CUTANEOUS ULCERS IN PRIMARY SCHOOL CHILDREN

IN THE

SOUTH TONGU DISTRICT

OF

VOLTA REGION

PRESENTED BY DR. NII ADJEI ADJETEY

DECEMBER, 1995

SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF GHANA

CUTANEOUS ULCERS IN PRIMARY SCHOOL CHILDREN IN THE SOUTH TONGU DISTRICT OF THE VOLTA REGION

A STUDY INTO THE PREVALENCE AND CHARACTERISTICS OF ULCERS IN PRIMARY SCHOOL CHILDREN

SUBMITTED IN FULFILMENT OF THE REQUIREMENT FOR THE M.P.H. DEGREE OF THE SCHOOL OF PUBLIC HEALTH

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Dedicated to my dear wife, Sophia and my lovely children, Andrew, Naomi and Esther for their wonderful support and encouragement during the preparation of this document.

DECLARATION

I declare that all the work in this study has been the result of my own research, except where specific references have been made; and that it has not been submitted towards any other degree nor is it being submitted concurrently for any other degree.

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LIST OF ABBREVIATIONS

1. **DHMT:** **District Health Management Team**

2. **GES:** **Ghana Education Service**

3. **MOH:** **Ministry of Health**

4. **OPD:** **Out-patient Department**

5. **SMO-PH:** **Senior Medical Officer - Public Health**

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EXECUTIVE SUMMARY

Introduction

The South Tongu District Health Administration has observed that skin diseases and ulcers have been featuring prominently in their top ten diseases reported at the OPD. Indeed for the past two years they ranked second among the various diseases reported and available records showed that the trend in 1995 may not be any different. The nature and magnitude of the problem of ulcers is not known to the health authorities since the cases of ulcers cannot be disaggregated from other skin disease with which they are grouped on the reporting forms currently in use. It is therefore important to find out the prevalence of ulcers in the district and their characteristics such as the types of ulcers that are predominant, who are affected and what kinds of treatment are applied on them. This would give an insight to the problem and what intervention measures to undertake.

This study was undertaken to investigate the prevalence of ulcers among primary school children, compare the prevalence among school children living within 1.5km of the Volta river to that of school children living further away from the river and to describe the characteristics of the

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ulcers. The results would serve as a basis for a more extensive study on the ulcers in the district.

Methodology

A cross-sectional comparative design was used in the study to find answers to questions such as: What are the predominant types of ulcers? What is the age-sex distribution and what traditional treatment, if any, are applied on these ulcers?

Four hundred primary school pupils were selected by multi-stage sampling method and were interviewed and examined clinically for ulcers. An interview schedule was used in the data collection. The data was processed and analysed using the Epi Info (Version 6) computer software programme.

Findings and Conclusion

The prevalence of ulcers among primary school children in the district was 29.6%. The prevalence among children living within 1.5km of the Volta river was 28.5% compared to 31.5% for those living further away. The difference in the prevalence between the two groups was not statistically significant.

The predominant type of ulcer found was tropical ulcer (95%) and the commonest sites on the body where the ulcers were found were the legs (82%). Traditional therapy using herbs and palm kernel oil was the main type of treatment used for the ulcers.

The prevalence of ulcers of 29.6% found among primary school children could mean an even higher prevalence among children in the district and for that matter the population as a whole, as it is known that children with severer forms of ulcers may stay away from school.

Recommendations

1. Ulcers should be disaggregated from skin diseases on the monthly morbidity reporting form and be placed on their own. This would allow for continuous watchfulness over their distribution and trends.
2. It is recommended that a further study is carried out on the ulcers in the district to find out the factors associated with the high prevalence in certain parts of the district which came out of the study.

3. Health education on the possible causes of ulcers and their management should be intensified especially in schools.

4. Finally it is recommended that an intervention strategy for ulcers should be included in the School Health Programme being run by the MOH and GES emphasizing on early treatment, regular physical examination of the children for ulcers and in-service training for both MOH and GES personnel involved in the School Health Programme on recent advances in the management of ulcers.

C H A P T E R O N E

INTRODUCTION

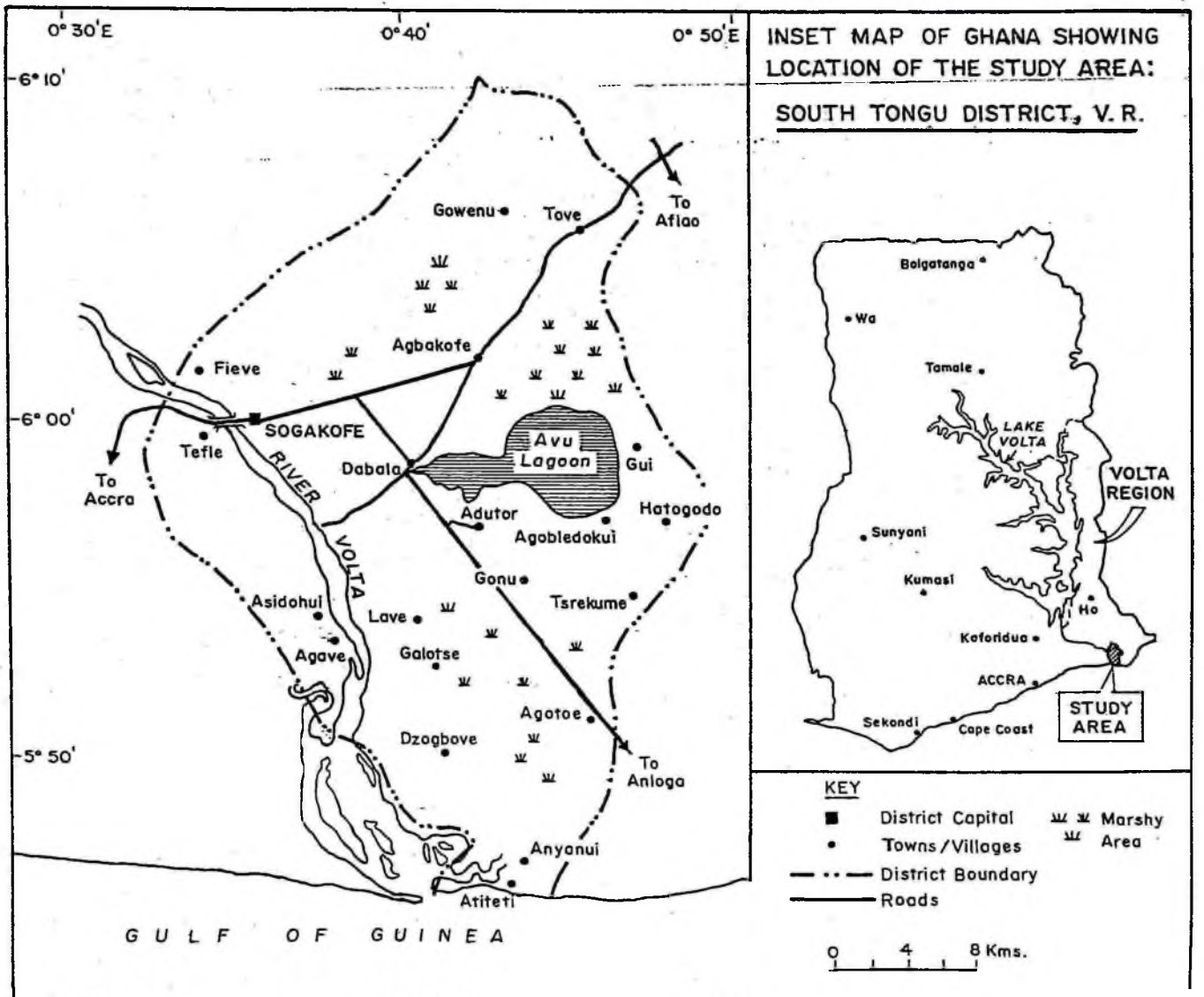
1.1 BACKGROUND OF STUDY AREA

The South Tongu District is one of the twelve districts in the Volta Region of Ghana. The district lies in the southern section of the region. It is bounded on the north by the North Tongu District, on the east by the Akatsi District, on the South by the Keta District, all in the Volta Region and on the west by the Dangbe East District in the Greater Accra Region. The total land area occupied by the district is approximately 400 square kilometres.

The district capital is Sogakope. It is about 150km from Ho, the regional capital, 86km from Aflao, the eastern border town and 128km from Accra, the national capital. The Volta river which passes through the district on its way to the sea is spanned by the lower Volta bridge at Sogakope. Figure 1. shows a map of the study area.

The total population of the district is 86,969, projected from the 1984 National population census with an annual growth rate of

Fig. 1: A MAP OF SOUTH TONGU DISTRICT (V. R.)



3.3%. About 75% of the population live in rural settings and the remaining 25% live in the urban areas.

The district has two main rainy seasons - major and minor. The major season is from April to July with the peak in June. The minor season falls between September and November with a peak in October. The vegetation is
Savana grassland interspersed with semi-deciduous forest in some areas.
The people are predominantly Ewes. The main occupations of the people are cattle-rearing, fishing and farming. Mat weaving and pottery are carried out on a minor scale in certain areas of the district.

The district is sub-divided into six sub-districts to facilitate health service delivery and improve coverage. There are ten health facilities in the district, two of which are run by non-governmental organizations. The district has a functioning District Health Management Team which implements health programmes in the district.

The South Tongu district has a number of educational institutions including 73 primary schools and 3 second cycle institutions. Most of the primary schools are housed in dilapidated structures especially in the rural areas and are poorly staffed.

The Ministry of Health in collaboration with the Ghana Education Service runs the school health programme which is aimed at maintaining the school children in good health through regular screening and examination of the children to detect abnormalities that could be corrected early to prevent permanent disability and ill health.

1.2 STATEMENT OF THE PROBLEM

The South Tongu district Health Administration has been reporting of cases of skin diseases and ulcers. Skin ulcers ranked as the second cause of OPD attendance in 1993. In 1994 there were 2302 of skin ulcers and still ranked as the second commonest disease seen at the OPD after malaria (Annual Report, 1994). Available records for the first eight months of 1995 gave a figure of 1680 cases reported. With the low utilization of health facilities in the country as a whole and the district in particular, the number of cases of skin

ulcers within the communities may even be higher. The reporting system of the Ministry of Health lumps all skin diseases and ulcers together, with the exception of yaws and guinea worm ulcer and also genital ulcers acquired through sexually transmitted diseases (MOH, monthly OPD return of morbidity). The magnitude of the problem of skin ulcers cannot therefore be fully appreciated if one relies on information provided on the monthly morbidity returns form. There is also very little knowledge about the characteristics of the ulcers or possible causes. The problem of ulcers in the district raises the following research questions which need to be investigated further

i. What is the nature or extent of the problem of cutaneous ulcers?

ii What types of cutaneous ulcers are predominant in the district?

iii. What are the predominant sites of these ulcers on the body?

iv. Who is affected?

v. What is the knowledge, attitude and practices of the affected people?

vi. How do the ulcers affect the lives of the people?

vii. What traditional remedies, if any, do affected people apply to

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the ulcers?

viii. What is the role of water availability in terms of nearness of the Volta River on the prevalence of cutaneous ulcers?

The district Health Management team (DHMT) would be interested in finding answers to some of these questions hence the need for study.

1.3 OPERATIONAL DEFINITIONS

ULCER: For the purpose of this study a cutaneous ulcer is defined as a breach in the continuity of the surface of epithelium with loss of tissue from specific or no-specific causes (Wosornu 1982). It however excludes genital ulcers acquired through sexually transmitted diseases.

TYPES OF ULCER: This is classified based on the clinical features as presented during the survey with reference to the size, location, nature of the edges of the floor of the ulcer. The diagnosis of what type of ulcer is made clinically without any attempt at using bacteriological or serological tests.

1.4 RATIONALE FOR STUDY

Chronic cutaneous ulcers especially of the lower extremities, represent a major health problem both in terms of disability and morbidity and of economic cost for society. In industrialised countries 0.5% to 1.5% of the population suffer from chronic leg ulcers (Mechele et al, 1992).

The prevalence may even be higher in rural communities in developing countries such as Ghana because of the warm humid climate and presence of other predisposing factors, such as sickle cell disease and poor personal hygiene.

The ulcers may be the reason for absence from work which to the rural peasant farmer may mean loss of income.

Children especially in rural communities such as exist in the South Tongu District are exposed to predisposing factors which can lead to cutaneous ulcers such as walking with bare feet on the farms, poor personal hygiene and malnutrition. Yaws, a rural disease of warm humid climates, is usually contracted from about the age two or three years. By age 15 most of the population has been affected (Manson-Bahr, et al 1987). Susceptible children are infected by contact with children from other households rather than from their

own siblings. Again, tropical ulcer has highest incidence in children after the age of five (Manson-Bahr, et al 1987). The burden of ulcers on children is therefore very great hence children constitute a relevant target group to be studied. A prevalence study of what the situation of cutaneous ulcers is in the district and some of their characteristics would serve as a basis for a more comprehensive study.

The school environment provides an opportunity for children to aggregate in large numbers, making it favourable for the spread of some skin infections, including ulcers

This study is limited to primary school children for the following reasons.

i. They constitute an easily identifiable and accessible target group.

ii. The Ministry of Health has an ongoing school health programme and it is envisaged that the findings of the study could serve as a basis of developing an intervention measure to be incorporated in the programme.

iii. The resources available for the study would not be enough to support a wider survey.

1.5 OBJECTIVES

1.5.1 GENERAL OBJECTIVE

The general objective of the study was to estimate the prevalence of cutaneous ulcers in primary childen in the district and describe the characteristics as basis for developing intervention measures and further studies.

1.5.2 SPECIFIC OBJECTIVES

The specific objectives of the study were:

i. To describe the age - sex distributions of cutaneous ulcers in primary school children.

ii. To find out the predominant sites of the location of the ulcers.

iii. To investigate the predominant types of ulcers in the district.

iv. To find out the socio-economic characteristics of the parents of children with ulcers.

v. To find out what types of treatment are used on the ulcers.

vii. To compare the prevalence of ulcers in school children living in communities within a distance of 2km from

the Volta river to that of children living further away.

vii. To describe personal hygiene practices among children with cutaneous ulcers.

viii. To develop an intervention measure on cutaneous ulcers to be incorporated into the School Health Programme of the District Health Management Team (DHMT).

CHAPTER TWO

LITERATURE REVIEW

2.1 TYPES OF ULCERS

Chronic ulceration of the skin is an important cause of disability in the tropics. There are many causes and when a cutaneous ulcer presents the following conditions must be thought of : Tropical ulcer, Tuberculosis, Buruli ulcer, Leprosy, Yaws, and Guinea worm. Chronic ulceration of the lower leg also may occur in sickle cell disease and cancer of the skin.

In Ghana, there has not been much work done on ulcers as a whole. There have been studies, however, on specific ulcers such as Guinea worm ulcer (Wurapa et al, 1975), Yaws (Onori, 1962) (Rossel, 1963) Buruli ulcer (Bayley, 1971), (van der Werf, et al 1989) and Sickle cell leg ulcer (Ankra-Badu, 1992).

2.1.1 TROPICAL ULCER

Tropical ulcer is a disease of rural farmers, plantation labourers or famine victims. The highest incidence is in the second decade of life, children under five years of age rarely

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being affected. Where both sexes work in the field the incidence is equal in both sexes (Manson-Bahr, 1987). The incidence is high in the rainy season and according to Kubesrski (1980) occasionally there is an outbreak amounting to a small epidemic.

The aetiology is still not clear but three factors are involved: infection, possibly nutritional deficiency and trauma.

Two organisms, *Fusobacterium fusiforme* and *Borrelia vincenti* are so closely connected with tropical ulcer that they are almost certainly concerned directly in its cause. Ngu (1967) found other organisms such as *Proteus,* pseudomonads and diphtheroids but these are probably contaminants.

Nutritional deficiency has been suggested as an important predisposing factor since malnutrition and tropical ulcers are frequently found together and tropical ulcers are common in famine condition. In Zambia, however, a significant minority of ulcer patients were well nourished and their diet contain plenty of fish (Robinson et al, 1986). This observation suggests that nutritional deficiency is not a major cause.

Although ulcers have been produced experimentally in healthy volunteers by contact with ulcer pus (Mc Adam, 1966) the high incidence of ulcers on the anterior and lateral aspects of the lower leg in people who go around with bare feet and legs suggest that trauma plays an important role (Manson-Bahr et al, 1987). Ankra-Badu (1992) also stressed the role of trauma in sickle cell leg ulcers.

Transmission is direct from cases to cases or contamination of an object which causes trauma . Flies have been thought to be agents of transmission but those cases on which flies feed were not infective (Robinson et al, 1986) and flies are not thought to be of importance in rural conditions.
Tropical ulcer begins as an abrasion or insect bite which soon swells and ulcerates. It has raised circular and sharply defined edges and a boggy floor, discharging blood stained and offensive pus (Wosornu, 1982).

2.1.2 BURULI ULCER

Buruli ulcer, named after the part of Uganda where it has been studied has been found in localized foci in Uganda,

Nigeria, Zaire, Benin and Ghana. The major foci of infection are Uganda and New Guinea. van der Werf and others (1989) described a series of cases of Buruli ulcer from a new endemic focus in the Afram valley, north of Agogo in Ghana. Before then there has been one case report from Ghana (Bayley, 1971).

Buruli ulcer is caused by *Mycobacterium ulcerans* which is an acid-fast bacillus first described in Australia.
The probable method of transmission is through the skin by an abrasion or insect bite. *Mycobacterium ulcerans* has not been recovered from soil, water or insects, but saprophytic mycobacteria closely resembling it have been isolated from grass and the distribution of Buruli ulcer in Uganda is similar to that of the grass *Echinocloa pyramidalis* (Baker, 1977). Meyers and others (1974) however believed that *Mycobacterium ulcerans* occur in the soil or on vegetation, infecting the dermis through thorn pricks or other penetrating injuries.
Buruli ulcer is a chronic ulcerating condition of the skin which heals naturally after months or years leaving severe

scarring. The onset is gradual with a small indurated subcutaneous swelling attached to the skin but not the deep fascia. Usually single and commonest on a limb or near the joint, the lesion may occur on any part of the body except the palms and soles and may itch. The overlying skin becomes hyperpigmented and then breaks down to form an ulcer with undermined edges which may become very large ((Manson-Bahr, et al, 1987). The ulcer is painless with little continuing discharge which is not offensive (van der Werf et al, 1989). Secondary infection, however, causes a foul swelling sloughing ulcer.

The highest incidence is in children and in Uganda in women more than men. The disease is found in relatively small foci around swamps and river banks (Uganda Buruli group, 1969).

2.1.3 YAWS

Yaws is restricted to tropical countries with a coastal distribution in South America because of its limitation to populations of African descent and a limited distribution in India in certain previously isolated Aboriginal tribe. Formerly

more prevalent in Africa, it still persists at low level and in a latent state, and there has recently been a considerable recrudescence; in Ghana there was a 12-fold increase between 1968 and 1981. In some countries the prevalence is not uniform throughout the yaws-endemic area. In some African countries active yaws has been reported more prevalent during the wet than during the dry, warmer season (Manson-Bahr et al, 1987)

The cause of yaws is *Treponema pertenue* which is a slender delicate spirochaete. Yaws is essentially a disease of primitive rural people living in moist humid climates. The infection is transmitted by direct contact of the fingers with an infective lesion in the skin of another person. The treponema probably enter through a breach in the epidermis. Transmission occurs from child to child. Early cases are much more common in children than in adults, possibly because adults tend to be immune through previous infection; or because they do not have such close physical contact with infective persons and such a propensity to minor skin injury.

Transmission is particularly likely in hot and humid conditions where little clothing is worn, the skin is constantly moist (and therefore the lesions tend to be open) and bodily cleanliness is not generally stressed.

The initial lesion is a granular papilloma, raised above the skin and usually covered with a scab. There may be an irregular fungating mass of granulation tissue. Sometimes the initial lesion takes the form of an ulcer with a granulating base which is rarely indurated. Healing takes place by scab formation and epitheliazation from the periphery (Bryceson, et al, 1970) (Walton, 1957).

The initial lesion develops most often on an exposed area of the body particularly the lower third of the leg and the wrist. It is uncommon on the edges or outer edges or between the toes (Manson-Bahr, et al, 1987).

2.1.4 SICKLE CELL ULCERS

Cutaneous ulcers especially on the inner aspect of the ankle may occur in older children as well as adults with sickle cell anemia (Lewis, 1970).

According to Ankra-Badu (1992) the first report of leg ulcers in sickle cell disease was by Netherton in 1936 but association between the two conditions was first published by Cummer and La Rocco in 1940. The prevalence ranges from 0% in Eastern province of Saudi Arabia through 2% in Nigeria to 10.2% in Ghana (Konotey-Ahulu, 1979). The ulcers are chronic, more common in homozygous sickle cell than other genotypes, often infected and may lead to tetanus or precipitate vaso-occlusive crisis.

Children with sickle cell disease are pale and mildly jaundiced. The recurrent leg ulcers may leave characteristic scars over the anterior medial tibial regions. They also show some characteristeric features like stunted growth and gnathopathy which may aid diagnosis in the field. Diagnosis however is always confirmed by a sickling test and haemoglobin electrophoresis.

2.2 SKIN DISEASES AND ULCERS AND WATER AVAILABILITY

There are many infections of the skin which especially in the tropics may be significantly reduced following improvements in domestic

and personal hygiene. These improvements in hygiene often hinge upon increased availability of water and the use for hygiene purposes of increased volumes of water. They may therefore be described as water-washed diseases and they depend on the quantity. The relevance of water to these diseases is that it is an aid to hygiene and cleanliness, and its quality is relatively unimportant for this purpose (Cairncross et al, 1983)

Bacteria skin sepsis, scabies, fungal infections of the skin and ulcers are extremely prevalent in many hot climates. These infections are related to poor hygiene and it is to be anticipated that they will be reduced by increasing the volume of water used for personal hygiene.

They therefore relate primarily to water quantity and are not significantly related to water quality. Observation of people's behaviour in Eastern and Southern Africa (White et al, 1972; Feachem et al, 1978) suggests that when water is available within about 1 mile (1.6km) or within half-an-hour's return journey of the home, water use does not significantly increase when the distance or time is reduced, until the point is reached where a tap can be provided within each house or yard. When this is achieved water use may increase dramatically from 10-30 litres to 30-100

litres/person day. Quantity related health benefits are therefore most likely where traditional water sources are particularly far away or where water can be supplied to each household.

Water availability in some areas of the district is very poor and it would be interesting to find what effect this may have on prevalence of ulcers.

CHAPTER THREE

METHODOLOGY

3.1 STUDY TYPE

The main issues the study sought to address were the magnitude of the problem of cutaneous ulcers in primary school children and their characteristics.

It also sought to compare the prevalence of the ulcers in children living near the Volta river to those living further away. The study design was therefore cross-sectional comparative.

3.2 STUDY POPULATION

The target population for the study was all children in primary schools in the district. There are seventy-three primary schools in the district and these are all under the Ghana Education Service. There are no private schools in the district offering primary education.

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3.3 SAMPLING METHOD AND SAMPLE SIZE

A multi-stage sampling procedure was adopted for the study.

The list of communities with primary schools in the district was obtained. This was stratified into two groups according to proximity to the Volta river. One group of communities was within 1.5km of the Volta river and the other group was more than 2km away from the river. This was done because it was important that the sample includes representative groups of study units from the two groups for the purpose of comparison. The distance of 1.5km was used because it has been shown that when water is available within this distance its use is not significantly increased when the distance is reduced and the effect of water availability for hygiene purposes is markedly felt when it is beyond 2km walking distance.

It was suspected that people living further away from the water source would be more prone to skin diseases and ulcers. The prevalence of ulcers in the communities further away from the river was therefore estimated to be about 24% and that of communities near the water to be 12%. These estimates were used to calculate the sample size for the study using the EPI Info computer software programme for calculating sample size for two proportions.

This worked out to give a sample size of 128 children for the group 2km away from the river and 256 children for the group nearer to the river making a total of 384. However, 400 pupils were interviewed and examined during the data collection.

The following three-stage sampling procedure was performed to select the respondents.

1. In all, eight communities, were randomly selected; 3 from the communites 2km away from the river, and five from the communities within 1.5km from the river.

The list of the communities is given in the following table.

Community within 1.5km from Volta River	**Community more than 2km from Volta River**
Agbeve	Dabala
Asidohui	Adutor
Tadze	Agbakope
Tefle	
Fieve	

2. A primary school was randomly selected from each of the eight communities.

The following primary schools were selected:

List of Primary Schools selected

Community within 1.5km of Volta River	**Community more than 2km from Volta River**
Agbeve Roman Catholic Primary	Dabala E.P. Primary
Asidohui Presby Primary	Adutor E.P. Primary
Tadze R.C. Primary	Agbakope R.C. Primary
Fieve E.P. Primary	
Tefle E.P. Primary	

3. Fifty pupils were randomly selected from each of the eight primary schools using the class registers. These pupils were then interviewed using an interview schedule and were physically examined for the presence of cutaneous ulcers and their characteristics.

The examinations were done by a physician.

3.4 VARIABLES

The following variables were selected for the study.

i. Age of pupil

ii. Sex

iii. Occupation of parent

iv. Educational level of parent

v. Location of ulcer

vi. Nature of the edges of ulcer

vii. Nature of the floor of the ulcer

viii. Treatment of the ulcer

ix. Source of treatment

x. Source of water for domestic use

xi. Distance from source of water

xii. Level of personal hygiene

For complete list of the variables and how they were defined and measured refer to Annex (1).

3.5 DATA COLLECTION TECHNIQUES AND TOOLS

The data collection techniques employed for the study were:

i. Interviews (face to face) of the pupils using questionnaires.

ii. Clinical examination of the pupils for the presence of ulcers and their characteristics.

A sample of the interview schedule used for the data collection can

be found in the Annex (2).

3.6 SELECTION AND TRAINING OF RESEARCH ASSISTANTS

Four research assistants were selected from the District Health Administration and given training in the use of the interview schedule.

This was very necessary because the questionnaire was prepared in English but had to be translated into Ewe on the field and the responses translated from Ewe to English.

It also ensured uniformity in the way the questions were asked and how the responses were translated. Two of the research assistants were technical officer from the Disease Control Division, one was a biostatistics assistant and the other an environmental assistant, all with the Ministry of Health.

3.7 PRE-TESTING EXPERIENCE

Pre-testing of the data collection tool was done in Dordekope, a community which was not included in the communities selected for the study. During the pre-testing it was noticed that the pupils interviewed were all giving similar answers to the questions asked. It was then realized that pupils interviewed earlier went back to tell

prospective interviewees what to say when they are interviewed. This anomaly was corrected by keeping all the pupils selected for the interview together at one area and releasing each pupil after completing his or her interview.

From the results of the pre-testing some of the questions were reframed and some open-ended questions were closed to facilitate analysis.

3.8 DATA COLLECTION AND HANDLING

Data collection took place at the selected schools from the 3rd to 14th November, 1995. The interview and examination were carried out in one school on each day of the data collection.

The data collected were checked for completeness and accuracy. The answered questionaires were sorted out and coded. Those that were found to be incomplete or inaccurate and there was no means of rectifying the inaccuracy were not included in the analysis. The coded data then entered into the computer using the EPI Info (Version 6) computer software programme. The analysis of the data was also carried out using the same computer programme.

3.9 ETHICAL CONSIDERATIONS

One main ethical issue that was considered during the study was the case of pupils found to have cutaneous ulcers. It would be very unethical to identify children with ulcers without offering some form of assistance. During the data collection children found with ulcers were given first aid treatment which included wound cleaning and dressing. They were then referred to the nearest clinics for further management.

3.10 LIMITATIONS OF STUDY

The target group for the study was primary school pupils who do not have much insight to the problem of ulcers hence much information could not be obtained from them. This limitation was anticipated and the data collection tool used was therefore limited to collecting information that did not require in depth knowledge of the problem.

The choice of the technique of interviewing for the data collection was appropriate as it afforded classification of the questions and higher response rate. The presence of the interviewer, however, could influence the respondents.

The use of a language that had to be translated into English posed a potential source of bias. This was reduced to a minimum, however, by ensuring adequate training for the research assistants pre-testing.

CHAPTER FOUR

RESULTS AND FINDINGS

4.1 AGE/SEX DISTRIBUTION OF CHILDREN WITH ULCERS

There were 61 males and 48 females, a sex ratio of 1.25:1 Their mean age was 12 years (range:6-18 years)

The distribution by age group is shown in the table below:

Table 4.1 Distribution of ulcers by age-group

Age Group	Number of Cases
5 - 9 yrs	13 (12%)
10 - 14	78 (72%)
15 yr and above	18 (17%)
TOTAL	109 (100%)

The age grouping was done to conform with the age grouping of the MOH reporting forms.

A large proportion (72%) was in the 10-14 years age group.

4.2 SOCIO-ECONOMIC BACKGROUND OF PARENTS OF CHILDREN WITH ULCERS

Of the 109 cases 49% had mothers who had attended school at least up to primary level and 79% of them had fathers who have had some schooling. Fifty-two (47.7%) of the pupils with ulcer had both parents educated.

The occupations of the parents of children with ulcers are summarised in the tables below.

Table 4.2 Occupation of mothers of children with ulcers

Occupation of mother	**Number of children with ulcers**
Farming	21.1 (21%)
Trading	44.0 (44%)
Wage employment	3.7 (3.6%)
Others	31.2 (31.4%)
TOTAL	109 (100%)

Table 4.3 Occupation of fathers of children with ulcers

Occupation of father	**Number of children with ulcers**
Farming	25.7 (25%)
Fishing	17.4 (17.4%)
Wage employment	14.7 (14.6%)
Others	42.2 (43%)
TOTAL	109 (100%)

Ninety-two (83%) of the children with ulcers help their parents on their farms. They help in either weeding, planting or harvesting of crops.

4.3 PREVALENCE OF ULCERS IN SCHOOL CHILDREN

Out of 369 pupils interviewed 109 had ulcers on their body giving a prevalence of 29.6% (29.5).

There were 42 children with ulcers out of 134 children in communities more than 2km from the Volta river giving a prevalence of 31.3%. In communities within 1.5km of the Volta river there were 67 children with ulcers from a total of 234 children. This gives a prevalence of 28.6% among those near the river.

The tables below show the distribution of ulcer in the Primary Schools and in children living far from and near the Volta river.

Table 4.4 Distribution of ulcers in the primary schools

School	Pupils with ulcer	Pupils without ulcer	Total
Agbakope R.C.	9	35	44
Dabala E.P.	6	25	31
Adutor E.P.	27	32	59
Agbeve R.C.	11	33	44
Asidohui Presby	17	44	61
Tadze R.C.	10	17	27
Fieve E.P.	18	44	62
Tefle E.P.	11	30	41
TOTAL	109	260	369

Table 4.5 Distribution of ulcers in children living far from and near the Volta river.

Distance from Volta river	Ulcer	No Ulcer	Total
Less than 1.5km	67 (28.5%)	168 (71.5%)	235 (100%)
2km or more	42 (31.5%)	92 (68.5%)	134 (100%)
TOTAL	109 (31.3%)	260 (68.71)	369

Table 4.5 indicates that 28.5% of shcool children living within a distance of 1.5km from the Volta river had ulcers compared to 31.5% of shcool children living 2km or further away from the river. This difference is not statistically significant (Chi-square = 0.33; P-value > 0.05).

The prevalence of ulcers among the various schools used in the study is also shown in the table below

Table 4.6 Prevalence of ulcers in Primary Schools

Primary School	Prevalence of ulcer
Agbakope R.C	20%
Dabala E.P	19%
Adutor E.P	45%
Agbeve R.C	25%
Asidohui Presby	27%
Tadze R.C	38%
Fieve E.P	29%
Tefle E.P	26%
All Schools	29.6%

The prevalence of ulcers in Adutor E.P. Primary (45%) and Tadze R.C. Primary (38%) are higher than the average for the district (29.5%).

4.4 PREDOMINANT SITES OF ULCERS ON THE BODY

The sites of the ulcers on the body are shown in table 4.7

Table 4.7 Location of ulcers on the body.

Site	Number of Cases
Legs	90 (82.6%)
Arms	16 (14.7%)
Head	2 (1.8%)
Trunk	1 (0.9%)
TOTAL	109 (100%)

The predominant site of the ulcers was the legs (82.6%). The trunk was least affected (0.9%).

4.5 CHARACTERISTICS OF ULCERS

The ulcers have slightly raised edges in 103 (95%) cases. There were no ulcers with undermined edges or punched out edges. Neither were there any with everted edges. Six (5%) of the cases had mere abrasions. The edges were round.

The floor of the ulcers were covered with slough in 45 (41.3%) cases. It was covered with granulation tissue in another 46 (42.2%)

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cases while 18 (16.5%) had the floor covered with dry scab. All the ulcers found were less than 2cm, measured at the longest diameter.

4.6 TREATMENT OF ULCER

Of the 109 children with ulcers, 29 (26.6%) said they treat their ulcers with traditional medicine mainly herbs and palm kernel oil. Fifty-seven (52.3%) said their ulcers are treated with orthodox medicine obtained from the clinics or bought from the chemical shops. In 23 (21.1%) of the cases there was no treatment at all.

Where treatment is applied, 86 (96.8%) of the children have the treatment at home while only 3 (3.2%) had their treatment at the clinic or health centre.

Some of the reasons given by the children for not going to the clinics for treatment were that their parents complained that there was no money to send them to the clinic and that ulcers heal faster when treated at home with herbs. Some said the clinics are too far away and it was easier to treat at home. Others gave reasons such as fear of the clinic environment.

4.7 WATER AVAILABILITY AND USE

The source of water used by the 369 children interviewed is shown in Table 4.8.

Table 4.8 Sources of water used by children.

Source of Water	Number of Children
Dam	3 (0.8%)
Streams	106 (28.7%)
Ponds	2 (0.5%)
Wells	2 (0.5%)
Volta River	256 (69.4%)
TOTAL	369 (100%)

It takes less than 15 minutes walk by 189 (51.2%) of the children interviewed to obtain water from the source for domestic use, while 98 (26.6%) take between 15-30 minutes. Thirty-two (8.7%) take more than 1 hour to obtain water.

Of the children with ulcers 55 (50.5%) take less than 15 minutes to obtain water, 29 (26.6%) take between 15 and 30 minutes to obtain water while 10 (9.2%) take more than one hour.

The number of times one washes the body and the amount of water used would help reduce the amount of disease-causing pathogens on the body. Of the children with ulcers 87 (79.8%) took their bath twice a day and only 10 (9.2%) had a bath once a day.

4.8 CAUSES OF ULCERS

The children interviewed attributed the causes of ulcers in the communities to injury from falls while playing, cuts from farm implements and thorn pricks. They also attributed them to boils and

insect bites which became infected. A few of them were of the view that sleeping in a poorly ventilated room with many people can spread the disease. Twenty-five percent (25%) of the children sleep in a room with three other people whilst 20% sleep with 4 other people.

The number of people sleeping in a room ranged between 1 and 10.

CHAPTER FIVE

DISCUSSION

5.1 AGE - SEX DISTRIBUTION OF CHILDREN WITH ULCERS

There is no preponderance of one sex in the ulcers although the sex ratio of male to female (1.25:1) found in the study gave a slight male preponderance in ulcers in school children. Similar results were obtained by van der Werf (1989) in the work on Buruli ulcer while Muelder and others (1990) had a male to female ratio of 1:1.3. However there was a clear male preponderance reported by Ankra-Badu (1992) and other authors in their work on sickle cell leg ulcer. These authors worked on specific ulcers, the predisposing factors of which may be different between the sexes. The present study, however, looked at the whole spectrum of ulcers without focusing on one particular type and this may account for the apparent lack of sex difference.

It could be said that in areas where farming and fishing are the predominant occupations, environmental and social factors that could predispose children to ulcers have no sex differentiation. One would expect that males would be more prone as they are more

aggressive and play a lot and trauma has been found to be a factor, but again, exposure to environmental factors as occur on the farm can also play an important role. In the Ghanaian society females do a lot of work on the farms; weeding, harvesting and carrying farm produce to the house. They are thus exposed just as equally as their male counterparts. The findings are similar to those of other authors (Manson-Bahr, 1987) who concluded that where both sexes work in the field the incidence of tropical ulcer is equal in both sexes. A high proportion (83%) of the children in this study assisted their parents on the farms.

A large proportion (72%) of the children were in the 10-14 years age group. This age group constitutes the early adolescence and it is during this period that children become more active and adventurous trying to explore the unknown thus exposing themselves to adverse environmental and social factors such as tree climbing, bird hunting and working on the farm.

The age range of 6 to 18 years was surprising considering the fact that in Ghana the usual age at which one entered primary class one was six years one would have expected that by age 13 the children

would have completed primary school. The higher age seen in this study may be due to late enrollment in school which is common in rural communities in Ghana.

5.2 SOCIO-ECONOMIC BACKGROUND OF PARENTS

Although obtaining formal education up to primary school level cannot be considered adequate, this was the minimum the study considered as basis for determining whether a parent was educated or not The information on education was obtained from children and so it was difficult to obtain a detailed information on the educational background of the parents. This limitation had to be borne in mind in trying to explain the results derived from the study.

The study revealed that 51% of the mothers of children with ulcers did not have any formal education while only 21% of the fathers were not educated. The educational background of the mother did not seem to have any influence on ulcers in children since children of educated mothers were equally affected as children of mothers without any formal education. On the other hand the high proportion of children with ulcers (79%) whose fathers had had some education seemed to go contrary to what one would have

expected since education equips one to be more conscious of personal hygiene and environmental sanitation and to inculcate such health-seeking practices in the children.

In traditional Ghanaian society it is the women who pay particular attention to the care and upkeep of the children and so their education would have a more positive influence on the health of children rather than men. The study was designed to describe the characteristics of children with ulcers rather than factors that influence the ulcers therefore comparing the influence of education on ulcers may not be conclusive.

5.3 PREVALENCE OF ULCERS

The prevalence of ulcers among school children was 29.6%. This figure is high and calls for an intervention measure to be put in place to reduce the prevalence. It is worthy to note, however, that this figure included all types of ulcers and cannot therefore be compared with the work of other authors who dealt with specific types of ulcers.

The importance of ulcer in general as a public health problem has not been emphasized by the Ministry of Health as evidenced by the

grouping together of ulcers and skin diseases on the monthly morbidity reporting forms. The reported outbreak of a 'strange disease' afflicting many people in the Amansie West District of the Ashanti Region by the Ghanaian Press in 1993 brought into focus the need to pay attention to ulcers however small they may appear to be. The 'strange disease' the press referred to turned out to be Buruli ulcer of which the health authorities were aware but not much attention had been given probably because of a deficiency in the reporting system.

Among the schools used for the study Adutor E.P. Primary had the highest proportion (45%) of ulcers. This confirmed the high incidence of skin diseases and ulcers reported from the sub-district in which this school is located (Annual Report, 1994). The prevailing factors within the sub-district which influence ulcers could not be investigated. Probably there are certain socio-cultural practices among the people in this area wich make them more susceptible. This aspect is worth exploring further.

There was no statistically significant difference between the prevalence of ulcers in children living within 1.5km of the Volta

river and those living further away as shown by the result of the Chi-square test. The Volta river can be said to have no influence on ulcers in terms of water availability and its use for hygiene purposes. This was so because 77.8% of the children with ulcers take less than thirty minutes to obtain water from the source hence quantity related health benefits of water are not obvious

Water use for hygiene purposes was similar for the two groups of children in the study. Most of the children (79.8%) had their bath at least twice a day. A smaller proportion (9.2%) had their bath once a day.

5.4 PREDOMINANT SITES OF ULCERS

Most of the ulcers were found on the legs (82.6%). They were not found in the area around the malleoli, an area which has a predilection for sickle cell ulcers. Perhaps this was so because the peak age of onset of leg ulcers in sickle cell is 15-19 years in Ghana (Ankra-Badu, 1992). Only 16% of the children with ulcers were in this age group.

The high proportion of the ulcers found on the legs may not be surprising. Children in rural areas tend to walk with bare feet with little protection to the feet and the legs are scarcely covered with clothing. The legs are also prone to trauma when the children are at play. Some authors (Mechele, 1992) recorded a prevalence of ulcers on the legs of 95%.

Buruli ulcer in children tend to affect the arms, head and trunk while it affects the legs more in adults (van der Werf, 1989). The low proportion (16%) of ulcers on the arms in the present study does not compare with that of the work done on Buruli ulcers. The lesions of yaws tend to occur on any part of the body - limbs, face, and anogenital region. This was not evident from the study.

5.5 PREDOMINANT TYPES OF ULCERS

Tropical ulcer was the predominant type of ulcer (95%) found in the study based on the criteria set for the diagnosis. An ulcer was diagnosed as Buruli if three criteria were met: ulcer legs widely undermined and the skin surrounding the ulcer shiny and hyperpigmented. These criteria for diagnosis were also used in the work on Buruli ulcer in Benin (Muelder and others, 1990) and Ashanti Region, Ghana (van der Werf and others , 1989). In

practice Buruli ulcer is a reliable clinical diagnosis, and further tests are necessary only to confirm atypical or isolated cases. Yaws and Guinea worm were also diagnosed clinically.

There were no Buruli ulcer, yaws or guinea worm ulcers found during the study. This may be due to the target population used for the study. It may be argued that children with those types of ulcers may stay away from school either for fear of being shunned by their peers or from the disabling effect of the ulcers. Yaws in particular has a very low prevalence in the district. Studies conducted by Wurapa and others (1975) in the Southern Volta region gave a prevalence of 0.5%.

If the speculation that the presence of ulcers may be the reason for staying away from school is actually the case then from the results of this study quite an appreciable number of children may be suffering from ulcers since there is low enrollment in schools in the district (Regional Health Research Unit Study, unpublished report). It would therefore be more informative if a more comprehensive study is carried out in the district using the present study as basis.

5.6 TREATMENT OF ULCERS

The variety of topical agents used in the management of cutaneous ulcers is a reflection of the disappointing results generally obtained. In Ghana disappointing results from the use of Eusol, Solcoseryl and Metronidazole either singly or in combination, have forced a few patients to use traditional therapies in sickle cell ulces(Ankra-Badu, 1992). This failure may be the reason why parents of 42% of the children with ulcer treated the ulcers with traditional therapy although this did not come out clear from the study. The children only said their parents decided to use traditional medicine for reasons they did not know. Others attributed the use of traditional treatment to the poor financial resources of their parents who could not afford the cost involved for treatment at the clinics.

The common traditional therapy used for the ulcers were honey, herbs, lime and palm kernel oil. The identity of the herbs used unfortunately could not be ascertained. Neem tree leaves however are known to be quite effective in the extraction of worms from guinea worm ulcers (personal experience). The pharmacological basis of lime and palm kernel oil in wound healing is not clear. However, the bland oily base has a basis for accelerating wound

healing in chronic ulcers. Moreover honey is a popular folklore drug and its anti bacterial and wound healing properties have been evaluated (Ankra-Badu, 1992).

It is worrying to find from the study that whereas orthodox medicine was applied in the treatment of some of the ulcers (52.3%), only 3.2% has the treatment at the clinic or health centre. The bulk had the treatment at home with drugs bought from chemical sellers or from friends who had had some experience with those medications. The hospitalization that sometimes became necessary with certain ulcers deter some patients to report for treatment at the hospitals and clinics. The lack of effective drugs for some ulcers means that excision and skin grafting remained the only active remedy (van der Werf, 1989), for larger ulcers it implies prolonged admission repeated anesthesia and painful procedures, and this further keeps the rural folk with ulcer away from the clinics.

5.7 CONCLUSION

In conclusion there is a high prevalence of cutaneous ulcers in primary school children in the South Tongu District. The ulcers are

predominantly tropical ulcers and of sizes less than 2cm at the longest diameter. Both sexes are equally affected with the peak age group being 10-14 years. The ulcers are very common on the legs and are treated mainly with herbs and palm kernel oil or with drugs bought from the counter in the home. The Volta river has no significant effect on the prevalence of ulcers in children in the district.



CHAPTER SIX

RECOMMENDATIONS

6.1 MOH - POLICY MAKERS

Reporting system for uloers

It is evident that the prevalence of ulcers in the district is high. This may also be the case in other districts but cannot be obvious from the way cases of ulcers are grouped together with other skin diseases on the MOH monthly morbidity reporting form (See Annex 3).

It is recommended that the ulcers should be disaggregated from skin diseases on the reporting form and placed on their own. This would allow for the continuous watchfulness over their distribution and trends through systematic collection and evaluation of morbidity reports and other data. The personnel required to do the differential diagnosis should be made available.

6.2 DISTRICT HEALTH MANAGERS

1. Further Study

The Adutor Community has the highest prevalence among the schools studied. It is recommended that a further study is carried out on the ulcers in the district to find out the factors associated with the high prevalence in certain parts of the district.

2. Health Education

Knowledge on possible causes and prevention of ulcers is poor among school children. There is he need to intensify health education, stressing on personal hygiene and the use of protective clothing.

3. Intervention Measures

An intervention strategy should be established in order to reduce the prevalence of ulcers among school children.
This intervention measure can be incorporated into the School Health Programme which should be intensified in the district.
The strategy must have the following components:

a) Regular examination: The pupils should be examined

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regularly for the presence of ulcers in order to initiate early treatment.

b) Treatment: Provision of First-Aid kits in all schools containing simple items for wound dressing. Prompt referral of all serious cases to the clinics/hospitals.

c) Training: Regular in-serving training should be conducted for both staff of the MOH and GES on the proper management of ulcers in line with new developments in the area.

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ANNEX (1)

VARIABLE	OPERATIONAL DEFINITION	SCALE OF MEASUREMENT
1. Age	Age at last birthday	Continuous in years
2. Sex	-	Nominal
3. Occupation of parent	Main type of income generating activity	Nominal e.g. Farming, Fishing
4. Educational level	The stage reached during formal education	Ordinal e.g. Primary, Secondary
5. Location of ulcer	The part of the body where the ulcer is found	Nominal e.g. head and neck, arms, legs
6. Nature of the edges of the ulcer	The edge is defined as the junction between the ulcer and the healthy skin	Nominal, e.g. raised edges, undermined edge
7. Nature of the floor of the ulcer	The floor is the area covering the base of the ulcer	Nominal, e.g. sloughy, granulating
8. Treatment of ulcer	Type of method of treating ulcer	Nominal, e.g. traditional, orthodox
9. Source of treatment	Where the treatment of the ulcer is done	Nominal, e.g. home, clinic, shrine
10. Source of water for domestic use	-	Nominal, e.g. river, pond well
11. Distance from source of water	-	Continues, in time taken to obtain water from source

12. Level of Personal Hygiene	How frequent a pupil takes his bath in a day	Ordinal, twice or more = good once or less = poor
13. Cause of ulcer	What brought about the ulcer on the body	Nominal, e.g. trauma, insect bite

ANNEX (2)

INTERVIEW SCHEDULE FOR THE STUDY OF CHARACTERISTICS OF ULCERS IN PRIMARY SCHOOL CHILDREN IN THE SOUTH TONGU DISTRICT

Instructions

Explain to the respondents the following -

a. This research is being undertaken by the School of Public Health, Legon.

b. The results will be helpful in the management of the disease.

c. The information will not be used to cause any form of embarrassment to the respondent.

Name of Community .....

Name of School .....

A. BACKGROUND INFORMATION

1. Sex:
   1. Male ( )
   2. Female ( )
2. Age (last birthday) .....
3. Class .....

B. SOCIO-ECONOMIC CHARACTERISTICS OF PARENTS

4a. Educational status of mother

1. Primary/Middle School ( )
2. Secondary School and above ( )
3. Did not attend school ( )
4. Don't know ( )

b. Educational status of father

1. Primary/Middle School ( )
2. Secondary School and above ( )
3. Did not attend school ( )
4. Don't know ( )

5.a. Occupation of father

1. Farming ( )
2. Fishing ( )
3. Wage Employment ( )
4. Unemployed ( )
5. Other Specify ----------

b. Occupation of mother

1. Farming ( )
2. Trading ( )
3. Housewife ( )
4. Wage employment ( )
5. Other (Specify) .....

C INFORMATION ON ULCER AND TREATMENT

6. Where do you have an ulcer on your body?

   1. Lower extremities (legs) ( )
   2. Upper extremities (arms) ( )
   3. Trunk ( )
   4. Head and neck ( )
   5. None ( )

   (If no ulcer proceed to Quest. 11)

7. How did your ulcer start?

   .....

   .....

8. What is the nature of the edges of the ulcer (Examine the ulcer)

   1. Raised edges ( )
   2. Punched out edges ( )
   3. Undermined edges ( )
   4. Everted edges ( )
   5. Other Specify .....

9. What is the nature of the floor of the ulcer (Examine floor)

   1. Granulating (red) ( )
   2. Sloughly (greyish, necrotic) ( )
   3. Other (Specify) .....

10.a. How is your ulcer treated?

   1. Traditional medicine ( )
   2. Orthodox medicine ( )
   3. Other (Specify) .....

b. Where is the treatment done?

1. At home ( )
2. At a herbalist ( )
3. Clinic/Health Centre ( )

c. Please give reasons for choice of source of treatment.

.....

.....

.....

11. What do you do when school is not in session?

.....

.....

.....

12. Do you help your parents on the farm? (for those whose parents are farmers)

1. Yes ( )
2. No ( )

13. If answer to question 12 is 'Yes' specify type of help.

.....

.....

.....

D. WATER AND SANITATION

14. Where do you obtain water for daily use in your home?

1. dam ( )
2. stream ( )

3. ponds ( )

4. wells ( )

5. Volta river ( )

6. rain water ( )

15.a. Do you treat your water before using

1. Yes ( )

2. No ( ).

b. Explain why .....

.....

c. How far is our water source from your home (approximate time taken)

1. less than 15 min. walk ( )

2. 15 - 30 min.walk ( )

3. 30 min. - 1hr walk ( )

4. more than 1 hr walk ( )

16. Where do you go to toilet (Specify) .....

1. Pit latrine (Public) ( )

2. Pit latrine (Private) ( )

3. 'Free Range' ( )

4. Other (Specify) .....

b. Please explain .....

.....

17. a. Do you sleep with your parents in one room?

1. Yes ( )

2. No ( )

b. How many people sleep with you in a room?

.....

.....

E. PERCEPTION OF THE ENVIRONMENT AND DISEASE

19. What do you think is the cause of ulcers in your community?

.....

.....

.....

20. Do you think your environment affects your health status?

1. Yes ( )
2. No ( )
3. Don't know ( )

THANK YOU

Date: .....

Name of interviewer .....

ANNEX 3

South Tongu Dist.

MINISTRY OF HEALTH: MONTHLY OUT-PATIENT RETURN OF MORBIDITY

VOLTA REGION 1994

DISEASES														Total
Diarrhoeal Disease	266	275	181	197	167	248	162	115	122	123				1850
Typhoid Fever				2						2				4
Tuberculosis		3	3	8	2	6	4	15	12	14				67
Whooping Cough	3	2	2	-	6	-	1	4	3	6				27
Meningitis	-	-	-	-	-	-	-	-	-	-				
Tetanus	-	-	-	-	-	-	-	-	-					
Acute Poliomyelitis	-	-	-	-	-	-	-	-	-	2				2
Chicken Pox	3	3	5	4	1	14	27	15	15	10				97
Measles	7	29	45	32	76	36	21	14	10	2				274
Infectious Hepatitis		4	1					6		4				15
Mumps		1	1	2	1		1	1	-	-				10
Malaria	721	1063	1207	1094	1486	1823	1488	1051	2429	1301				13858
Gonorrhoea	45	43	63	43	54	62	47	33	29	33				452
Yaws				2	1	3	2	3	1	3				16
Bilharzia(Schistosomiasis)	81	35	51	36	39	78	45	40	37	19				464
Intestinal Worms	192	152	88	76	88	71	123	60	56	44				710
Guinea Worm			6	3				1	-	-				11
Malnutrition	40	42	26	36	39	28	51	37	30	51	43			433
Anaemia	152	95	62	35	39	46	44	56	41	17				567
Mental Disorders	49	12	11	12	16	17	22	24	55	44				365
Acute Eye Infection	184	43	75	106	36	78	69	78	126	76				871
Cataract	158	55	30	35	10	11	27	44	55	35				454
Ear Infections	46	17	24	26	20	43	23	23	27	34				284
Hypertension	182	132	150	117	228	125	114	117	124	112				1397
Other Heart Diseases	57	11	7	5	2	14	13	4	23	21				155
Upper Respiratory Infection	267	188	201	153	130	178	196	162	201	209				1884
Pneumonia	26	6	19	17	1	10	13	18	5	15				130
Diseases Of Oral Cavity	126	63	101	119	57	91	101	186	153	111				1111
Gynaecological Disorders	122	53	63	41	37	65	69	100	70	20				640
Pregnancy & related comp.	232	134	249	183	222	188	146	176	217	163				1711
Diseases of Skin(ulcers)	298	446	207	211	189	205	191	166	237	152				2302
Rheumatism and Joint Pains	336	186	223	182	111	185	173	123	238	181				1729
P.U.O.(not Malaria)	27	5	3	4	1	9	21	44	29	17				163
Accidents(Fractures/Burns)	107	153	144	178	175	160	147	116	147	106				1429
Onchocerciasis			3											3
Leprosy														
Neonatal Tetanus														
All Other Diseases	290	560	972	1039	1283	1142	905	945	1166	1059				9361
TOTAL NEW CASES	1498	2829	1322	1363	1372	1529	1243	1569	928	898				2803
RE-ATTENDANCES	1436	1480	306	350	348	462	386	327	389	372				5856
REFERRALS	35	19	15	11	21	22	19	17	6	17				182

27 Cases of the other diseases