement: did you have guinea worm more than three years ago (before 1975) ?

Table 7.5 Sources of information on the knowledge of guinea worm in the control and experimental groups

	Control		Experimental	
	Before	After	Before	After
Radio	13	13	15	10
Clinic	17	17	21	18
Visiting Health Worker	21	21	33	30
Friend	6	6	2	-
Poster	-	-	-	-
Film Show	-	-	-	-
School	6	6	2	2
P.H.W.	-	-	-	80

Table 8: Experience of incidence of guinea worm infection reported by respondents in the control and experimental villages

TIME	CONTROL	EXPERIMENTAL
More than 3 years ago	90.7%	32.1%
Within 3 years past	57.1%	51.3%
Now	39.2%	37.4%

The answers showed close figures in the level of their ability to recollect the occurence of guinea worm in the control and experimental villages which were 80.7% and 82.1% respectively, (see table 8). When they responded to the statement, have you had guinea worm in the past three years (1975-1978) ? there were 57.1% positive responses in the control group and 54.3% in the experimental group. The responses regards having the disease at the time of intervier revealed that 39.2% of the respondents in the control villages claimed to have the disease, while 37.4% of the respondents in the experimental group claimed to have the infection. These figures indicated a similar level of the incidence in the two communities. The figures also show that the incidence was a bit higher in the control group during the period of study.

(b) Attitudes toward guinea worm:

Some specified attitudes toward guinea worm infection on which the control and experimental villagers expressed their opinion during the interview schedule (appendix VI) were:

1. the seriousness of guinea worm infection (question 19).
2. their susceptibility to the infection (question 29),
3. eradication of the infection through the use of safe water (question 31)
4. Solving the guinea worm problem through self-reliance (question 33) and

5. choice of treatment of the infection (questions 35-37)

Test of comparability of the control and experimental groups

Hypothesis 3: That there would be no significant difference in some specific attitudes of the control and experimental groups toward the guinea worm infection at time 1.

The experimental and control groups had a similar perception of the disease concerning the statement that every age-group could be at risk at time 1. Table 9.1 shows that 60 people (i.e. 37.5%) in the experimental group and 67 people (i.e. 47.9%) of the control group disagreed in their opinion. 73 respondents in the experimental and 48 others in the control groups were uncertain. The x^2 equals 13.885, (4 df) $P<0.001$ indicating that there was significant difference between the two groups. The hypothesis that there would be no significant difference in attitudes between the two groups at time 1, has no backing from the statistical data above.

The differences in their perceived susceptibility to the disease detected have implications for health education. 115 people out of the 140 resoondents in the control group and 133 out of the 160 respondents in the experimental group were in a state of uncertainty and disagreement. In such a situation, the people would not have any fear about the disease.

Table 9.1 Comparison of Perception of both the control and experimental groups on susceptibility of all the groups to guinea worm infection at time 1

	Opinion					
Group	SA	A	U	D	SD	Total
Control	12	13	99	80	27	140
Experimental	10	17	73	89	11	160
Total	22	30	121	69	38	300

X^2 = 23.385 1df P< 0·001

Table 9.2

Comparison of the responses of the control and experimental groups to the statement: Guinea worm should not be considered a serious disease at time 1

	Opinion					
Group	SA	A	U	D	SD	Total
Control	4	21	3	64	48	140
Experimental	9	17	2	81	51	160
Total	13	38	5	145	99	300

X^2 = 6.690 4df 0.2>P>0.1

There was need therefore for an intervention, to increase the awareness of the experimental groun on their susceptibility to the infection. If they could realize that the whole population of the village was at risk of the infection, then that could enable them to take action to control the disease.

The two communities exhibited similarity in their perception of the seriousness of the infection at time 1. Table 9.2 shows x^2 equals 6.690, (4 df) 0.2> P >0.1 indicating that there was no statistically significant difference in the two groups at time 1. 112 out of the 140 respondents in the control group and 132 out of the 160 respondents in the experimental group disagreed with the statement that guinea worm should not be considered a serious disease. It meant that most people feared the disease because of its high incidence and the complications that infected individuals experienced.

In response to the statement that: providing safe water for family use would eradicate guinea worm at time 1, the two groups presented similar opinion (see table 9.3). More people tended to agree with the statement in the two groups. The chi-square equals 5.5 (4 df) 0.3>P>0.2 pointing out that there was no significant difference statistically in their opinion. The hypothesis that there would be no significant difference in attitudes between the two study areas at time 1 was thus supported.

Table 9.3 Comparison of the opinion of the control and experimental groups on the statement: Providing safe water for family use will eradicate guinea worm at time 1

	Opinion					
Groups	SA	A	U	D	SD	Total
Control	22	41	29	35	13	140
Experimental	25	56	26	37	16	160
Total	47	97	55	72	29	300

x^2 = 5.5 4df 0.3>P>0.2

Table 9.4

The opinion of the experimental and control groups on treatment of guinea worm with Orthodox medicine before the study

	Opinion					
Groups	SA	A	U	D	SD	Total
Control	28	45	19	27	21	140
Experimental	35	40	13	43	29	160
Total	63	85	32	70	50	300

x^2 = 5.837 4df 0.30>P>0.20

Table 9.3 Comparison of the opinion of the control and experimental groups on the statement: Providing safe water for family use will eradicate guinea worm at time 1

	Opinion					
Groups	SA	A	U	D	SD	Total
Control	22	41	29	35	13	140
Experimental	25	56	26	37	16	160
Total	47	97	55	72	29	300

χ^2 = 5.5 4df 0.3>P>0.2

Table 9.4

The opinion of the experimental and control groups on treatment of guinea worm with Orthodox medicine before the study

	Opinion					
Groups	SA	A	U	D	SD	Total
Control	28	45	19	27	21	140
Experimental	35	40	13	43	29	160
Total	63	85	32	70	50	300

χ^2 = 5.837 4df 0.30>P>0.20

At the beginning of the study, information was collected on the opinion of the two communities concerning the treatment of the infection with orthodox medicine (see table 9.4). The $x^2 = 5.837$, (4 df) $0.30>P>0.20$ pointing it out that there was no significant difference statistically.

The data supported the hypothesis that there would be no significant difference in attitudes of the control and experimental groups at time 1. Another look at table 9.4 manifested a fair distribution of the opinion of the two communities between agree and disagree. This tended to mean that though many people favoured the use of modern medicine, yet a large number of the people still did not consider such treatment acceptable.

In comparing the control and the experimental groups before the study on their attitudes toward the use of traditional medicine for the treatment of guinea worm (see table 9.5), it was observed that the two groups had similar opinion. They tended to agree more with the use of traditional medicine though a very close finure also showed their disagreement. The statistical test $x^2 = 1.916$, (4 df) $0.80>P>0.70$ indicated that there was no significant difference in their opinion at time 1.

The villagers of the two study areas had similar opinions at time 1 on the statement that leaving the infection alone to disappear without any treatment was the best way to manage the

Table 9.5 The opinion of the control and experimental groups on the treatment of guinea worm with traditional medicine before the study

Groups	Opinion					
	SA	A	U	D	SD	Total
Control	11	45	28	29	27	140
Experimental	15	57	23	35	30	160
Total	26	102	51	64	57	300

X^2 = 1.916 4 df 0.80>P>0.70

Table 9.6

The opinion of the experimental and control groups on leaving guinea worm infection to disappear without treatment before this study

Groups	Opinion					
	SA	A	U	D	SD	Total
Experimental	7	11	20	49	70	160
Control	5	12	22	35	66	140
Total	12	26	42	94	136	300

X^2 = 1.706 4df 0.80>P>0.70

infection. Table 9.6 shows the responses with 220 out of the 300 respondents who disagreed with the above statement. The x^2 = 1.705, (4 df) 0.80>P>0.70 meant that there was no statistically significant difference in the opinion of the two communities at time 1.

Community self-help to promote health, to prevent and to cure diseases are some major goals of health education. So, the perception of the two communities under study were assessed to determine their opinion on dependence on government help or self-help to overcome the guinea worm problem.

At time 1 (see table 9.7) the control and the experimental groups had similar opinions; as they tended to support the view that waiting for government to solve the problem was preferred to self-help. The chi-square equals 5.734, (4 df) indicated 0.3>P>0.2 which meant that there was no significant difference in the opinion of the two communities at time 1. The hypothesis that there would be no significant difference in the attitudes of the control and experimental groups at time 1 was thus supported.

The above statistical evidences showed that the two groups of villages were comparable in the seven attitudinal variables on guinea worm infection although there was some difference detected in their perception of susceptibility to the disease.

Table 9.7

The responses of the control and experimental groups to the statement: Waiting for government to solve the problem is preferred to self-help at time 1.

	Opinion					
Groups	SA	A	U	D	SD	Total
Control	35	48	13	29	15	140
Experimental	33	74	17	25	11	160
Total	68	122	30	54	26	300

$x^2 = 5.734$ 4df $0.3>P>0.2$

Test of no other factors causing change in attitudes

The responses of the control group to their perceived susceptibility to guinea worm infection at time 1 and time 2 tended to present no differences (see table 10.1). The chi-square equals 0.084, (4 df) P>0.99 indicated that there was no statistically significant difference in the opinion of the control group before and after the study on their perceived susceptibility of the infection.

When considering the opinion of the control group on their perception of the seriousness of guinea worm infection (see table 10.2) at time 1 and time 2, it appeared to show only marginal differences. The opinions of the respondents during the two periods of interview tended to disagree with the statement that guinea worm should not be considered a serious disease. This meant that the people realized that guinea worm was a serious disease. The x^2 = 9.108, (4 df) 0.1>P>0.05 showed that there was no statistically significant difference in their opinion at time 1 and time 2.

The control group showed some evidence of the opinion that the use of safe water in the family would eradicate guinea worm at time 1. Table 10.3 manifested the opinion of the respondents before and after the study. 63 respondents out of a total of 140 agreed at time 1, and 64 out of the 140 respondents agreed at time 2. Their opinions before the study began and at the end of the study were similar.

Table 10.1 The perception of the control group on susceptibility of all age groups to guinea worm infection at time 1 and time 2

	Opinion					
Period	SA	A	U	D	SD	Total
Before	12	13	48	40	27	140
After	11	13	49	39	28	140
Total	23	26	97	79	55	280

x^2 = 0.034 4df p>0·99

Table 10.2 The responses of the control group to the statement: Guinea worm should not be considered a serious disease at time 1 and time 2

	Opinion					
Period	SA	A	U	D	SD	Total
Time 1	4	21	3	64	48	140
Time 2	2	22	4	65	47	140
Total	6	43	7	129	95	280

x^2 = 9.108 4df 0.1>P>0.05

Table 10.3 The opinion of the control group on the statement: Providing safe water for family use will eradicate guinea worm at time 1 and time 2

	Opinion					
PERIOD	SA	A	U	D	SD	Total
Time 1	22	41	29	35	13	140
Time 2	21	43	30	31	12	140
Total	43	84	59	69	25	280

x^2 = 0.142 1df 0.95>P>.90

Table 10.4 The opinion of the control group on the treatment of guinea worm with Orthodox medicine before and after study

	Opinion					
Period	SA	A	U	D	SD	Total
Before	28	45	19	27	21	140
After	26	46	18	28	22	140
Total	54	91	37	55	43	280

x^2 = 0.152 1df. 0.9995>P>0.995

The x^2 = 0.142, (4 df) 0.95>P>0.90 has suggested that there was no significant difference in their attitudes between time 1 and time 2.

The responses of the control group to the statement that guinea worm is best treated with modern medicine (table 10.4) revealed that the people slightly favoured the modern medicine at time 1 and time 2. At time one 73 respondents agreed while 48 others disagreed to the statement. At time 2, 72 people agree while 50 respondents disagreed. The figures manifest close similarity in their opinion during the two periods of interview. The x^2 = 0.152, (4 df) 0.995>P>0.995. This meant that there was no significant difference statistically in their opinion at time 1 and time 2.

In comparing the opinion of the control group before and after the study on the treatment of guinea worm with traditional medicine (table 10.5) it was found that 56 out of 140 respondents favoured the traditional treatment at time 1 while 55 out of 140 respondents favoured this mode of treatment at time 2. 56 respondents disagreed at time one while 57 people disagreed at time 2. These figures showed the closeness in the responses of the people during the two periods of interview. The x^2 = 1.224, (4 df) 0.90>P>0.90 indicated that there was no statistically significant difference in the responses at time 1 and time 2.

The x^2 = 0.142, (4 df) 0.95>P>0.90 has sunnested that there was no significant difference in their attitudes between time 1 and time 2.

The responses of the control group to the statement that guinea worm is best treated with modern medicine (table 10.4) revealed that the people slightly favoured the modern medicine at time 1 and time 2. At time one 73 respondents agreed while 48 others disagreed to the statement. At time 2, 72 people agreed while 50 respondents disagreed. The figures manifest close similarity in their opinion during the two periods of interview. The x^2 = 0.152, (4 df) 09995>P>0.995. This meant that there was no significant difference statistically in their opinion at time 1 and time 2.

In comparing the opinion of the control group before and after the study on the treatment of guinea worm with traditional medicine (table 10.5) it was found that 56 out of 140 respondents favoured the traditional treatment at time 1 while 55 out of 140 respondents favoured this mode of treatment at time 2. 56 respondents disagreed at time one while 57 people disagreed at time 2. These figures showed the closeness in the responses of the people during the two periods of interview. The x^2 = 1.224, (4 df) 0.90>P>0.80 indicated that there was no statistically significant difference in the responses at time 1 and time 2.

The x^2 = 0.142, (4 df) 0.95>P>0.90 has sunnested that there was no significant difference in their attitudes between time 1 and time 2.

The responses of the control group to the statement that guinea worm is best treated with modern medicine (table 10.4) revealed that the people slightly favoured the modern medicine at time 1 and time 2. At time one 73 respondents anreed while 48 others disagreed to the statement. At time 2, 72 people anreed while 50 respondents disagreed. The figures manifest close similarity in their opinion during the two periods of interview. The x^2 = 0.152, (4 df) 0999S>P>0.995. This meant that there was no significant difference statistically in their opinion at time 1 and time 2.

In comparing the opinion of the control group before and after the study on the treatment of guinea worm with traditional medicine (table 10.5) it was found that 56 out of 140 respondents favoured the traditional treatment at time 1 while 55 out of 140 respondents favoured this mode of treatment at time 2. 56 respondents disagreed at time one while 57 people disagreed at time 2. These figures showed the closeness in the responses of the people during the two periods of interview. The x^2 = 1.224, (4 df) 0.90>P>0.80 indicated that there was no statistically significant difference in the responses at time 1 and time 2.

Table 10.5 The opinion of the control group on the treatment of guinea worm with traditional medicine before and after the study

	Opinion					
Period	SA	A	U	D	SD	Total
Before	11	45	28	29	27	140
After	13	42	28	29	28	140
Total	24	37	56	58	55	280

x^2 = 1.224 4df. 0.90>P>0.80

Table 10.6 The opinion of the control group on leaving guinea worm infection to disappear without treatment before and after the study

	Opinion					
Period	SA	A	U	D	SD	Total
Before	5	12	22	35	66	140
After	3	15	22	35	65	140
Total	8	27	44	70	131	280

x^2 = .802 4df. 0.95>P>0.90

possibly due to diffusion between the experimental and control groups, though the investigator felt this was unlikely as the areas were some distance apart.

Since there were no statistically significant changes in the control group between time 1 and time 2 from the data presented in this sub-section, it would help to strengthen the point that any significant change in the experimental group between time 1 and time 2 could be due to the effect of health education input.

Test of the effect of health education input

Hypothesis 4: That there would be a significant difference in some specified attitudes between the control and experimental groups toward the control of guinea worm infection at time 2.

Table 11.1 revealed a wide margin of difference in the perception of the experimental villages on their susceptibility to the infection before and after the study. 10 (6.3%) of the respondents strongly agreed and 17 (10%) agreed to the statement that all age-groups are susceptible to the infection at time 1. At time 2, up to 70 (45.8%) of the people strongly agreed and 71 (44.4%) of them agreed to the statement. This showed a change in the opinion of the respondents from disagree to agree at time 2. The $x^2 = 157.596$, (4 df) $P<0.001$ showing that the change was significant in the attitude of the experimental group between time one and time two.

Table 10.7 The responses of the control group to the statement: Waiting for government to solve the problem is preferred to self-help at time 1 and time 2

	Opinion					
Period	SA	A	U	D	SD	Total
Time 1	35	37	13	29	26	140
Time 2	22	26	16	36	40	140
Total	57	63	29	65	66	280

X^2 = 8.918 4df. $0.1 > P > 0.05$

possibly due to diffusion between the experimental and control groups, though the investigator felt this was unlikely as the areas were some distance apart.

Since there were no statistically significant changes in the control group between time 1 and time 2 from the data presented in this sub-section, it would help to strengthen the point that any significant change in the experimental group between time 1 and time 2 could be due to the effect of health education input.

Test of the effect of health education input

Hypothesis 1: That there would be a significant difference in some specified attitudes between the control and experimental groups toward the control of guinea worm infection at time 2.

Table 11.1 revealed a wide margin of difference in the perception of the experimental villages on their susceptibility to the infection before and after the study. 10 (6.3%) of the respondents strongly agreed and 17 (10%) agreed to the statement that all age-groups are susceptible to the infection at time 1. At time 2, up to 70 (43.8%) of the people strongly agreed and 71 (44.4%) of them agreed to the statement. This showed a change in the opinion of the respondents from disagree to agree at time 2. The $x^2 = 157.596$, (4 df) $P<0.001$ showing that the change was significant in the attitude of the experimental group between time one and time two.

Table 11.1 The Perception of the experimental group on susceptibility of all age groups to Guinea worm infection before and after intervention

	Opinion					
Period	SA	A	U	D	SD	Total
Before	10	17	73	49	11	160
After	70	71	7	10	2	160
Total	80	88	80	59	13	320

x^2 = 157.596 4df. P<0.001

Table 11.2 Comparison of perception of the control and experimental groups on susceptibility of all age groups to guinea worm infection at time 2

	Opinion					
Period	SA	A	U	D	SD	Total
Control	11	13	49	39	28	140
Experimental	70	71	7	10	2	160
Total	81	84	56	49	30	300

x^2 = 150.313 4df. P< 0.001

In comparing the experimental and control groups of villages at time 2 (table 11.2), the experimental group showed improvement in their level of perception of susceptibility to the infection, more than the control group. In the experimental group 141 (88.1%) of the 160 respondents agreed to the statement that all ages were susceptable to guinea worm infection. But in the control group only 24 (17.1%) of the 140 respondents agreed to the statement. The x^2 = 150.313, (4 df) P<0.001 suggested that a statistically significant difference existed between the two groups of villages at time 2. The hypothesis that there would be a significant difference between the two groups at time 2 was thus supported.

There was a change in the opinion of many of the experimental group between time 1 and time 2. At time 2 no one agreed to the statement that guinea worm was not a serious disease. Hence more people were found to disagree with the statement (table 11.3). The statistical test showed the chi-square equals 35.14, (4 df) P<0.001 indicating that there was significant difference in their perception of the seriousness of the disease between time 1 and time 2. It also signified the effect of the health education intervention during the period of study.

Table 11.3

Responses of the exnerimental group to the statement: Guinea worm should not be considered a serious disease at time 1 and time 2

	Opinion					
Period	SA	A	U	D	SD	Total
Time 1	9	17	2	81	51	160
Time 2	0	0	1	90	69	160
Total	9	17	3	171	120	320

X^2 = 35.14 4df P<0.001

Table 11.4 Comparison of the responses of the control and experimental groups to the statement: Guinea worm should not be considered a serious disease at time 2

	Opinion					
Group	SA	A	U	D	SD	Total
Control	2	22	4	65	47	140
Experimental	0	0	1	90	69	160
Total	2	22	5	155	116	300

X^2 = 14.761 4df P<0.01

At time 2 (see table 11.4), out of the 160 people in the experimental group, 90 (56.3%) of them disagreed and 69 (43.1%) others strongly disagreed with the statement that the infection should not be considered a serious disease. Out of the 140 people in the control group, 65 (46.4%) of them disagreed and 47 (33.6%) others strongly disagreed with the statement. The x^2 = 14.761, (4 df) P<0.01 showed that there was statistically significant difference in attitudes between the two groups at time 2 due to the effect of the health education programme on the experimental group.

The table 11.5 showed a shift in opinion of the experimental group from disagree to agree between time 1 and time 2. It meant that the people tended to have the opinion at time 2 that the provision of safe water would eradicate guinea worm infection. The x^2 = 36.8, (4 df) P<0.001 indicating that there was a significant difference statistically between time one and time two in the attitudes of the experimental villages. The change experienced by this group was in the right direction toward the control of the infection brought about by the community involvement approach used in the study.

In comparing the control and experimental groups, at time 2 table 11.6 showed more members of the experimental community agreeing more to the statement that guinea worm would be eradicated with the use of safe water, than the control community.

Table 11.5 The opinion of the Experimental group on the statement: Providing safe water for family use will eradicate guinea worm at time 1 and time 2

Period	Opinion					
	SA	A	U	D	SD	Total
Time 1	25	56	26	37	16	160
Time 2	45	85	7	20	3	160
Total	70	141	33	57	19	320

x^2 = 36.8 4df P<0.001

Table 11.6 Comparison of the opinion of the control and experimental groups on the statement: Providing safe water for family use will eradicate guinea worm at time 2

Groups	Opinion					
	SA	A	U	D	SD	Total
Control	21	43	30	34	12	140
Experimental	45	85	7	20	3	160
Total	66	128	37	54	15	300

x^2 = 44.297 4df P<0.001

The chi-square equals 44.297,(4 df) P<0.001 signified that there was a significant difference between the experimental and control groups in the attitudes toward the disease at time 2. The hypothesis that there would be a significant difference in attitudes between the experimental and the controlgroups at time 2 was supported by these data.

The experimental group favoured the use of modern medicine in the treatment of guinea worm at time 2. Table 11.7 showed 75 (46.9%) of the 160 respondents who agreed and 72 (45%) of them who disagreed at time 1. But at time 2, 103 (64.4%) of the respondents agreed while only 42 (26.3%) of them disagreed. The people seemed to be sceptical though it did not seem to be significant. Many of the respondents, 13 at time 1 and 15 at time 2, still remained undecided. The x^2 = 21.496, (4 df) P<0.001 pointed to the fact that there was a statistically significant difference in the attitude of the people between time 1 and time 2 in the use of orthodox medicine to treat their guinea worm infection.

From the data collected after the study period, there was an observed difference in the opinion of the experimental and control groups on the treatment of guinea worm with orthodox medicine (table 11.8). 72 (51.4%) of the 140 respondents in the control group agreed to the use of modern medicine while 103 (64.4%) of the 160

Table 11.7 The opinion of the experimental group on the treatment of guinea worm with Orthodox medicine before and after intervention

Period	Opinion					
	SA	A	U	D	SD	Total
Before	35	40	13	43	29	160
After	61	42	15	35	7	160
Total	96	82	28	78	36	320

X^2 = 21.196 4df $P < 0.001$

Table 11.8 The opinion of the control and experimental groups on the treatment of guinea worm with Orthodox medicine after the study

Group	Opinion					
	SA	A	U	D	SD	Total
Control	26	46	18	28	22	140
Experimental	61	42	15	35	7	160
Total	87	88	33	63	29	300

X^2 = 21.833 4df $P < 0.001$

respondents in the experimental group agreed to the use of orthodox medicine. 50 (35.7%) of the control and 42 (26.3%) of the experimental groups disagreed with the use of that treatment. The chi-square equals 21,833, read P<0.001 at 4 df meaning that there was significant difference between the two groups in their attitudes toward the use of modern medicine at time 2. This supports the hypothesis that there would be a significant difference between them at time 2.

The responses of the experimental group on their opinion of the use of traditional medicine to treat guinea worm (see table 11.9) at time 1 and time 2 showed some variations in the figures for the two periods. Of the 160 respondents 72 (45%) of them agreed at time 1 while 36 (22.5%) of them agreed at time 2. At time 1, 65 (40.6%) of them disagreed while at time 2, 104 (65%) of them disagreed with the statement that the guinea worm was best treated with traditional medicine. The x^2 = 22.25, (4 df) P<0.001 showing that the difference was significant. The change experienced could be due to the influence of the investigator and the primary health workers who encouraged infected individuals to go for treatment at the Rural Health Centre.

Table 11.9 The opinion of the experimental group on the treatment of guinea worm with traditional medicine before and after intervention

	OPINION					
Period	SA	A	U	D	SD	Total
Before	15	57	23	35	30	160
After	5	31	20	61	43	160
Total	20	88	43	96	73	320

x^2 = 22.25 4df $P < 0.001$

Table 11.10 The opinion of the control and experimental groups on treatment of guinea worm with traditional medicine after intervention

	Opinion					
Group	SA	A	U	D	SD	Total
Control	13	42	28	29	28	140
Experimental	5	31	20	61	43	160
Total	18	73	48	90	71	300

x^2 = 19.847 4df $P < 0.005$

In comparing the two groups at time 2, (table 11.10) the experimental villages tended to withdraw from the use of traditional medicine. However, 36 (22.5%) of the experimental group respondents still agreed to the use of the traditional medicine. 55 (39.3%) of the respondents in the control group agreed to that mode of treatment. The $x^2 = 19.817$, (1 df) $P<0.005$ indicated that there was statistically significant difference between the two groups thus supporting the hypothesis that there would be a significant difference in attitudes between the two communities at time 2.

There were 20 (12.5%) of the respondents in the experimental villages who were uncertain of what to do when infected. These people could constitute a serious impediment in the control of the disease.

In the responses of the people to the statement "guinea worm was best treated by leaving it to disappear", the experimental villages had a change in their opinion between time 1 and time 2. Though the respondents tended to disagree at time 1 (table 11.11) they disagreed more at time 2. The chi-square equals 13.1, (1 df) $P<0.025$ which showed that a significant change had occurred between time 1 and time 2 in their opinion. The people had right direction of change from agree and undecided to disagree to no treatment for guinea worm infection. The hypothesis that there would be a

significant change in the attitudes of the experimental group of villages between time 1 and time 2 was thus supported. The difference observed could be due to the health education intervention between time 1 and time 2. But the 10 (6.3%) people who agreed to the statement and the 11 (6.9%) others who were uncertain could constitute a group that could sustain the spread of the disease in the area.

In comparing the experimental and control groups at time 2, (table 11.12) there was a significant difference observed. The x^2 = 16.803,(4 df) p<0.005 indicated that there was statistically significant difference between the two groups at that time. The hypothesis that there would be a significant difference in the attitudes between the experimental and control groups at time 2 was supported. The difference was in the fact that there were less people(6.3%) who agreed in the experimental group that guinea worm infection should not be treated than (12.9%) in the control group while more people (86.2%) in the experimental group disagreed than those (71.3%) in the control villages.

The problem of depending on Government for the provision of amenities instead of providing such amenities, through self-reliance was assessed. The statement was: "waiting for government to solve the problem is preferred to self-help".

Table 11.11 Opinion of the experimental group on leaving guinea worm infection to disappear without treatment before and after intervention

	Opinion					
Period	SA	A	U	D	SD	Total
Before	7	14	20	69	70	160
After	0	10	11	67	72	160
Total	7	24	31	136	142	320

x^2 = 13.1 4df P<0.025

Table 11.12 The opinion of the experimental and control groups on leaving guinea worm infection to disappear without treatment after the study

	Opinion					
Group	SA	A	U	D	SD	Total
Experimental	0	10	11	67	72	160
Control	3	15	22	35	65	140
Total	3	25	33	102	137	300

x^2 = 15.903 4df P< 0.005

Table 11.11 Opinion of the experimental group on leaving guinea worm infection to disappear without treatment before and after intervention

	Opinion					
Period	SA	A	U	D	SD	Total
Before	7	14	20	49	70	160
After	0	10	11	67	72	160
Total	7	24	31	116	142	320

X^2 = 13.1 4df P<0.025

Table 11.12 The opinion of the experimental and control groups on leaving guinea worm infection to disappear without treatment after the study

	Opinion					
Group	SA	A	U	D	SD	Total
Experimental	0	10	11	67	72	160
Control	3	15	22	35	65	140
Total	3	25	33	102	137	300

X^2 = 15.903 4df P< 0.005

In the opinion of the experimental group at time 1 and time 2 (table 11.13) there appeared to be a change in that at time 2, no one could strongly agree to the statement. Only 17 (10.6%) of the respondents agreed at time 2 while at time 1, up to 107 (66.9%) agreed. 36 (22.5%) of the respondents disagreed at time 1, but up to 140 (87.5%) of them disagreed at time 2. The chi-square equals 76.632, (4 df) P<0.001 indicated that there was a significant difference in the attitude of the experimental villagers between time 1 and time 2. The figures showed that the people were aware of the need for self-help at time 2. The change in the attitude was in the right direction that could likely lead to change in behaviour.

Though there were some forms of changes at time 2 in both the experimental (table 11.13) and control (table 10.7) a comparison of the two groups at time 2 (table 11.14) indicated that changes in the experimental group were much more than what occurred in the control group. The χ^2 = 57.939,(4 df) P<0.001 supported the statistically significant difference between their opinion. The hypothesis that there would be a significant difference in the attitudes of the experimental and control groups at time 2 was supported. The difference observed could be due to the impact of the community involvement approach on the control of the infection.

Table 11.13 The responses of the experimental group to the statement: Waiting for government to solve the problem is preferred to self-help at time 1 and time 2

	Opinion					
Period	SA	A	U	D	SD	Total
Time 1	33	74	17	25	11	160
Time 2	0	17	3	79	61	160
Total	33	91	20	104	72	320

χ^2 = 70.632 df P< 0.001

Table 11.14 The responses of the control and experimental groups to the statement: Waiting for government to solve the problem is preferred to self-help at time 2

	Opinion					
Group	SA	A	U	D	SD	Total
Control	22	26	16	36	10	140
Experimental	0	17	3	79	61	160
Total	22	43	19	115	101	300

χ^2 = 39.994 df P< 0.001

(c) Effort of the people to control guinea worm

To assess the respondents effort to control guinea worm infection, they responded to questions 44 and 49 (see appendix VI). The respondents were scored on any correct measure taken to avoid the infection:

1. Filteration of water
2. Boiling water
3. Use of sanitary well
4. Carrying water from the villages for use in their farms

Test of comparability of the two groups:

Hypothesis 5: That there would be no significant difference in some specified effort of the control and experimental groups toward the control of guinea worm infection at time 1.

The control and experimental groups appeared to have similar effort to control guinea worm infection before the study began. Table 12.1 showed the $x^2 = 5.679$, (2 df) $0.10>P>0.05$ which indicated that there was no statistically significant difference between the two communities. Though 6 (3.75%) of the respondents in the experimental group who were primary school teachers living among the farming villagers had been taking right measures to control the disease, they however, did not wield any influence on the other community members.

Table 12.1 Efforts to control guinea worm in both the experimental and control groups before the study

Group	Effort: Did Nothing	Wrong Measure	Right Measure	Total
Experimental	111	43	6	160
Control	105	35	0	140
Total	216	78	6	300

X^2 = 5.679 2df. $0.10 > P > 0.05$

Table 12.2 Efforts to control guinea worm in the control group before and after the study

Period	Effort: Did Nothing	Wrong Measure	Right Measure	Total
Before	105	35	0	140
After	101	39	0	140
Total	206	74	0	280

X^2 = 0.294 2df. $0.99 > P > 0.975$

Test of no other factors causing change in the effort to control guinea worm infection

In the control group, 4 people moved from doing nothing to doing something which was wrong. No one did anything right in respect of effort to control the infection at time 1 and time 2. Table 12.2 showed that there was no significant change in their effort between time 1 and time 2. $x^2 = 0.294$, (2 df) $0.99>P>0.975$ has suggested that there was no statistically significant change that took place between time 1 and time 2.

Test of effect of health education input

Hypothesis 6: That there would be a significant difference in some specific effort of the control and experimental groups to control the infection.

Table 12.3 showed changes in the experimental group from a large number of people (111 or 69.4%) doing nothing at time 1 to a majority (120 or 75%) of the people doing something right at time 2. The $x^2 = 174.2$, (2 df) $P<0.001$. The hypothesis that there would be a change in behaviour of the experimental group at time 2 was strongly supported. But the fact that there were 21 (14.1%) people doing nothing and 17 (10.6%) others taking wrong action at time 2 could pose some threat on the rest of the community members.

Table 12.3 Efforts to control guinea worm in the experimental group before and after intervention

Period	Effort: Did Nothing	Wrong Measure	Right Measure	Total
Before	111	43	6	160
After	23	17	120	160
Total	134	60	126	320

χ^2 = 174.2 2df. $P < 0.001$

Table 12.4 Efforts to control guinea worm in both the experimental and control group after the study

Group	Effort: Did Nothing	Wrong Measure	Right Measure	Total
Experimental	23	17	120	160
Control	101	39	0	140
Total	124	56	120	300

χ^2 = 177.148 2df. $P < 0.001$

In comparing the control and the experimental groups at time 2, (table 12.4) there was a marked difference. The χ^2 = 177.146 (2 df) P<.0001 showed that there was statistically significant difference between the behaviour of the control and experimental groups at time 2. None in the control group took any right action while 120 (75%) of the experimental villagers took right action to control the infection at time 2.

The wrong measures taken by both the control and the experimental groups in their effort to control guinea worm were:

(1) the use of alum to disinfect water

(2) prayer over water

(3) the use of incantation and white chalk on water before drinking.

The changes in behaviour which took place in the experimental group included:

(1) Filteration of water

(2) Avoiding wading into sources of water supply

(3) Carrying clean water from their villages to their farms to drink

(4) Use of sanitary wells.

The mean values of the results presented in this chapter are shown on figure 7. It revealed that there were no significant changes in the control group between time 1 and time 2 while there

Fig. 7: Comparison of the mean value scores of the experimental and control groups on the nine variables.

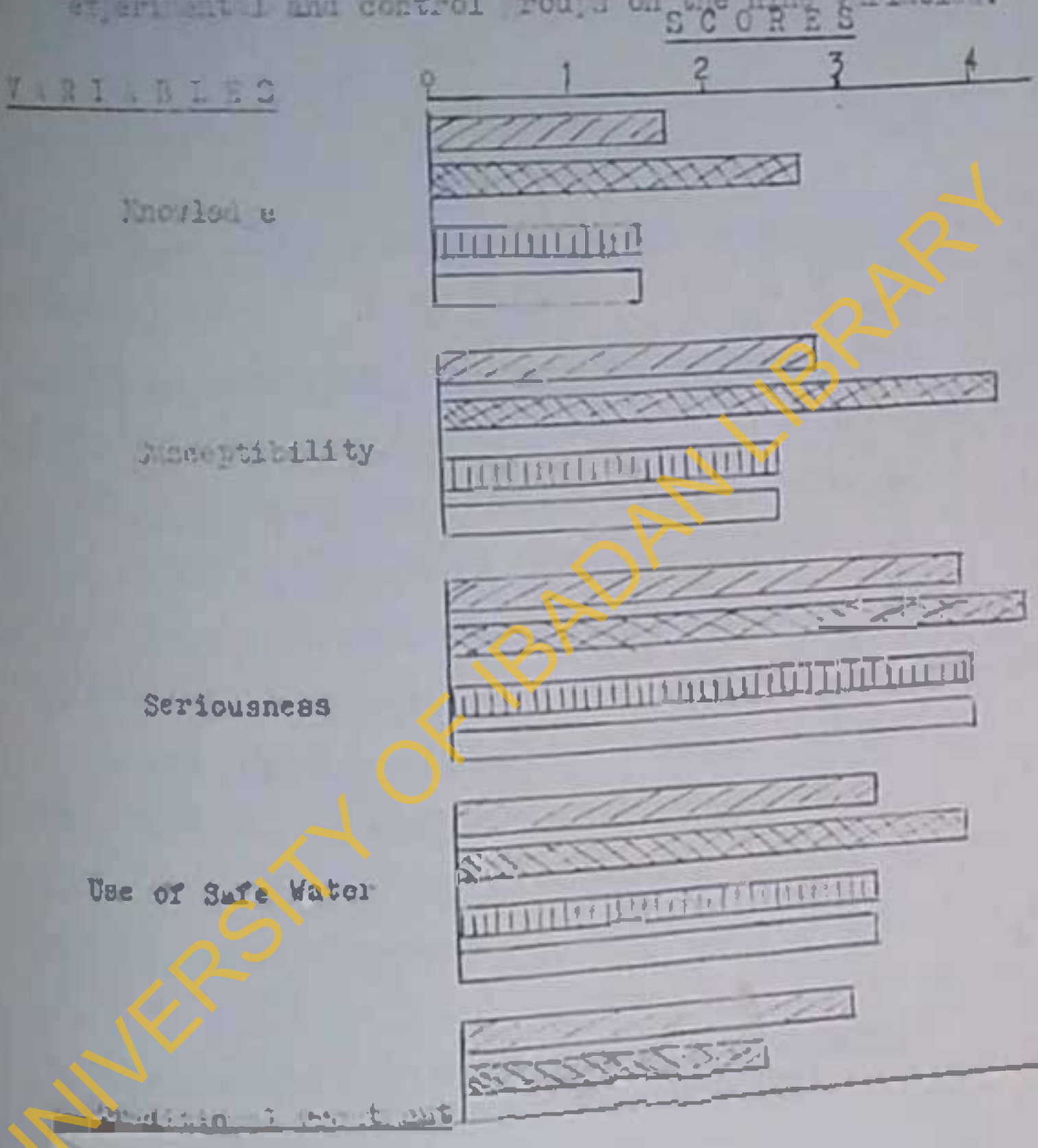
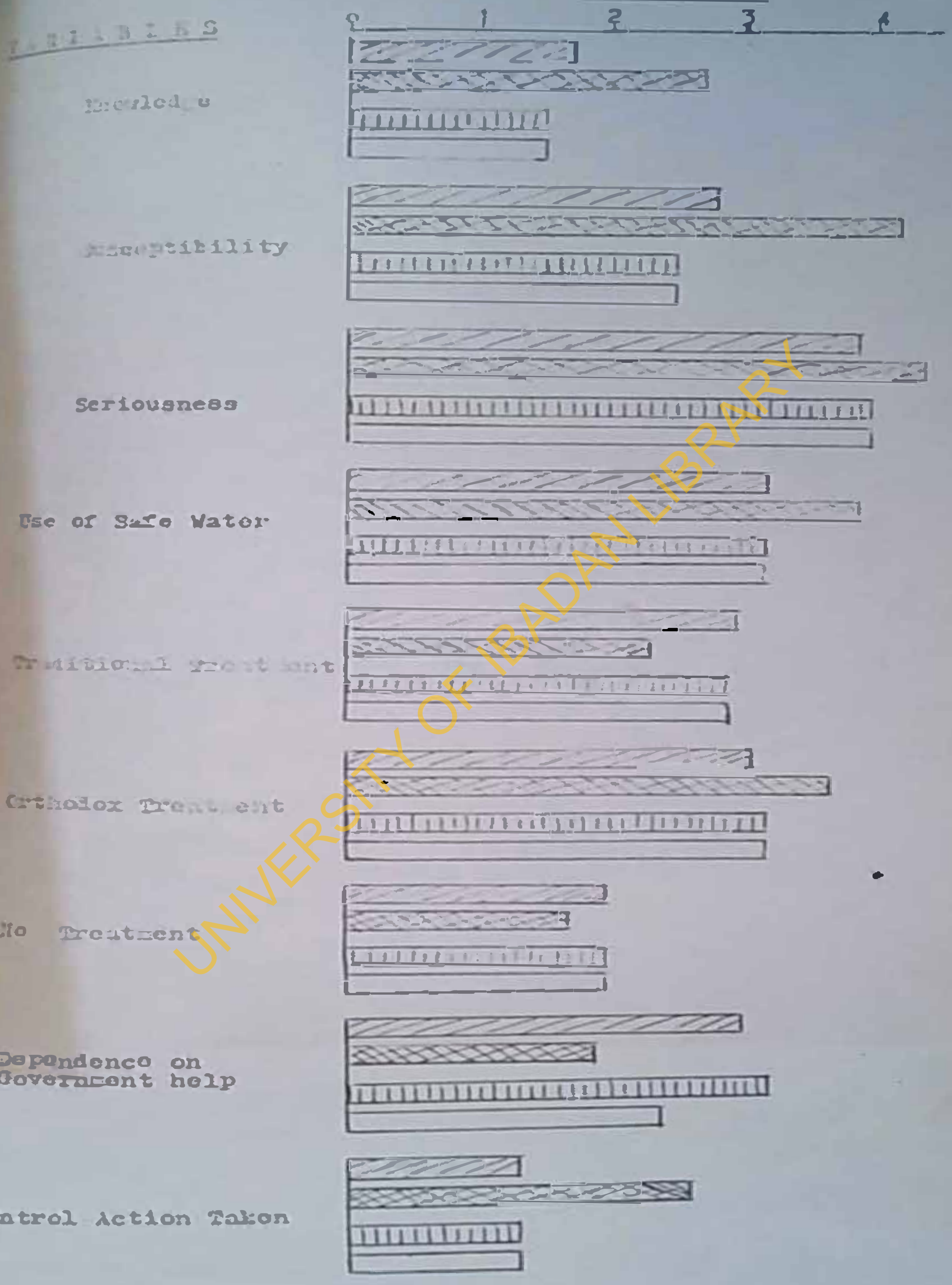


Fig. 7: Comparison of the mean value scores of the experimental and control groups on the five variables.



were significant changes in the experimental group within the same period.

3. Information gathered from observations and informal interviews.

Selection of primary health worker:

Each of the experimental villages formed a committee by the month of October, 1970 and selected a primary health worker. The primary health workers (appendix IV) attended training for the months of November to January.

The primary health workers shared their knowledge with their fellow villagers. Their work was assessed during follow-up supervision visits to the villages by the investigator. 75% of the families in the experimental group filtered their water before drinking.

Sex:

More males responded to the interview schedule than females because of the nature of the experimental design. Although, the females were the people involved in collecting water for household use, the males who were the heads of the families had the final say on matters affecting the households. The males would take decisions and get involved in community matters. They could order their wives to participate or refuse to allow them to do so in any programme.

Treatment of guinea worm:

The traditional way of treating guinea worm was in-expensive and easily available, and individuals did not react to the treatment; though the healing process appeared longer. There could be chances of secondary infection occurring. The drugs used were herbs and red palm oil which were applied topically.

The modern or orthodox treatment was expensive (N6 per head) and not always available in the health institutions around. Most of the patients who were fortunate to receive the treatment reacted to the drug and could not keep to the regimen as prescribed. In most cases, the sick individuals combined the orthodox and traditional forms of treatments.

An individual with the infection really left it to heal by itself without any form of treatment, be it traditional or orthodox. The people also believed that if the infection was not treated it might not heal or the illness could be prolonged.

The impression of the people about the infection

The people feared guinea worm infection and considered it as a serious disease that could kill and that it has a severe debilitative effect.

The people had the opinion that some were more likely to have the infection of guinea worm than others. This was manifested in some of the wrong answers to the questions on what could cause the disease. Their answers included:

1. Gods - when they were offended
2. Evil spirits
3. Sin
4. Heredity
5. Weakness of blood
6. I do not know.

Most people had the strong belief that guinea worm infection was always in the blood stream of every individual which could be palpable, visible or felt by the sufferer. They supported their argument by citing incidences of their people who lived in cities like Lagos or Ibadan that suffered from the disease. Some people believed that those who had "weak blood" suffered from the infection while those with "strong blood" did not have the infection.

Measures taken to control the infection:

It was observed that at time people just walked into the source of water supply to collect water for household use in both the

experimental and control villages. Though at time 2, there was no change in the control group on how they collected water from their ponds; there was change in the experimental group. Those with obvious infection were discouraged by the villagers from going to collect water from their ponds. The villagers also provided devices for collecting water without entering the source of water before collecting water. These devices were either logs of wood or stones put at the edges of the ponds. As the water dried up gradually, the stone or log of wood was moved closer to the water. In order to collect water, the people had to use a smaller bowl or calabash as a dipper for fetching the water into the bigger containers that they carried to their villages.

At the time of writing the report, construction of four wells had been completed in four villages (see figure 8).

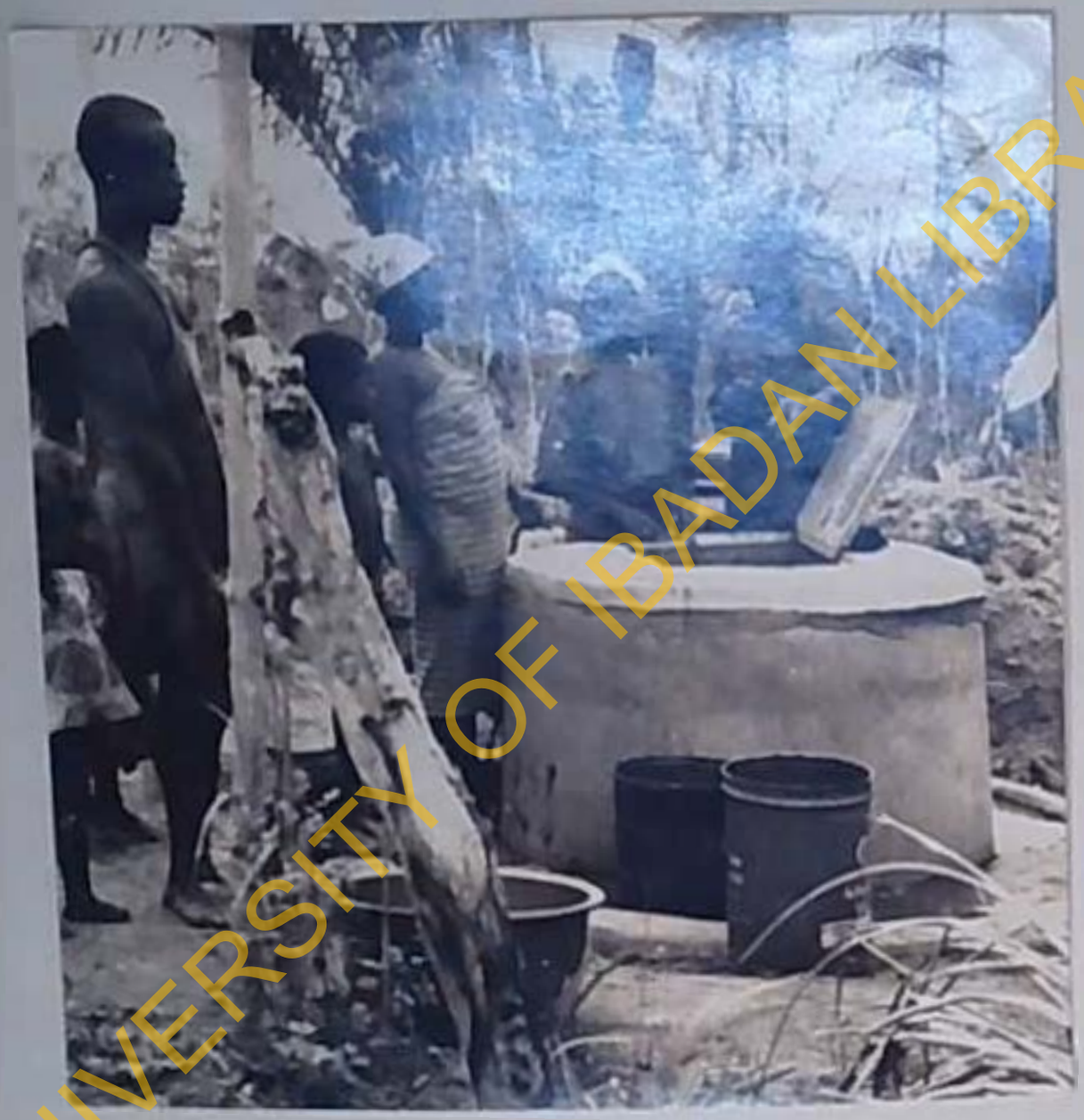


Fig. 8: Some of the villagers collecting water from a sanitary well constructed through self-help by the villagers.

Two wells were under construction while two other villages were waiting for the contractors to start work on their wells. There were two unfortunate incidents that happened that have contributed to failure to complete these wells in two villages.

firstly, there was a case of murder in one village in March, 1979 which made the villagers desert their places of work on the farm and to return to Idere town to stay. The construction of the well in that village has therefore not been completed. The second incident was that the contractor digging the well for another village received a mobilization fee of half the cost of construction the well and ran away with the money without completing the work.

Two of the four villages that completed their wells had to construct two wells each instead of one each, because in the first site, the contractors hit some impenetrable rocks at a considerable depth, close to underground water level. In each case, the villagers had to pay for digging another well which fortunately reached water level without much difficulty.

Changes also occurred in the main town of the experimental group compared with the town of the control group. Decision making and training of the primary health workers took place in Idere town. Though the town was not used as one of the experimental groups, it was observed that five wells were constructed in the town during the period of study (see table 13).

Table 13

Construction of wells in Idere and Tapa towns between 1977 & 1979

Year	Tapa	Idere	Comment
1978	0	0	No action
1979	0	5	Action due to influence of Health Education activities in Idere community

Idere has pipe borne water which provides periodic water supply making the source of water undependable. The people were motivated from their exposure to health education to take action to improve their water supply.

Other farming villages that were not included in the experimental group were not visited. So, it was not known if there were wells constructed in the other villages of the Idere group during the period of study as a result of diffusion. A further study could be conducted to detect this.

CHAPTER FIVE

DISCUSSION

The infection of guinea worm was a fearful disease and was perceived to be serious in the control and experimental villages. Idere town has pipe-borne water while Tana town does not have. As a result, the level of the infection of guinea worm was higher in Tana than in Idere (Esekwen, 1975). But the level of the infection in the experimental farm villages (37.1%) and the control farm villages (39.2%) from this study appeared to be comparable. The farming villagers in both communities spent three-quarters part of the year working on their farms. During that period, they depended on the use of water from slow flowing streams, stagnant ponds and water holes that were potential sources of guinea worm infection. The farmers could be forced out of their jobs due to lack of waterduring the dry season when their sources of water supply dried up.

To overcome the problem of guinea worm infection and ensure regular water supply throughout the year in the experimental group, community participation and training were operationalized in the investigator's model of community participation. The majority of the farming villagers had never been to school, so in the process of educating the experimental group, care was taken to encourage them, sustain their attention and provide learning experiences.

The impact of the experimental health education approach has been demonstrated and supported by data from this study. It featured the participation of the local and central committees, selection and training of primary health workers who worked with their people sharing what they learned. In that process, the primary health workers used a culturally relevant approach of story telling, songs, proverbs, riddles and humours. In addition to the investigator, the dispenser and the midwife for Idere community participated in the training of the primary health workers. The experimental group of farming villages experienced significant changes in the direction of improved knowledge, attitudes and behaviour on guinea worm control. The control group of villages in contrast did not demonstrate any significant change in any of these variables.

Two important findings in this study were (1) that although a few people had some knowledge of the disease before the programme started, they could not translate their knowledge to influence others' attitudes and effect a change in their behaviour. Tests to rule out any other factors that might have caused any change, showed that the control group did not experience significant difference in knowledge, attitudes and behaviour between time 1 and time 2. Therefore, it was possible to conclude that the significant changes observed during the study in the experimental group were due to the health education

The impact of the experimental health education approach has been demonstrated and supported by data from this study. It featured the participation of the local and central committees, selection and training of primary health workers who worked with their people sharing what they learned. In that process, the primary health workers used a culturally relevant approach of story telling, songs, proverbs, riddles and humours. In addition to the investigator, the dispenser and the midwife for each community participated in the training of the primary health workers. The experimental group of farming villages experienced significant changes in the direction of improved knowledge, attitudes and behaviour on guinea worm control. The control group of villages in contrast did not demonstrate any significant change in any of these variables.

Two important findings in this study were (1) that although a few people had some knowledge of the disease before the programme started, they could not translate their knowledge to influence others' attitudes and effect a change in their behaviour. Tests to rule out any other factors that might have caused any change, showed that the control group did not experience significant difference in knowledge, attitudes and behaviour between time 1 and time 2. Therefore, it was possible to conclude that the significant changes observed during the study in the experimental group were due to the health education

because, there was evidence that there was an association between the changes and the method used. (2) The changes in knowledge and attitudes could only bring about improved health status if health action was taken. It was observed during the study that some factors could have adverse effect on community implementation of decisions to take action. The following were the factors and how they were managed in the experimental group of villages:

(a) Co-operation from significant others in the Community. The village heads, elders and influential people were involved in the operation of the project by the Community electing them into offices as members of committees at various levels.

(b) Financial constraint. Money for the construction of wells in the villages was collected in small instalments over a period of three months so that no heavy sum of money was contributed at a time by the villagers.

(c) Time factor. The period for the construction of the wells was planned with the villagers to be during the "heart" of the dry season when the under-ground water level was very low. This ensured that the wells would provide water all the year round.

(d) Acceptability of health facility. The villagers took the decision on what to do tocontrol the infection.

They chose and bought material for filtering their water, provided themselves with cans to take clean water to their farms to drink and selected the site as well as entered into contract for the construction of their wells.

Those who lived in farming villages were the group of energetic economy raising members of the population. Agriculture was their main occupation which required the use of physical strength. As such, many of the old people did not live in the farming villages because they might not be very useful in farm work.

The people could perceive and recognise the onset of the infection when it had not become obvious to others. The issue of 'resistance' was important in that some people who had the infection were able to overcome it during the swelling stage and the worm not calcified in a swollen spot. Other people who had no such 'resistance' suffered greatly from the crunted infection.

One of the problems encountered by the people of this area was the scarcity of drugs for the treatment of the infection in the Health Institutions. Some patients who were referred by the primary health workers to the Health Institutions for the treatment of guinea worm infection could not get the drugs. They were however, able to buy them from local medicine stores. It is therefore suggested that drugs be made available for the treatment of the infection in the

health institutions in such an endemic area.

Some effort would need to be made also by health workers to assess and care for patients who might react to the treatment.

The period of study was so short that it was not possible to assess any change in the level of incidence of guinea worm infection among the villagers under study. On short term basis, the intervention has shown changes in behaviour to control the infection on the part of the experimental group. The people were made to understand that some of them might still suffer from the infection within the next one to one and a half years, despite their use of clean water. The explanation to that was because of the long incubation period of the disease. Changes on long term basis would be detected from other studies which could be carried out over some years to come. Such studies would ascertain if there would be a reduction in the incidences of guinea worm infection following the educational intervention as well as any increase in the number of wells due through community self-help, comparing the two groups of villages.

It would be a good idea if the model of activities used in the ten experimental villages could be expanded to include more villages. The implication of such an expansion would be the need to mobilise manpower for training and supervising the primary health workers.

The Community health workers would therefore need to be trained to know their functions as to train and supervise the primary health workers throughout the district.

To maintain the three months health education activities, the Idere central health committee, the village health committees, the village general meetings and the community development officer for the area have been liaisoned with. This would enable them to work together with the primary health workers to continue the guinea worm control efforts and the other village health activities initiated during this experimental study. The staff of the maternity and dispensary at Idere were instructed to keep in touch with the primary health workers to give guidance and support to their continued effort to promote the health of the villagers.

Limitations

In the course of the study, the following limitations were identified:

1. The study relied on the efficiency of the Primary Health Workers. The success or failure of some of the health education programmes in the villages depended on their ability to function effectively.
2. Some villagers that were referred by the investigator for treatment of the disease at the Rural Health Centre at

the time of entry into the communities, were exposed to the knowledge of the control of the disease through health education activities at the Centre. This might have affected the base line data collected.

3. The time of study was short. It was not possible to assess the level of reduction of the incidence of the disease in the community. The time available was spent to work on change in behaviour of the people towards the control of the disease.

4. The presence of the investigator might have created some bias as to influence the people's behaviour.

5. Some members of the two communities might communicate since in a social study as this complete isolation of the control community may not be possible, though there was no evidence of this.

6. There was no time to explore why the other farming villages in the experimental group did not volunteer to take part in the programme. It is possible that those who accepted the programme were the early accepter group and with long term continuation, others might come along to take part.

7. As the farming villages in the experimental group participated voluntarily, it would not be possible to generalise the results of the findings at this stage.
8. The study subjects had to recall their past experiences during the research. It was possible that some facts could have been distorted or eluded their memory.

CHAPTER SIX

SUMMARY AND CONCLUSION

The three months health education programme was planned to involve all the farming villagers in the experimental group. They willingly accepted to participate in this study which attempted community action to control guinea worm infection through self-reliance. The Community participation was tailored to fit into the six stages or steps of the model developed by the investigator which served as a guide.

A trial of a new approach to community health education in the area of study has elicited exciting results. The results from tests of the control group made the experimental findings manifest that there was an association between the changes and the health education programme executed. The changes in the experimental group between time 1 and time 2 could not be considered to be due to chance because there was strong support to suggest that the results were due to the health education intervention. The findings suggested that communities that depended on external (especially government) help to meet their health needs could be influenced to be self-reliant if this type of community participation approach were used.

CHAPTER SIX

SUMMARY AND CONCLUSION

The three months health education programme was planned to involve all the farming villagers in the experimental group. They willingly accepted to participate in this study which attempted community action to control guinea worm infection through self-reliance. The community participation was tailored to fit into the six stages or steps of the model developed by the investigator which served as a guide.

A trial of a new approach to community health education in the area of study has elicited exciting results. The results from tests of the control group made the experimental findings manifest that there was an association between the changes and the health education programme executed. The changes in the experimental group between time 1 and time 2 could not be considered to be due to chance because there was strong support to suggest that the results were due to the health education intervention. The findings suggested that communities that depended on external (especially government) help to meet their health needs could be influenced to be self-reliant if this type of community participation approach were used.

With the continuing community action to control guinea worm infection in the experimental group, it could be possible that at a time three, the incidence of the infection would be reduced in that area.

BIBLIOGRAPHY

Adeniyi, J. D., "Problems of Beliefs and Attitudes," International Journal of Health Education, Supplement No. 3, 1972.

American Public Health Association, "Initiating Health Education Programs, ", American Journal of Public Health, Supplement, Vol. 65, Page 5, Oct. 1975.

Bakare, C. G., A First Colouring Book for Children Teaching Psychological Skills, Manual: Ibadan: Ibadan University Press, 1975.

Bello, Bayo, "Organization of our Community Health Care Delivery: Some Lessons from China," Journal of Nigerian Medical Association, Pages 86 - 90, June, 1977.

Belcher, D. W., Murapa, F. K. and Ward, W. B., "Failure of Thiabendazole and Metronidazole in the Treatment and Suppression of Guinea Worm Disease," The American Journal of Tropical Medicine and Hygiene, Vol. 24, No. 3, Pages 444 - 446, May, 1975.

Belcher, D. W. and Murapa, F. K., "Guinea Worm in Southern Ghana: Its Epidemiology and Impact on Agricultural Productivity," The American Journal of Tropical Medicine and Hygiene, Vol. 24, No. 2, Pages 243 - 249, March, 1975.

Benne, K. and Birnbaun, M. "Change does not have to be Haphazard," The School Review, Vol. 68, No. 3, Pages 283 - 293, 1976.

Bennis, W., Benne, K. and Chin, R., The Planning of Change, New York: Holt, Rinehart and Winston, Pages 1 - 2 and 27, 1961.

Bowen, Rhoda, "Effect of Organized Instruction for Patients with the Diagnosis of Diabetes Mellitus," Nursing Outlook, Vol. 10, No. 3, Page 151, September, 1961

Bredemeier, H. C., and Stephenson, R. M. The Analysis of Social System, London: Holt, Rinehart and Winston, Pages 2 - 3, 1962.

Briscoes, C. and Thomas, D. N., (Editors) Community Work: Learning and Supervision, London: National Institute Services Library, No. 32, George Allen and Unwin Ltd. 1977.

Brown, Murray, On the Theory and Measurement of Technological Change, Cambridge: Cambridge University Press, 1966

Burton, W. H., The Guidance of Learning Activities, New York: Appleton - Century Croft, Inc., 1962.

Cantor, Nathaniel, The Teaching-Learning Process, New York: Holt, Rinehart and Winston, Page 309, 1953.

Cohen, Percy S., Modern Social Theory, London: Heinemann, 1978.

Combs, A.W. and Snygg, D. Individual Behaviour, New York: Harper and Row, 1959.

Commonwealth Conference on Education in Rural Areas, Accra: University of Ghana, Legon, 23rd March to 2nd April, 1970.

Contact 41, "Rural Basic Health Services: The Lardin Gabas Way." Christian Med. Commission, World Council of Churches, Geneva, Oct. 1977.

Craig, Robert L., (Editor) Training and Development Handbook, 2nd Ed., New York: McGraw-Hill Book Co., 1976.

Craige, R. C., The Psychology of Learning in Classroom, The Psychological Foundation of Education Series: London: The Macmillan Co., Page 51, 1971.

Davey, T. H. and Wilson, J., Davey and Lightbody's Control of Diseases in the Tropics, London: E&S Livingstone and Lewis and Co. Ltd., Page 65 - 69, 1974.

Dichter, Ernest, Motivating Human Behaviour, New York: McGraw-Hill Book Co., 1971.

Ezekiel, G. J. K., "Guinea Worm Infection in two Rural Communities (Idere and Tapa/Aiyete) - A Prospective Study," Ibadan Project Bulletin No. 61, Pages 33 - 36 A 74, 13, Oct. - 22 Nov., 1976.

Federal Republic of Nigeria, Population Census of Nigeria, Lagos: Federal Office of Statistics, Vol. XXI, 1963.

Gibb, Jack R., "The Role of the Consultant," The Journal of Social Issues, Vol. XV, No. 2, 1959.

Gilmore, G. D., "Needs Assessment Process for Community Health Education," International Journal of Health Education, Vol. XX, Pages 164 - 173, 1977.

Green, L. W., "Identifying and Overcoming Barriers to the Diffusion of Knowledge about Family Planning," Advances in Fertility Control, Excerpta Medica Foundation, 1969.

Griffiths, W., "The Educational Approach to Health Work," California's Health, Vol. 15, No. 12, Pages 89 - 91, 1957.

Grossman, Jerome, "Health for What Change, Conflict and Search for Purpose," Pacific Health Education Reports, No. 2, Pages 51 - 65, 1971.

Havelock, R. G. and Havelock, M. C., Training for Change Agents, Michigan: University of Institute for Social Research, Michigan, Pages 51 - 59, 1973.

Hilgard, E. R., Introduction to psychology, 3rd Ed., New York: Harcourt Brace and World, Inc., Pages 196 - 220, 1962.

Hilgard, E. R., Theories of Learning, 2nd Ed., New York: Appleton-Century, Croft, Page 15, 1965

Hilton, David, Basic Health Services Scheme, Health Services Management Board, Concola State, 10/10/78.

Hiss, F. M., Students Evaluation of Faculty, Nursing Outlook, Vol. 13, No. 7, Pages 103 - 107, 1970.

Jehu, Derek, Learning Theory and Social Work, London, Routledge and Kegan Paul, Page 3, 1970.

Johnson, C. C., "Measuring Local Leader Participation in Health Programmes," Dissertation Abstracts International (University of California, Berkeley, 1977), Vol. 33, No. 3, 1972

Kale, O. O., "The Clinic-epidemiological Profile of Guinea Worm in the Ibadan District of Nigeria," American Journal of Tropical Medicine and Hygiene, Vol. 26, No. 11, Pages 208 - 214, 1977.

Keyes, L. L., "Health Education in Perspective - An Overview," Health Education Monographs, Vol. 12, Pages 13 - 17, 1972

Kingsley, H. L. and Garry, R., The Nature and Condition of Learning, Englewood: Prentice-Hall Inc., Pages 95 - 99, 106 - 112, 1962.

Knowles, Malcolm, Self-directed Learning, New York: Association Press, Pages 18 - 21, 1975.

Lambo, T. A., "Total Health," World Health, Page 3, Dec., 1975.

Lele, Uma, The Design of Rural Development: Lessons from Africa, Baltimore: The Johns Hopkins University Press Pages 167 - 171, 1975.

Lucas, A. O. and Gilles, H. M., A Short Textbook of Preventive Medicine for the Tropics, London: English University Press, Page 76, 1973.

Macleod, John, (Editor) Davidson's Principles and Practice of Medicine, 11th Ed., New York: Churchill Livingstone, Page 92, 1976.

Manzoor, Ahmed, "Community Participation, the Heart of Primary Health Care" UNICEF Assignment Children-Government and People's health. International Conference on Primary Health Care No. 12, Edited by Mandl, P.E., Alma-Ata, USSR., Pages 80 - 81, April/June, 1978.

Maslow, A., Toward a Psychology of Being, Princeton: Van Nostrand, 1968.

Mathews, Betty, "Planned Change and the Role of Training." Pacific Health Education Report, No. 2, Pages 1 - 14, 1971.

Maukch, I. G., "Lets Listen to Students." Nursing Outlook, Vol. 20, No. 2, Pages 103 - 107, 1971.

Mavel, K. W., (Editor) Health by the People, W. H. O., Geneva, Page 30, 1975.

Okediji, F. O. and Ogionwo, W., Experiment in Population Education and Attitude Change, Ibadan: Ibadan University Press, Sept., 1973.

Olsen, M. E., The Process of Social Organization, London: Holt Rinehart and Winston. Pages 159 - 167, 1970.

Olumide, P. A., "Environmental Health Survey of Ibarapa Division 1964 - 71." Ibarapa Project Bulletin, No. 6, Pages 14-24, 1971

Olumide, P. A., "Pilot Studies on Simple Water Schemes in an Endemic Area of Guinea Worm Infection." Journal of the Society of Health, Nigeria, Vol. X, No. 1, Pages 17 - 22, April, 1975.

Onabamiro, S. O., "The Geographical Distribution and Clinical Features of Dracunculus Pedinensis in S.W. Nigeria." West African Medical Journal, Vol. 1, Pages 159-165, 1952.

Parekh, C. and Kulkarni, D.R., "A Clinical and Therapeutic Study in Dracuntiasis (Guinea Worm) Infection." J.J.J. Hospital Grant Med. Coll., 3: Page 22: 1958.

Richard, Paul, Water Supply and Economic Development - A Case Study of Ilorapa Division, Western Nigeria, Geography Department, University of Ibadan, Page 5, 1974.

Rines, A.R., Evaluating Student Progress in Learning the Practice of Nursing, New York: Columbia University Teachers College, Department of Nursing Education, 1963.

Rogers, E. M. and Shoemaker, F. F., Communication of Innovation: A Cross-Cultural Approach, 2nd Ed., New York: The Free Press, Pages 209 - 216, 1971.

Rogers, P. G., "Health at the Crossroad: Which Road to Follow," Journal of Medical Education, No. 48, Pages 8-12, January, 1973.

Rosenstock, Irwin M., "The Health Belief Model and Preventive Health Behaviour," Health Belief Model and Personal Health Behaviour, Becker, M. M. (Editor), New Jersey: Charles B. Slack Inc., Pages 27 - 59, 1974.

Ross, M. G. with Lappin, B. W., Community Organization: Theory, Principles and Practice, 2nd Ed., New York: Harper and Row, 1967.

Salubritas, "Health Auxiliaries: Three Experiences," American Public Health Association and the World Federation of Public Health Associations, Vol. 2, No. 4, Oct., 1978.

Schwartz, Dan, "The Russ line as Consumer participation and Community Involvement," International Journal of Health Education, Supplement, Vol. XX, No. 3, July - September, 1977.

Shenu, U. "Health Care in Rural Areas," AFRO Technical Paper, No. 10, World Health Organization, Brazzaville, Pages 16 and 26, 1975.

Sridhar, M. K. C., (Lecturer, Department of Preventive and Social Medicine, University of Ibadan), Personal discussion, November, 1978.

Stoll, M. R., "This Wormy World," Journal of Parasitology, 32 Pages 1 - 18, 1947.

Suchman, Edward A., Evaluative Research Principles and Practice in Public Service and Social Action Programmes, New York: Russel Sage Foundation, 1967.

Thomas, C., The Role of Health Education in New Zealand Hydatid Disease Eradication Campaign, (WHO Document No. ZOON/WP7023). Paper presented at the FAO/WHO Inter-Regional Seminar on Control of Echinococosis (Hydatidosis), Buenos Aires, 1970.

Tolman, E. C., Purposive Behaviour in Animal and Man, New York: Appleton-Century Croft, 1932.

Tomic, Bratislav, "Invanjica: A Community Conquers Health." International Journal of Health Education, Geneva, Supplement, Vol. XX, Pages 1-8, April - June, 1977.

UNICEF-WHO Joint Committee on Health Policy, Community Involvement in Primary Health Care: A Study of the Process of Community Motivation and Continued Participation, Geneva, 31 January - 2 February, 1979.

Ward, T., "Cognitive Process and Learning: Reflections on a Contemporary Comparative Study in 14 African Societies," Comparative Education Review, No. 17, Pages 1-9, 1973.

Ward, W. B., Health Education and Health Behaviour: The Danfa Comprehensive Health and Family Planning Project, A Brief Presentation of the First Review Meeting, The Medical School, Accra, Jan. 29, 1979.

Wilkening, E. A., "Acceptance of Improved Farm Practices in three Coastal Plain Countries," Raleigh, North Carolina Agricultural Station Technical Bulletin, No. 99, 1953.

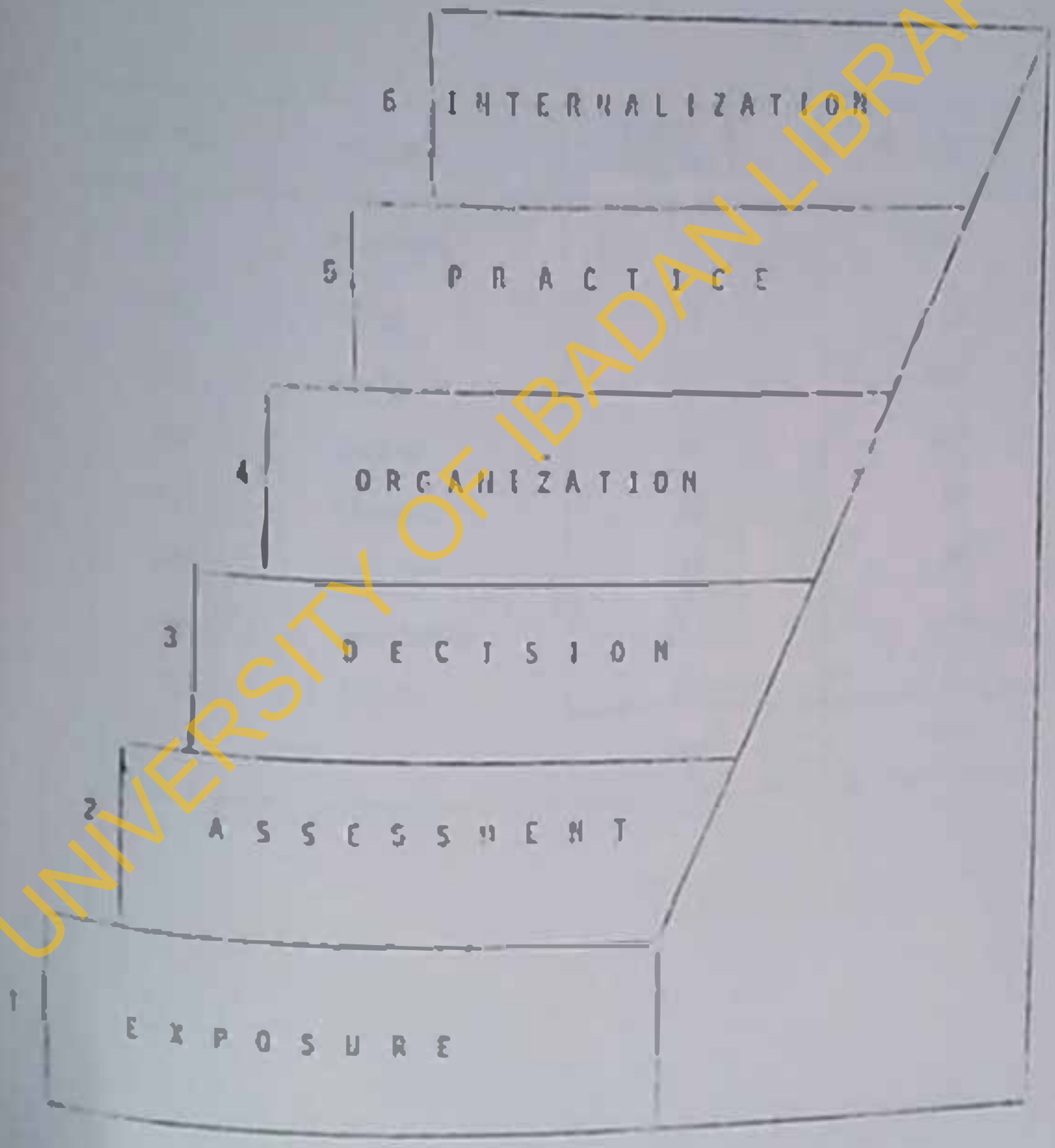
World Health Organization, Expert Committee on Health Education of the Public, WHO Technical Report Series No. 99, Geneva, 1956.

World Health Organization. Health Education with Particular Reference to the Primary Health Approach, Regional Committee for the Eastern Mediterranean, Alexandria, Egypt. 16 August, 1977.

World Health Organization. Primary Health Care, AFRO Technical Report Series No. 3, Brazzaville, 1977.

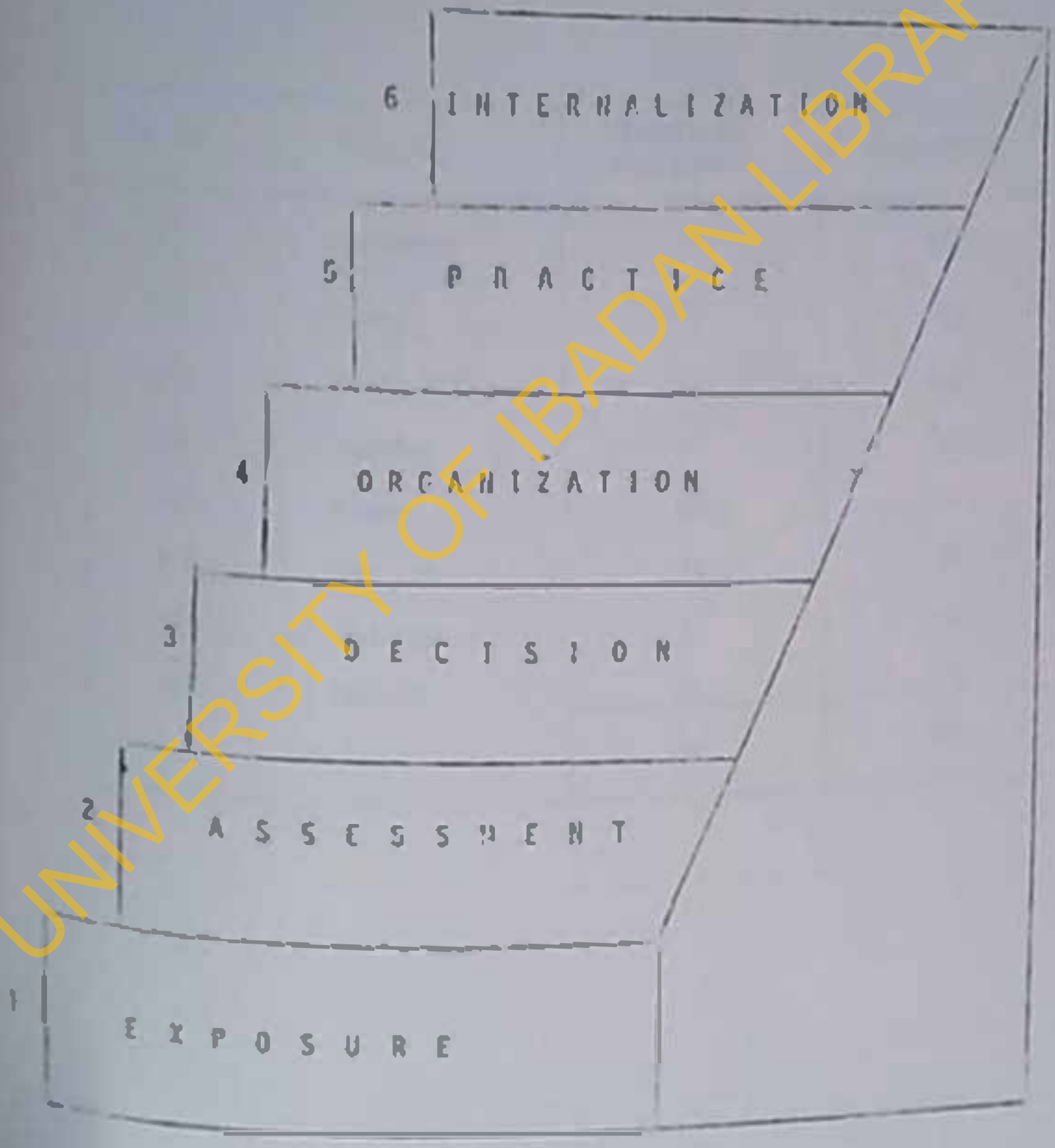
Appendix I.

A MODEL OF COMMUNITY INVOLVEMENT APPROACH IN EFFECTING CHANGE.



Appendix I.

A MODEL OF COMMUNITY INVOLVEMENT APPROACH IN EFFECTING CHANGE



ENUMERATION OF THE CONTROL GROUP OF VILLAGES

Appendix II.

CODE NO.	VILLAGE	NUMBER OF HOUSEHOLDS	POPULATION
021	Alapirun	17	101
022	Oniko	12	80
023	Isale Ofiki	21	100
024	Iwafin	30	287
025	Etunota	20	90
026	Oke Ero	15	50
027	Oke Apoio	12	93
029	Aobede	13	31
	TOTAL =	140	304

Appendix III.

ENUMERATION OF THE EXPERIMENTAL GROUP OF VILLAGES

CODE NUMBER	VILLAGE	NUMBER OF HOUSEHOLDS	POPULATION
001	Onileka	20	110
002	Olowolayemo	14	56
003	Ajelanwo	13	41
004	Baba Elegun	9	37
005	Osorinde	17	110
006	Asipa	16	73
007	Oyanlaic	6	30
008	Orini	7	45
009	Olanperu	19	113
010	Jaeun	40	360
	TOTAL=	160	979

Appendix III.

ENUMERATION OF THE EXPERIMENTAL GROUP OF VILLAGES

CODE NUMBER	VILLAGE	NUMBER OF HOUSEHOLDS	POPULATION
001	Onileka	20	110
002	Olowolayemo	14	56
003	Ajelanwo	13	41
004	Baba Elegun	9	33
005	Osorinde	17	118
006	Asipa	16	73
007	Oyankale	6	30
008	Orisi	7	45
009	Olanperu	19	113
010	Jagun	40	360
	TOTAL =	160	979

APPENDIX IV.

THE LIST OF PRIMARY HEALTH WORKERS AND THEIR BACKGROUND

VILLAGES	NAMES	SEX	AGE IN YEARS	EDUCATION	OCCUPATION
001	Adewuyi Oseni	Male	35	Adult Ed.	Farming
002	Sunronu Ayanshina	Male	26	Pry. Six	Farming
003	Matthew Toriola	Male	31	Adult Ed.	Farming
004	Okekunle Olaoke	Male	30	Adult Ed.	Farming
005	Oyeladun Oladeno	Male	26	Adult Ed.	Farming
006	Abel Sadiku	Male	29	Adult Ed.	Farming
007	Babarinde Abiona	Male	40	Adult Ed.	Farming
008	Idowu Ipadeola	Male	32	Adult Ed.	Farming
009	Olumide Akinyodo	Male	36	Adult Ed.	Farming
010	Samson Ogundiro	Male	34	Adult Ed.	Farming

APPENDIX V

The Course Content For Training Primary Health Workers at Idere

December, 1978 - January, 1979

1. Introduction
   - Introduction to the programme
   - The role of the primary health worker
   - Collaboration and integration with other health workers
   - Orientation tour to Maternity/Dispensary at Idere and Rural Health Centre, Ilato-Ora
   - The responsibilities of the village health committee and the central health committee
   - Working in a group

2. Teaching methods for use by P.H.W.
   - Stories
   - Proverbs
   - Folk-songs
   - Jokes
   - Demonstration

3. Nutrition

- Malnutrition in children
- Well nourished child
- Weaning diet
- Balanced diet
- Use of arm circumference
- Use of weight chart
- Food sanitation

4. Village and home sanitation

- Water supply
- Construction of a well
- Refuse and waste disposal
- Personal hygiene
- Faeces disposal

5. Maternal care

- Vulnerable family
- Care during pregnancy
- Family planning

6. Accident prevention

7. Simple management of:

- Convulsion
- Fever
- Cough
- Vomiting
- Diarrhoea
- Burns
- Bites
- Cut

8. Communicable diseases

- Malaria
- Measles
- Guinea worm
- Worms
- Tuberculosis
- Tetanus
- Poliomyelitis
- Whooping cough
- Chicken pox
- Scabies
- Ring worm

9. Referal system

- To maternity/dispensary at Idere
- To Rural Health Centre at Inbo-Ora

Note: Follow-up visits to supervise the primary health workers during the week days were on Tuesday, Wednesday and Thursday.

APPENDIX VI

INTERVIEW SCHEDULE

NO. _____

ON

THE KNOWLEDGE, ATTITUDE AND BEHAVIOUR TOWARD THE CONTROL OF DRACUNCULUS MEDINENSIS

1. Name of Village
   ORUKO ABULE _____

2. Sex
   Male - 1
   Female - 2 [ ]

3. Age
   OJO ORI
   20 - 24 - 1
   25 - 29 - 2
   30 - 34 - 3
   35 - 39 - 4
   40 - 44 - 5
   45 - 49 - 6
   50 and above - 7 [ ]

4. Religion
   ESIN
   Christianity - 1
   Moslem - 2
   Traditional - 3
   Others (specify) - 4 [ ]

5. Marital Status -
   Single - 1
   Married - 2
   Divorced - 3
   Separated - 4
   Widowed - 5 [ ]

6. Level of Education
IWE !HELO NI E KA

Illiterate (did not attend any formal school) - 1
Arabic education - 2
Adult Education - 3
Some Primary School - 4
Completed Primary School - 5
Some Secondary Education - 6
Completed Secondary Education - 7
Post Primary Professional Training - 8
Others (specify) - 9

7. Occupation

Farming - 1
Trading - 2
Teaching - 3
House Wife - 4
Others (specify) - 5

8. Do you know guinea worm ?
NJE E MO SOBIA BI ?

Yes - 1
No - 2

9. What do you think causes guinea worm ?
KINI E RO WIPE O NFA SOBIA ?

I don't know - 1
Gods - 2
Evil spirit/witches - 3
Insects - 4
Infected water with cyclops - 5
Weakness of blood - 6
Others (specify) - 7

10. Do you know how a person contacts the disease ?
NJE E MO BI ENIYAN SE NKO ARUN SOBIA NLA ?

Yes - 1
No - 2 [ ]

11. If the answer to question 10 is Yes, please describe it (life cycle)
BI E BA MO, NJE E LE SE ALAYE ?

(Larva from infected person into water, enter a new host by drinking)

(Drinkind infected water) - Very well - 1
(Drinking water) - Fairly well - 2
(Worm) - Venue - 3 [ ]
(I don't know) - Very poor - 4
- Not at all - 5

12. How did you get the above informations ?
BAWO NI E SE GBO EYI TI E SO YI ?

Through Radio - 1
Clinic - 2
Visiting Health worker - 3 [ ]
Friend - 4
Poster - 5
Film Show - 6
Other (specify) - 7

13. Have you had guinea worm in the past three years ?
NJE SOBIA TI NU E NI ARIN ODUN MET? SEHIN ? [ ]

Yes - 1
No - 2

14. Did you have the disease more than three years ago ?
NJE O TI NI ARUN SOBIA NA KOJA ODUN META ? [ ]

Yes - 1
No. - 2

15. Have you seen other people with the disease in this village within the past three years ?

NJE E TI RI ELOMIRAN PELU ARUN YI NI ABULE YI NI ARIN ODUN META SEHIN ?

Yes - 1

No - 2 [ ]

16. Do you have the disease now ?

NJE E NI SOBIA BAYI, TABI OH BA E LOKO BAYI ?

Yes - 1

No - 2 [ ]

17. Do you know anything one can do to avoid the disease ?

NJE NKANKAN WA TI ENIYAN LE SE KI O MA BA NI ARUN YI ?

Yes - 1

No - 2 [ ]

18. Please state the control measure you know

JOJO SO NKON OHUN TI E NO TI ENIYAN LE GBA LATI DAMO ARUN NI

Filteration of water - 1

Avoid wading into water source - 2

Boiling water - 3 [ ]

Use of sanitary well - 4

Use of chemical on water (specify) - 5

Treatment of infected person - 6

Other measures (specify) - 7

N O T E: The following statements express opinions. Please indicate the degree of agreement or disagreement with each statement.

AWON IOI TABI OOLOHUN TI O HA SO WONYI JE NIWU ERO TI ELOMIRAN. JOWO SO EYI TI E BA FARAJO NIWU RE TABI TI E KO FARAJO NIPA LILO AWON NII TI O WA NISALE WONYI:-

Tick	☐	SA	If you strongly agree TI E BA FI GBOGBO OKAN GBA
"	"	A	If you agree BI E BA GBA
"	"	U	If you are uncertain TI KO BA DA O LOJU
"	"	D	If you disagree TI E KO BA GBA
"	"	SD	If you strongly disagree TI E BA KO JALE/ TI E KO BA GBA RARA

		SA	A	U	D	SD
19.	Guinea worm should not be considered a serious disease ARUN SOBIA KO YE NI ARUN TI A LE KA SI PATAKI					
20.	Guinea worm can not infect me SOBIA KO LE HU MI					
21.	Guinea worm can not infect my wife SOBIA KO LE MI IYAWO MI					
22.	Guinea worm can not infect my children SOBIA KO LE HU AWON OMO MI					
23.	Guinea worm can not infect my friends SOBIA KO LE HU AWON ORE MI					

	SA	A	U	D	SD
24. Guinea worm is curable SOBIA SE WO SAN					
25. It is not a disease one should fear SOBIA KI SE ARUN TI EMIYAN LE K' BERU					
26. Guinea worm does not have effect on my health SOBIA KO LE DA ALAFIA JE					
27. If a person is infected, it does not have effect on his energy to work SOBIA KO LE [illegible] ATI SISE E'IYAN KU					
28. If someone has guinea worm in the village other people are not at risk TI SOBIA BA NU EMIKAN NI ABULE, KO LE NU AWON TI O KU					
29. All age-groups are susceptible to the infection ATI AGBA ATI OKOOE NI SOBIA LE NI					
30. To do community group work, people do not co-operate IFOWOSOWOPO KI ISI NIRA ISE ILU (LATI SE ISE PO AWON EMIYAN KO NI IFOWOSOWOPO)					
31. Providing safe water for family use will eradicate guinea worm [illegible] TI O DARA FUN LILO IDILE KO NI JE KI SOBIA NU WON					
32. To control the disease entails responsibility that it is not worth doing WAHALA ATI DIDENO ARUN NI KU POJU LO NU IRESI EA EMIYA					
33. Waiting for government to solve the problem is preferred to self-help O SAN KI IJOBA SE GOGO ETO TI O YE JU ISE IRANWO ENI LOKO					

	SA	A	U	D	SD
34. Going for treatment of guinea worm entails much problems like time wasting and expenses that it is worthless to do so. LATI IBI TOJU ARUN SOBIA NI ILE OOGUN RU WAHALA ATI IYONU LOWO PUPO, TOPE TI IO WA SI FIFI AKOKO SOFO. OWO EHIYAN LOWOJU, KO TILE YE NI EKAN TI O YE KI A W SE					
35. Guinea worm is best treated with native medicine OGUN IBILE LO LE WO ARUN SOBIA DAA					
36. Guinea worm is best treated with Orthodox medicine OGUN OYINBO TABI ABERE LO LE WO SOBIA DAA					
37. Guinea worm is best treated by leaving it to disapear by itself KI A KUKU FI SOBIA SILE, YIO LO FUNRARE					
38. It is a good thing to encourage people take appropriate measures to control the disease O DARA PUPO KI A WA GBA AWON EHIYAN NIYANJU LATI DO OHUN TI A LE FI WOPA ARUN SOBIA YI					
39. Neither myself nor my family members is likely to get the disease KO SEEU PE EMI TABI AWON ARA ILE MI LE NI ARUN SOBIA. TABI KI O SE EWUKEWU NIBI YI					

40. Have you made any attempt to avoid the occurrence of guinea worm in the past three months ?

AWE E TI GBIYANJU LATI RI WIPE O KO KO ARUN SOBIA NIBI OSU KETA TI O KOJA YI ?

Yes - 1

No - 2 [ ]

Not applicable - 3

41. What exactly did you do ?
KINI AWON NKAN TI E SE GAN ?

42. Did you succeed ?
NJE E NI AYORISI RERE/SE KO ITI MU E ?

Yes - 1
No - 2
Not applicable - 3

43. Please comment on your answer to question 42, if applicable.
SE ALAYE OIE SINUJU SI. SI IDAHUN PE TI E KO SOKE YI

44. What method of control did you adopt to avoid guinea worm in the past three months ?
IRU ONA WO NI O TI GBA LATI MA JE KI SOGIA NU YIN NINU OSU NETA TO KOJA ?

Filteration of water - 1
Boiling - 2
Sanitary well - 3
Use of chemical (name it) - 4
Others (specify) - 5

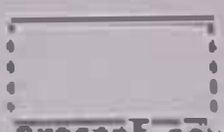
45. Who motivated you to take the action stated above ?
TANI RANYIN LOMO LATI NO ONA TI E GBA LATI KANO SORIA TEMI YI ?

46. Where do you get water for household use ?
NIBO NI E TI NYON OMI TI E NLO NINU ILE RE ?

Pond	-	1
Water-hole	-	2
Spring	-	3
Pipe borne	-	4
Well	-	4
Stream	-	6
Others (specify)		7

47. Do you have water supply from the source all the year round ?
NJE OMI NAA YIPO ODUN LATI ONA TI E NGBA RI YI ?

Yes	-	1
No	-	2



48. Where do you get water from, if the present source gets dry ?
NIBO NI E TI NRI OMI MIRAN PON NIGBATI EYI TI E TI NPON TELE RI TI GBE ?

49. Do you carry water from the village to your farms to drink ?
NJE E NGBE OMI MINU LATI ABULE LOSI OKO RE FUN MINU ?

Yes	-	1
No	-	2

50. Where do you get water to drink in the farm ?
NIBO NI E TI NPON OMI TI O NRI MINU OKO RE ?

Stream	-	1
Pond	-	2
Others (specify)	-	3

51. Physical Examination for guinea worm.